


THE MCKNIGHT FOUNDATION

Collaborative Crop Research Program

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CCRP Quarterly Newsletter

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CCRP News

- The CCRP's West Africa Community of Practice (W. Africa CoP) has been initiated with funding of a cluster of five crop research projects aimed at improving food and nutritional security in millet and sorghum based cropping systems of the West African Sahel. The five projects address aspects of strategic importance in these cropping systems are mentioned below. As the W. Africa CoP, the project teams will meet regularly in the coming years to share ideas, learn together, and foster project synergies. Keep abreast of their activities and progress by visiting their individual project pages, as well as the W. Africa CoP webpage.
 1. **Grain legume/cereal intercropping.** The [Grain legumes \(Mali\)](#) project, led by Boubacar Traoré of the Institut d'Economie Rurale du Mali (IER), will employ a combined nutrition education and participatory action research approach to boost human nutrition and soil fertility benefits by intensifying farmers' utilization of grain legumes. Collaborators include representatives from Union Locale des Producteurs de Céréales (ULPC), Michigan State University, Association des Organisations Professionnelles Paysannes (AOPP), Helen Keller International, and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).
 2. **Micronutrient and nutritional sufficiency.** The [Nutrition \(Mali\)](#) project, led by Lina Mahy of Helen Keller International and supported by collaborators at IER and ICRISAT, will improve understanding of the critical determinants of nutritional status (especially iron and zinc deficiencies) in local food systems in Mali, as well as identify locally available food resources and/or superior food processing/preparation practices that will help improve nutritional sufficiency.
 3. **Pest management.** The [Insect pest management \(Niger\)](#) project is led by Baoua Ibrahim of the Institut National de Recherche Agronomique du Niger (INRAN) and supported by collaborators at IER, Institut National pour l'Etude et la Recherche Agronomique (INERA) and the International Institute of Tropical Agriculture (IITA). It aims to devise an integrated

management strategy for the millet head miner, focusing on biological control and the identification and participatory deployment of resistant varieties.

4. **Sorghum and millet improvement.** Bettina Haussmann of ICRISAT-Niger leads the [Sorghum/millet improvement \(W. Africa\)](#) project, which targets increasing West African farmers' access to improved pearl millet and sorghum varieties. Haussmann and her collaborators from INRAN, IER, and INERA will focus on farmer participatory improvement of local varieties in each major agro-ecological zone in the target region, as well as work towards the development of new screening methods for evaluating varietal adaptation to stresses associated with low soil fertility conditions.
 5. **Farmer seed systems.** The [Seed systems \(W. Africa\)](#) project, led by Eva Welzien-Rattunde of ICRISAT and supported by collaborators at INRAN, INERA and IER, will work with local farmer groups in Mali, Burkina Faso and Niger to increase the sustainability of local millet and sorghum seed systems. The project will build the groups' capacity to identify improved, locally adapted sorghum and millet varieties through on farm research, and to multiply and market the best varieties to ensure wider availability of improved germplasm.
- The renewal proposal from the [P-efficient legumes \(China/Mozambique\)](#) project was approved by the McKnight board last quarter. This project, formerly the [Soybean roots \(China\)](#) project, will now involve the Agricultural Research Institute of Mozambique (ARIM), and will focus on phosphorus efficiency and production of soybean in China and common bean in Africa.
 - The [Rice biodiversity \(Thailand\)](#) project was renewed. For the next phase, the project will expand from Thailand to include Lao PDR and Cambodia. It will now be known as the [Rice biodiversity \(S.E. Asia\)](#) project.
 - The [Quinoa \(Bolivia\)](#) project was also renewed and has expanded from Bolivia to include CIRNMA Centro de Investigacion de Recursos Naturales y Medio Ambiente in Puno, Peru. The project will now be known as the [Quinoa \(Andes\)](#) project.
 - Renewal proposals were received last quarter from the [Cereal roots \(Brazil/E. Africa\)](#) and the [Tef/finger millet \(E. Africa\)](#) projects. The [Cereal roots \(Brazil/E. Africa\)](#) has proposed to foster partnerships with both Moi University and KARI in Kenya. In 2005, members of the [Tef \(Ethiopia\)](#) and [Finger millet \(India\)](#) projects held a workshop in Nairobi to allow researchers working on genomics of these two "orphan" crops in the Chloridoid sub-family of the Gramineae (the grass family) to exchange information. The Chloridoid team proposes to expand to include finger millet researchers in Ethiopia, Kenya and Uganda.
 - The [Chickpea \(India\)](#) project held a wrap-up meeting at National Chemical Laboratory, Pune, India on March 13-14, 2006. The 25 participants included investigators, project staff, advisers and reviewers. The group reviewed the results obtained and planned future strategies to continue chickpea collaboration.
 - The [Legumes project development workshop](#) took place in Arusha, Tanzania on March 28-31, 2006. This workshop involved the 10 project teams that had successfully competed in the initial round of selection for CCRP pre-proposals focused on "*Enhancing the utilization of legumes in Malawi, Mozambique and Tanzania.*" The workshop was intended to facilitate the preparation of the project teams' final proposals and provided an opportunity for the CCRP team and the project teams to get to know one another. Workshop documents, photos, participant feedback and links to valuable

literature resources are available on the [workshop webpage](#). The CCRP would like to thank Jonathan Otto of The McKnight Foundation's Africa Program.

- We have initiated planning of the next Grantee Conference. Representatives of all active CCRP projects will participate in the meeting, which will take place in Chantilly, France in December 2007.
- The second annual meeting of the Andes Community of Practice will take place July 18-21, 2006 in Quito, Ecuador. This meeting will bring together representatives of the eight Andean Community of Practice projects. This meeting will take place immediately before the XII Congreso Internacional de Cultivos Andinos to be held in Quito, Ecuador. Project teams will give updates on their projects, discuss topics identified by the group, and visit to a CCRP project in the area. A preliminary planning document and list of workshop topics are available on the [workshop webpage](#). The workshop is being organized by Betsy Campbell (CCRP consultant), Rebecca Nelson (CCRP Program Director), Claire Nicklin (Andes CoP assistant), Max Ochoa (MACRENA), Myriam Paredes (workshop facilitator), Kathy Rysted (McKnight Foundation representative), and Eliana Suarez (PUMA Foundation). Your input on the agenda is welcome!
- From March 3-9, Dr. Peter Berti visited collaborators in INIAP, Vecinos Mundiales and CODESCOP in Ecuador. Dr. Berti is Deputy Director and Nutrition Advisor to the NGO "PATH Canada" and is working with two of the Andean projects to support them in including a nutritional component in their projects. Dr. Berti met with the teams to review their nutrition plans, provide some training, discuss project progress and results of a baseline survey; and to develop a nutrition promotion plan and study design.
- In April 2006, The Bill and Melinda Gates Foundation announced that it will be supporting a new Global Development program. This program is one of the Gates Foundation's four organizational groups that focuses on agricultural development and financial services for those living in extreme poverty. In November 2005 and April 2006, Rebecca Nelson attended meetings with the Gates Foundation as a representative of the CCRP.
- Congratulations to CCRP consultants Drs. Mohamed Ag Ayoya and Rachel Bezner Kerr, on their new positions! Mohamed will be the regional nutrition officer for West and Central Africa to UNICEF in Senegal, and Rachel will be assistant professor in the Department of Geography at the University of Western Ontario. We thank Mohamed and Rachel for all of their hard work and dedication to our program, and wish them the best of luck on their future endeavors!
- Please see the last section of this update for news from the CCRP projects.

Upcoming CCRP Events

2007

March

First Meeting of the CCRP's West African Community of Practice (dates to be determined)

December

1-6 Triennial Grantee Conference to be held in Chantilly, France

2006

July

18-21 Meeting: 2006 Meeting of the CCRP's Andean Community of Practice to be held in Quito, Ecuador

Recent and Upcoming Related Events

2006

July

23-28 The XII International Congress of Andean Crops to be held in Quito, Ecuador, will be entitled "For the Food Security and Sovereignty of the Andes." For further information, please contact Dr. Eduardo Peralta at peraltae@ecnet.ec or legumin@pi.pro.ec.

October

9-13 The 2006 International Rice Congress to be held in New Delhi, India

The 2006 International Rice Congress, entitled "Science, technology and trade for peace and prosperity," will be held October 9-13 in New Delhi, India. This Congress is being jointly organized by the Indian Council of Agricultural Research (ICAR) and the International Rice Research Institute (IRRI) and will feature four major events. The aim of the Congress is to bring together diverse stakeholders of the international rice community to address emerging issues and to provide a common platform for sharing knowledge and expertise. For more information, go to this website: <http://www.irri.org/irc2006> or <http://www.icar.org.in>.

The CCRP Web is located at... <http://mcknight.ccrp.cornell.edu>

CCRP Web changes over the past quarter:



During the last quarter, the CCRP Web team began working on developing a new [themes and topics](#) section of the web. The CCRP’s four defined themes are food security and nutrition; research/knowledge management; sustainable production and food policy. We are currently working on developing the topics pages that fall under each theme. Check back often for these updates.

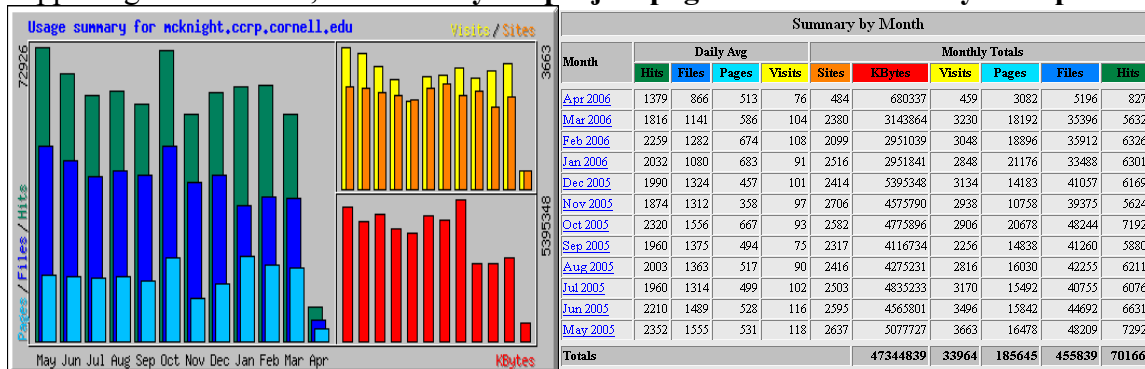
Kelly Lindsay has been working with a team of translators to continue the development of the trilingual feature of our website. These changes are slowly making their way onto the web and will be more evident in the coming months.

Upcoming changes to the CCRP-Web

- Kelly will continue to send web pages for translation into Spanish and French until the entire site is trilingual! Many thanks to our translators Dr. T. Ames (Spanish) and Mr. M. Chetima (French).
- The CCRP web team (Kelly Lindsay, Beth Medvecky, Rachel Bezner Kerr, Claire Nicklin and Rebecca Nelson) will continue to develop topics pages for each of the four CCRP themes.
- Project and workshop pages will be updated with new picture pages and quarterly newsletter additions.

“Site” visits

The CCRP Web site stats continue to impress us! Our peak this reporting period occurred in February at close to 63,000 hits. Our top country for hits was Tanzania, probably due to preparations in progress for the Legumes project development workshop taking place in Arusha, Tanzania at the end of March. The CCRP web receives approximately 60,000 hits a month. Keep visiting the site to know what is happening in the CCRP, **and check your project pages to make sure they are updated!**



Updates from the CCRP Projects. The updates below are published as received. Minimal edits have been made.

[Chickpea \(India\)](#)

- Release of a new variety of chickpea named “Rajas” through concerted efforts of MPKV, Rahuri and NCL, Pune.
- Fine mapping of QTL1 responsible for major contribution (>60%) to the Ascochyta blight resistance in chickpea using CAPS and dCAPs markers and heterozygous inbred families.
- A project wrap up meeting for Chickpea India partnership was held at National Chemical laboratory, Pune, India during March 13-14, 2006 to review the progress made so far and to plan for future strategies to continue Chickpea collaboration. Twenty five members including investigators, project staff, advisers and reviewers attended the meeting.

[Finger millet \(India\)](#)

- Three elite genotypes were identified for high yield under drought situation with 3.5 tons of grain yield/ha.
- Four elite genotypes suited for rainfed situation continued for third year multilocation trials by the University.
- Genomic library of finger millet constructed. Identified and sequenced 75 new SSR marker sequences and polymorphism tested.

[P-efficient legumes \(China/Mozambique\)](#)

- The second phase of the China/Root project officially began in January 2006 with a new title “Increasing Phosphorus Efficiency and Production of Grain Legumes in China and Africa”. A new partnership has been formed for an extended effort in increasing phosphorus efficiency and production of grain legumes in both China and Africa, specifically Mozambique. As the first step of the project, 3 Mozambique trainees, Magalhaes Miguel, Celestina Jochua and Soares Xerinda, arrived at Pennsylvania State University in January to start their Ph.D. programs under the supervision of Dr. Jonathan Lynch. The trainees will take courses for one year before returning to Mozambique for their actual thesis research.
- Five soybean breeding lines (2 Spring varieties and 3 Summer varieties) bred by the CCRP team at SCAU have recently been submitted to the Chinese National Variety Certification Committee to apply for the National Official Variety Certification. These breeding lines performed significantly better than the official best check in the 15 regional trial sites for two consecutive years in 2004 and 2005. Once certified, these varieties will be officially released in late 2006.
- Dr. Xiaolong Yan, PI of the China/Mozambique Project, has recently received a “Changjiang Scholar Award” from the Ministry of Education of China for his outstanding achievements in higher education and scientific research. This is a higher level award followed his “Distinguished Professorship Award” from the Education Bureau of Guangdong Province last year.

Rice biodiversity (S.E. Asia)

- The partnership (all original partners plus new partners from Lao PDR and Cambodia) met in Bangkok on March 16-19, 2006 to initiate the project's new phase (2006-2009), which will cover genetically rich local rice germplasm in Lao PDR and Cambodia as well as Thailand. The project's short title has now been changed from "Thai Rice Biodiversity" to "Rice Biodiversity."
- Project partners (Kanok Rerkasem and Miguel Pinedo Vasquez) published a paper entitled "Diversity and Innovation in Smallholder Systems in Response to Environmental and Economic Changes" in a forthcoming book: "Managing Biodiversity in Agricultural Ecosystems", co-edited by another partner (Christine Padoch) being published by Columbia University (available January 2007).
- PI (Benjavan Rerkasem) has been invited to present a paper on "Wild rice: genetics and conservation," at the forthcoming Ethnobotany Conference, to be held in Chiang Mai in June 2006. (See attached abstract)

Seed systems (Ecuador)

- Marlene Willemsen completed her M.Sc. thesis entitled, "Sembrando la semilla para un proyecto participativo." Arjen Wals (Wageningen), Connie Almekinders (Wageningen), Julio Beingolea (World Neighbors), and Marlene have written an article entitled, "Multi-level learning around local seed in Andean Ecuador" from the experience that will appear in a forthcoming UNUP publication.
- In February and March the Seed Savers Group conducted a series of in-depth courses for project leaders on seed system erosion, conservation and reproduction. Presently, project leaders are replicating courses in their zones of influence in the provinces of Cotopaxi, Bolivar, and Chimborazo.
- The COBERAGRI and Seed System project co-hired Ross Mary Borja to help improve the design of its participatory monitoring and evaluation (PME) system, in particular with attention to its beneficiary led implementation. After reviewing the design, Ross will conduct training for staff of both the COBERAGRI/MACRENA and Seed System initiatives, who in turn will conduct complementary PME activities in project areas. Following testing and adjustments, the projects intend to publish the emergent PME methodology and draw on its outcomes as case study material.
- Project participants have been exploring creative means to improving circulation of goods and services, for example, through barter, solidarity baskets, and alternative currency. This has included involvement in bi-weekly farmer fairs in the city of Riobamba. This experience will contribute to new ideas on how to improve non-formal exchange of seeds.
- Project participants from Winay Kawsay and Bilingual Education have become proactive in demanding a national referendum on the Free Trade Agreement that promises to produce unfair marketing conditions for smallholder farmers. Presently, the FTA is being negotiated behind closed doors between the United States and Ecuador. Farmers are concerned about the loss of competitive access to domestic markets, which represent their major source of income, in large part due to

subsidies to growers and corporations in the United States. Another major concern is over farmer's ability to protect intellectual property rights, in particular over Andean crops, varieties, and seed. Activities have included participation in a national strike that closed down highways for three weeks during March as well as workshops and informational fairs over the proposals and implications of the Free Trade Agreement. Despite overwhelming support for a referendum by over 70% of the population, the Ecuadorian government has not acknowledged the concerns of its public.

Sweetpotato breeding (Uganda)

- One of our graduate students, Mr. Moses Ekobu on the sweetpotato program doing his masters degree at Makerere University (MU) in Kampala, Uganda, is co-supervised by Professor Samuel Kyamanhywa at MU, Dr. Benson Odongo at Namulonge Agricultural and Animal Production Research Institute (NAARI) and Prof. William Moar of Auburn University in Alabama, USA. Moses made very good progress in formulating and modifying artificial diet suitable for the African sweetpotato weevil (ASPW). The artificial diet is a prerequisite for conducting bioassays on chemicals from different sources with potential application as pesticides/ biopesticides or transgenics. Prof. Moar was impressed by Moses' laboratory work at NAARI, and he decided to arrange short training for him in his lab at Auburn (October 26, 2005- February 3, 2006), to improve his skills and to interest him in a related project on developing Bt transgenic sweetpotato resistant to the ASPW, funded by the Rockefeller Foundation. During his visit in the USA, Moses attended the 53rd Annual Meeting of Entomological Society of America at Fort Lauderdale in Florida (December 15-18, 2005) where he presented a poster on developing bioassays for the ASPW. Moses had very good exposure in working in a modern laboratory, presenting and preparing a manuscript for publication, and when he got back to NAARI he reduced ASPW larval mortality in the lab from 10% to 0% due to his training. Moses' MS training is supported by the McKnight Foundation, but Prof. Moar arranged for his training in the US. This is a very good example of synergy between two projects that the McKnight Foundation encourages.
- Philip Stevenson, of the Natural Resources Research Institute (NRI)/ University of Greenwich was in Uganda (February 10-17, 2005) to rate a field trial at Serere Research Agricultural Institute on ASPW planted in North Eastern Uganda, and to go through the process of chemical extraction from sweetpotato roots with the PhD student, Harriet Musinga, who he co-supervises with the Dr. Benson Odongo. The extracted chemicals are sent NRI for analysis. Harriet is running laboratory tests on roots in the lab at NAARI to rate resistance/susceptibility to the ASPW of around 120 sweetpotato accessions.
- The sweetpotato program at NAARI has taken over all the sweetpotato participatory breeding (PPB) activities in Uganda formerly run by Dr. Richard Gibson of NRI as principal investigator in collaboration with the National Agricultural Research Organization (NARO)/ NAARI. The Crop Protection Program of the UK Department funded the PPB project for two years for International Development, and the project terminated at the end of December 2005. Our experience with this project, which is among the first of its type on the continent on sweetpotato, should provide lessons to other countries because we have well-established activities of the so-called convectional breeding (CB) and, now we have PPB. We have one MS student, Mr. Godfrey Light Kisembo studying the social economics of PPB and participatory selection (PPS), and we hope to provide valuable information on the PPB, PPS, CB or a blend of the different approaches.

Sweetpotato diversity (Kenya)

- Douglas Miano, a Ph.D student at Louisiana State University prepared a manuscript documenting the first documented report of a begomovirus infecting sweet potato in Kenya. This report has been accepted by the *Plant Disease Journal* for publication. Douglas also attended the National Sweetpotato Collaborators Group Annual Meeting in Orlando, Florida, where he presented two papers on his virus research studies in Kenya. He has submitted an abstract to American Society for Horticultural Science Annual Conference to be held at New Orleans, Louisiana in July, and another abstract to The American Phytopathological Society for the APS/CPS/MSA Joint Meeting to be held in Quebec, Canada at the end of July. Douglas is currently working on molecular markers for resistance to SPVD using AFLPs. He has already done the initial runs using DNA samples from sweet potato germplasm collected in Kenya.
- Activities of the project in Tanzania during this quarter were severely affected by a prolonged drought. This necessitated preserving and multiplying planting materials near Lake Tanganyika and along river valleys elsewhere. But despite this, at the onset of the rains in March, a total of 84600 vines were distributed to Tanzanian farmers for planting. In addition the selected sweetpotato varieties have been planted in two locations in the Lake Zone (Sengerema and Missungwi) as multi-locational trials, a final stage towards recommendation of the best varieties for official release to Tanzanian farmers. Training and evaluation of sweetpotato products (value addition) in the Lake Zone was done in 2 villages in Musoma districts. The evaluations revealed that most of the products have a big potential of being adopted by farmers in the region. The Msc. Student, Teresia Ngendello has started her research work at two sites, Ukiriguru Research Centre and Sokoine University. Her studies are progressing on well.
- Similarly project activities in Kenya were severely affected by a prolonged drought this quarter. In south-west Kenya during the month of December to March 2006 the second season trials were harvested in three sites ie Kabondo Ndhiwa and Rangwe as the sites receive bimodal rainfall annually. Data were collected on yields, taste, market preference, cooking quality, pests and disease tolerance on the twelve sweetpotato varieties being evaluated with the farmer's participation. This data is being processed. In general the yields for this second season are lower due to less rainfall received. The MSc. Student, Johnson Kwach who is carrying out this work is organizing the second season data for analysis and has started writing his thesis.
- In Embu a GXE Trial and an Advanced Yield Trial (AYT) were harvested and data analyzed. Several new varieties in the AYT out-yielded the local check and will be candidates for advancement to multi-location testing. Three Community Based Organisations (CBOs) were supplied with planting materials to plant one-acre multiplication plot per CBO. Materials from these plots are currently being distributed to farmers in the region. Training on sweet potato production and utilisation for CBOs in Mukurweini was conducted. These were new CBOs with no previous intensive exposure to sweet potato production. At Katumani two Preliminary Yield Trials, one Advanced Yield Trial and one National Performance Trial were planted but dried up due to lack of rains. Participatory on-farm trials and seed multiplication activities had a similar fate. These activities are now being repeated with onset of the current rains.
- The following manuscripts have been submitted for publication:

1. Villordon, A., W. Njuguna, S. Gichuki, P. Ndolo, H. Kulembeka, S.C. Jeremiah, D. LaBonte, B. Yada, P. Tukamuhabwa, and R.O.M. Mwanga. 2006. Using GIS-based tools and a consensus niche-based distribution model to determine sweetpotato germplasm exploration and documentation priorities in Sub-Saharan Africa. *Submitted to HortScience*.
2. Villordon, A.Q., W. Njuguna, S. Gichuki, H. Kulembeka, J. Simon, B. Yada, P. Tukamuhabwa, R. Mwanga. 2005. GIS tools for documentation and analysis of germplasm collections from a secondary center of diversity: a case study for East African sweetpotatoes. Poster-ASHS 2005 National Meeting: Las Vegas. *HortScience* 40:1028.
3. Villordon, A., W. Njuguna, S. Gichuki, P. Ndolo, H. Kulembeka, S.C. Jeremiah, D. LaBonte, B. Yada, P. Tukamuhabwa, and R.O.M. Mwanga. 2006. Development of a Web-Accessible Germplasm Collection Database Using Publicly Available Software Tools. Poster- ASHS 2006 National Meeting: New Orleans (submitted and accepted for presentation)

Tef/finger millet (E. Africa)

- In Ethiopia, the National Variety Release Committee has approved the official release of one tef variety (code: DZ-Cr-387-RIL355) derived from a targeted cross (DZ-01-196 x DZ-01-974) intended to combine high seed-quality (DZ-01-196), high yield and good plant stature (DZ-01-974). The variety is given the name "Quncho", which in English language translates "top brass" or "at the helm."
- Mark Sorrells and Ju-Kyung Yu attended the Plant and Animal Genome conference, San Diego, CA, Jan. 14 – Jan 18, 2006. We presented a poster about tef QTL mapping.
- Dr. Katrien Devos at Uni. of Georgia has provided us total of 213 finger millet markers. Among 213 finger millet markers, 138 markers (65%) were functional with tef DNAs and 12 markers were mapped in tef population (Kaye Murri x *E. pilosa*) using length or sequence polymorphism. Two hundred forty six CNL markers developed based on rice EST-SSR were tested on tef DNAs. A total of 87 functional CNL markers will be checked their length polymorphism and mapped on tef population. A total of 12 inflorescence architectural gene markers was tested on tef mapping parents and three gene markers are polymorphic; five maize genes from Elizabeth A. Kellogg at Uni. of Missouri, and seven sorghum genes from Stephen Kresovich at Cornell Univ. These gene markers will be mapped and analyzed with phenotype of tef panicle form. In addition, five red pericarp gene primers from rice were provided by Susan R. McCouch at Cornell Univ and two primers produced PCR amplicons with tef DNA thus, the polymorphism of these primers will be tested on tef mapping parents.