


THE MCKNIGHT FOUNDATION

Collaborative Crop Research Program


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CCRP Quarterly Update

To: CCRP Grantees

From: Office of the CCRP Program Director

Reporting period: January-March 2004

CCRP News

- Thank you to projects that submitted year 2 progress reports and work plans for year 3 during this quarter: Andean tubers (Peru), Rice (Thailand), Soybean (China), Wheat (China). Funds were released for the rice, soybean and wheat projects.
- A request for proposals (RFP) focusing on achieving impact in the Andes was released on Jan. 15. The RFP was based on the input obtained at the Bolivia workshop held in Oct. 2003, and with input from the oversight committee. This was posted on the [CCRP](#) and McKnight Web sites, and was distributed by email to a network of contacts in the region. We have received many queries via email regarding the RFP. Pre-proposals were due in mid-April.
- A [consultation workshop](#) on millet- and sorghum-based systems in West Africa was held January 27-30 in Niamey, Niger. The workshop, which was intended to inform a call for proposals, was attended by 92 participants representing research, development and farmer organizations. The proceedings of the workshop are now available. A “beta” version of the full proceedings is now being checked and will soon be sent to our longer mailing list.
- Plans are advancing for the Grantee Conference, which will be held in the Netherlands in November. Invitation letters were sent out in March to several representatives of each of our current projects, based on the recommendations of the principal investigators. The program is now being developed.
- Dr. Robert Mwangi’s renewal proposal was recommended by the program director and oversight committee, and approved by the Board of The McKnight Foundation. Congratulations to Dr. Mwangi and team!
- Third annual meeting of Andean Tubers group was held March 29-31 in Cusco, Peru.
- Dr. Sam Gudu of Moi University and Mr. Dickson Ligeyo of KARI traveled to Brazil for training and collaborative research at Embrapa Maize and Sorghum. Embrapa scientists sent potentially valuable maize seed to Kenya for evaluation and utilization in breeding for adaptation to marginal soils. Dr. Bob Schaffert of Embrapa made a presentation at the Niger workshop.
- Alejandro Bonifacio defended his dissertation at Brigham Young University. Our congratulations to Dr. Bonifacio and his advisor Dr. Fairbanks!

- Richard Jones visited the legumes project in South Africa in early March.
- Mark Sorrells had a bicycle accident, but made a speedy recovery and is back on his bike.
- Bob Goodman and Rebecca Nelson visited The McKnight Foundation offices on 20 February to meet with Carol Berde and Kathy Rysted for planning purposes.
- See the last section of this update for news from each of the CCRP projects. Our thanks to project teams that contributed to this newsletter.

Developing news in related areas

[Mpoko Bokanga named first executive director of AATF](#)

[Conference on Assuring Food and Nutrition Security in Africa by 2020](#)

Upcoming Events *[This list does not include all steps in the grant selection process]*

April 2004

[Tef \(Ethiopia\) midterm evaluation, Debre Zeit, Ethiopia](#)

Charity Kabutha and Richard Jones' visit to the [tef](#) (Ethiopia) project.

May 15-19, 2004

[Soybean and wheat \(China\) site visits, Guangzhou and Nanjing, China](#)

Daowen Wang will visit the [soybean](#) and [wheat](#) (China) projects.

June 2004

4-6 [OC to meet in Amsterdam to select pre-proposals for the Andes RFP.](#)

July [Legumes \(South Africa\) midterm evaluation, Cape Town, South Africa](#)

Two OC members' visit to the [legumes \(South Africa\)](#) project.

November

6-10 [2004 Grantee conference, The Netherlands](#)

The biennial grantee conference will be held at the Dolce Kasteel Vaalsbroek in Vaals, The Netherlands on November 6-10. This conference center is located on the borders of Germany, Brussels, and The Netherlands and has room for 130 guests. For more information, click [here](#).

CCRP Web

The CCRP Web saw a surge in activity after we announced the Andes RFP in mid January. Hundreds of unique hits originated in Peru, Ecuador, Bolivia and other South American countries. This spike continued through February, a record-breaking month that yielded over 26,000 hits, over 1,000 of which were from unique users.

In March, Jon Corson-Rikert at Mann Library developed a new tool that allows Kelly Lindsay to update the website directly. This tool uses an intermediary server and web-based command to execute changes. This tool has proved to be extremely useful in enabling Kelly to make immediate changes to the website.

User feedback is critical to making any website truly useful. Please contact [Kelly Lindsay](#) for any questions, comments and/or concerns you may have. Your input is valuable to us!

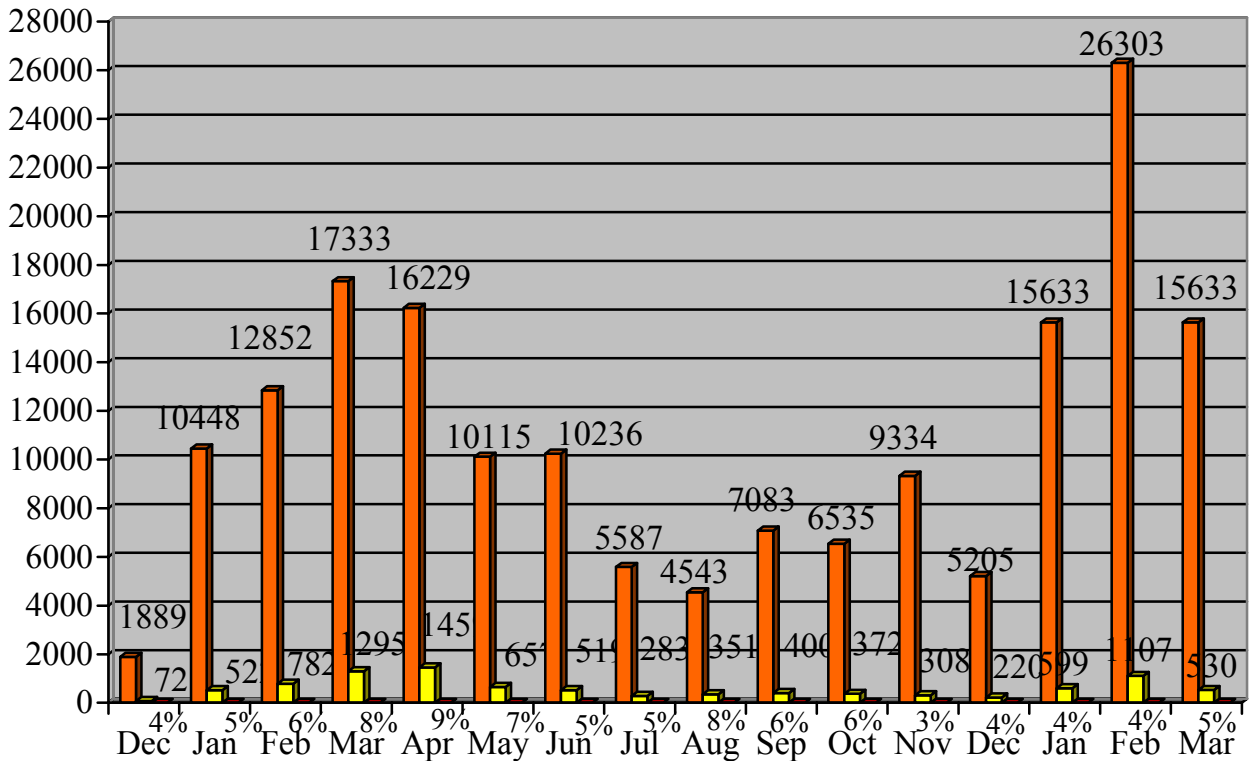
CCRP Literature Service

The last quarter's activity picked up a little since last report. A total of 16 articles were sent to various project leaders, grantees, students and non-CCRP affiliates with similar research interests. We encourage literature requests both within and outside of the CCRP.

CCRP Web Statistics Summary

Webalizer is a free program that generates web site usage reports. Over the past few months, we have been using Webalizer to interpret the CCRP Web's log files to determine how many hits, visitors, and countries have visited the web site.

Hits and Visitors to the CCRP Website



Hits: Total number of times the site was visited. This is every single request made to the server.

Visitors: Total number of unique IP address requests made to the server.

% Unique hits: What percentage of hits were from unique users.

To view full web statistics reports by month, click [here](#).

Updates from the CCRP Projects

The updates below are published as received. Thanks again to those who have contributed updates. These items are featured in McKnight board papers, so please take advantage of the opportunity to let the Foundation know of your progress. In addition to bullet points, please also send references for any articles published during the quarter.

Andean tubers (Peru)

- A meeting was held in Cusco, Peru from 29 - 31 March to (a) evaluate the 2nd year output of the Andean tuber project, (b) plan strategy for the 3rd year, and (c) intensify distribution and circulation of our results. In response to the third objective of our meeting, two seminar presentations were given at Cusco University. The first one was on oca weevil taxonomy, and the second was on Andean tuber cultivars in six rural communities of Cusco. The first seminar, given by Dr. Lynn Kimsey, University of California – Davis, indicated that the weevil species, which is the major pest of oca fields in the Peruvian Andes, was identified as *Macrostyphus tuberculatus*. However, the generic status of this weevil is in question as the type specimens have been lost, and more research is needed to clarify this situation. Natural enemies of the oca weevil including ants and carabid predators are found in the field, but their impact appears to be minimal. Consequently, introduction of other control tactics such as insect-parasitic fungi and nematodes, repellent plants and cultural methods are needed to optimize integrated management of this pest in farmers' fields. In the second seminar, Dr. Carlos Arbizu, CIP, presented information about Andean tuber cultivars grown in six villages in the Cusco region. His research showed that 72 morphotypes of oca, 68 of mashua, and 29 of ulluco were being grown. Furthermore, preliminary results about homologation of oca cultivars grown in these rural communities of Cusco indicate that only 4-5 cultivars of the villages are duplicated at the oca gene bank maintained by CIP. This would suggest that most oca cultivars of the communities are not maintained by CIP gene bank. Additionally, homologation has shown that some oca cultivars are very widespread as they are grown from Northern to Southern Peru, more than 1000 kilometers apart. This finding will be taken into consideration to optimize conservation of these cultivars both on-farm and *ex situ*.
- In addition to the seminars, the findings of our results were broadcasted by INTIRAYME radio 830 AM every Saturday morning from 12 December 2003 to the middle of January 2004. The program was in the farmer's mother tongue (Quechua), and mainly addressed to villagers of the Southern Peruvian Andes.
- A communal locale was built in the village of Matinga through collaboration of the Municipal Government of Taray and Matinga as well as the Andean tuber project. The locale will be used to improve efficiency of farmers' workshops, field schools, students training, and project participant's work.

Chickpea (India)

- Two researchers from National Chemical Laboratory, Pune, India, Dr. Ashok P. Giri, Scientist and Ms Manasi Telang, PhD scholar worked with Prof. Vincent R. Franceschi, Washington State University, Pullman, USA to carry to specific work on winged bean proteinase gene cloning and making construct for yeast and plant expression. Large-scale expression of these gene products in yeast is in progress, which will be, used to test their efficacy against chickpea pod borer, *Helicoverpa armigera* at NCL, India. Transformation events performed by Assam Agriculture University, Jorhat, India, Scientists using winged bean proteinase inhibitor gene constructs on chickpea generated several putative lines which were screened for gene insertion and few lines containing winged bean proteinase inhibitor gene were identified. Further

characterization of these lines for the gene expression and copy number will be attempted once these plants are well established in glass-house. Similar chickpea transformation events will be attempted at WSU for other winged bean proteinase inhibitor genes cloned under different tissue specific promoter.

- Mr. Ajay Srinivasan, PhD Scholar NCL visited Prof. John Gatehouse's laboratory at University of Durham, UK for 8 months to carry out work on a novel chickpea proteinase inhibitor protein (CaKPI) identified by NCL scientists. At present this gene product are being tested for it's in vitro and in vivo potential against *Helicoverpa armigera* and other insect pests.
- Screening of recombinant inbred lines for identification of Fusarium-wilt specific DNA markers at NCL, Pune and analysis their disease scoring data performed at Mahtma Phule Krishi Vidyapeeth (Agricultural University) during this season is in progress. In the second year farmers participatory program organized by MPKV, Rahuri and NCL, Pune was successful in several locations in different states of India. We are waiting the get feedback from the farmers. Dr. Fred Muehlbauer, WSU, Pullman, USA visited NCL and MPKV with all the Indian collaborators, this meeting was very much useful for designing immediate plans in different areas in the project.

Finger millet (India)

- Purified and characterized 120 leaf and neck blast isolates of finger millet.
- Parents of mapping population, IE1012 and Indaf-5, were inoculated with Magnaporthe grisea strain #50 to develop blast disease. RNA hybridized from 45hr treated samples of IE1012 and Indaf-5 to Magnaporthe/Rice Oligo Microarrays (G4137A) from Agilent using Agilent's recommended protocol. The chip hybridized with RNA from Indaf-5 failed. While the chip hybridized with IE1012 showed 590 genes are up-regulated, 43 of which are rice genes, and 997 genes are down-regulated, 334 of which are rice genes.
- 20 SSR sequences are identified and 7 found to be polymorphic., Mapping population analysis with SSR is in progress using SSRs, STS and informative RAPD markers.
- Polymorphism detection is in progress using SSR, RAPD and RGA sequences using parents of RIL population.
- Primers have been constructed against 111 finger millet SSRs. Eighty percent of the primers display variation between *E. coracana* and *E. africana*. Only about 10% of the primers detect variation between IE 1012 and Indaf-5 genotypes
- Three elite lines are among 30 lines selected by farmers in testing for drought, blast and yield. These lines are grown by 10 farmers in second year trials.
- One genotype found to be highly drought tolerant is being multiplied for large scale screening in Wet season.
- Farmer participatory evaluation in 10 trials has yielded detection of drought tolerant, blast tolerant and yielding lines, that will be included in Mother baby trials in rainfed situation (July –November, 2004).

- 1000 finger millet ESTs from leaf, root and inflorescence cDNA libraries have been sequenced. And 220 ESTs have been analyzed. About 60% of the finger millet ESTs has a homologue in rice. These finger millet cDNAs are being tested for polymorphisms using single strand conformation polymorphism assays.
- Several Single feature polymorphisms (SFPs) have been identified from Rice. Primers are being designed to validate additional SFPs randomly selected from the 3,709 putative ones. If the results show promise, a new set of chips will be designed and apply them to finger millet. The finger millet EST sequences will be used in the new design.

Potato (Chile/Brazil)

- The XXI Meeting of the Latin American Potato Association (ALAP) was held in Valdivia, Chile, 7-12 March 2004. It was organized along with the II Iberian American Congress of Potato Research and Development; the V Latin American Potato Seminar: Use and Commerce; and the X Meeting of the Chilean Potato Association. Over 250 people, 120 of which from Latin America, and also from USA and Europe, participated in the meetings. Several papers related to the potato McKnight project "Obtaining Potatoes Less Dependent on Pesticides Through Broad Spectrum Insect Resistance" were presented as oral and posters including one key-note presentation.
- After the XXI Meeting of the Latin American Potato Association (ALAP) held in Valdivia, Chile, 7-12 March 2004, several breeders attending the ALAP meeting from Colombia, Peru, and Cuba visited the potato breeding program at INIA in Osorno, Chile, where they could see advances in the potato variety development program including varieties with resistance to insects in the framework of the McKnight project.

If any person needs more information on a presentation or the abstract of any of them please contact jkalazic@remehue.inia.cl

Quinoa (Bolivia)

- In January, flooding adversely affected quinoa and potato crops in the Bolivian altiplano.
- Because of the high humidity, quinoa crop was highly affected, it allowed us to select for mildew resistance under field conditions.
- On March 2nd, Alejandro Bonifacio successfully defended his Ph D dissertation at Brigham Young University
- The journal Theoretical and Applied Genetics recently accepted for publication a manuscript documenting the first molecular-genetic map of quinoa produced by researchers at BYU and PROINPA as a part of the CCRP quinoa project. BYU researchers also sequenced two full-length cDNA clones of two variant forms of the quinoa 11S seed-storage globulin, one of the major seed storage proteins in quinoa. Quinoa's seed storage proteins are of particular interest because of the favorable composition of essential amino acids in quinoa protein. The cDNA and derived amino acid sequences of the 11S globulin variants are publicly available as accessions AY562549 and AY562550 in the GenBank DNA database.

Rice (Thailand)

- We have found some promising value-enhancing traits among Thailand's native rice germplasm:
 - variation in tolerance to aluminum toxicity;
 - non-retrogradation quality (starch that stays soft after cooked grain has become cold);
 - high grain Fe in content and bioavailability.

Much of the rice grain Fe is in the bran layer, which is removed by polishing (normal procedure in rice milling). However, we found that polishing actually increases Fe bioavailability. On the other hand, we have found some local rice varieties with high bioavailable Fe even when unpolished.

- We have found genetic variation within and between seed lots with the same name, with some of the variation now characterized at molecular level. Found promising molecular evidence of gene flow between wild and crop rice.
- Our ITP plan is now finalized (contributions from Rebecca Nelson and Victoria Henson-Apollonio are gratefully acknowledged) and has been sent for official recognition by partner institutions.
- Some of the results in 1 and 2 were conducted by young researchers while in training overseas. Bioavailability of Fe by Chanakan Prom-u-thai at the USDA/ARS Nutrition Lab at Ithaca; molecular analysis by Sunisan Niratrayakul and Tonapha Pusdee at Barbara Schaal's lab in St Louis.
- To join the celebration of the year of rice, project submitted 3 papers to International Rice Research Note, one more is expected to be submitted soon. Titles and authors:

Submitted

(i) Nitrogen fertilizer increases protein and reduces breakage of rice cultivar Chainat by M. Leesawatwong, S. Jamjod, B. Rerkasem, J. Kuo, Centre for Microscopy and B. Dell

(ii) Bioavailable iron in hand pounded rice from a highland village in Northern Thailand by C. Prom-u-thai and B. Rerkasem

(iii) Arbuscular mycorrhizal fungi associated with upland rice in a rotational shifting cultivation system by Somjit Youpensuk, Narit Yimyam, Saisamorn Lumyong, Benjavan Rerkasem, Bernard Dell

In preparation

(iv) Implications of Variety Turnover and Seed Exchange for Conservation of Rice Genetic Diversity On-Farm by Anothai, Coffey, Rerkasem, Padoch



- Above is a picture of panicle selection by a farmer (Mrs. La-ong Nacharoen of Sri Chula, Nakhon Nayok - Photo Credit: Chanya Maneechote). In this deep water rice area, we have found some 30 varieties of rice grown in a diverse variety of flood regimes (time and duration of flooding, water depth, rate of flood rise, time of field drainage) with various grades of grain quality. Some 20 years ago this area grew the lowest grade of rice (round grain, lots of red rice, good for feed only, called 'duck and horse rice' by rice traders) with very low yields of just about 0.6-1 ton/ha. Now with some fertilizer and marl (to combat the acid sulphate) good farmers harvest 2.5 - 3.5 t/ha, all of the varieties grown are long grain mostly local varieties selected by farmers. Station bred PC1 and PC2 are adapted to only one flood regime, their quality does not match local varieties. La-ong (and other farmers who do this) selected panicles by their size, grain shape and husk colour. She then put the panicle on a large flat pebble, and lightly bashed 1-2 grains at the tip of the panicle with a small pebble (others use other means to remove the husk, e.g. putting the panicle on a tile and bashing the grain with the head of an 8 in bolt), to see the pericarp colour and appearance of endosperm. Panicles that are rejected include those with red pericarp, crumbly and opaque endosperm. Grain with high quality are those with shiny pericarp and translucent endosperm.

Soil (Brazil/Kenya)

- The second year of this project was completed on February 29, 2004 and the second year report and third year workplans are being finalized. Dr. Robert E. Schaffert participated in the McKnight Consultation Workshop on Millet and Sorghum - based Systems in West Africa in January in Niamey, Niger where he presented a report on "Breeding for Acid Soil Adaptation and Phosphorus Efficiency: the Brazilian Experience and Implications for West Africa". Discussions with the Rockefeller representative in Africa, Dr. Joe DeVries, lead to the approval to use US \$ 15,000 to organize a workshop and develop collaborative project proposals between INRAN (Niger), IER (Mali), ICRISAT and Embrapa Maize and Sorghum in the area of developing genetic resources of millet and sorghum more efficient in phosphorus acquisition and in developing improved technology to use native rock phosphates in sorghum and millet production. The workshop is planned for May 4 – 6, 2004 at Bamako. Dr. Eva Eva Weltzien-Rattunde (e.weltzien@cgiar.org) and Dr. Fred Rattunde (f.rattunde@cgiar.org) of ICRISAT are collaborating in the organization of the workshop.

Sweetpotato (Kenya)

- Mr. Douglas Miano of the Kenya Agricultural Research Institute (KARI) completed preparing his program of study (proposal) for Ph.D. program at Louisiana State University, U.S.A. His committee met in February 2004 to approve his program of study. He presented his research proposal seminar to the department in March 2004. Mr. Miano completed his first semester of coursework taking courses in Mycology, Soil borne microorganisms and Statistical techniques. Courses in progress include: Statistics II (experimental design), Host-parasite interaction and disease resistance and a graduate seminar. He has evaluated 21 landraces from Kenya grafted to *Ipomoea setosa* for various viruses using Elisa and real time PCR. Viruses detected included Sweetpotato Featherly Mottle Virus (SPFMV) and Sweetpotato Mild Mottle Virus (SPMMV). Additional screening is planned on the same material using fresh plant DNA extracts. This effort will be expanded once Douglas returns to Kenya. Douglas has also initiated studies in March 2004 to examine virus movement and concentration (titre levels of different potyviruses too) in sweetpotato (SPFMV, SPCSV, and their combination SPVD) in various genotypes. Douglas will return to Kenya in August/September 2004 to conduct further research for his PhD studies.
- Farmer Field School (FFS) activities have been started in several areas in Kenya and Tanzania. In South Western Kenya farmers from two FFSs in Kabondo and Ndhiwa graduated after six months of training. A one week training of trainers workshop was organized for extension and research staff in Eastern and Central Kenya from 14th March 2004 to 20th March 2004. Participants included 12 extension officers from four districts and 6 research officers from KARI. The extension staff was drawn from Ndeiya in Kiambu district, Mukurueni in Nyeri district, Kyeni in Embu district and Kangundo, Kathiani and Matungulu all from Machakos district. KARI centres involved were KARI – Embu, KARI – Katumani and KARI – National Agricultural Research Laboratories in Nairobi. Two experienced resource persons conducted the training, Mrs Elizabeth Wajekeche a food scientist from KARI – Kitale and Mr. Oscar Simanto an extension officer from Transzoia district. The two have had extensive experience conducting soil fertility FFSs for the Rockefeller Foundation funded project on fodder legumes. Subsequent to this training four FFSs have been launched in Kyeni, Mukurueni and Ndeiya. Ground working for another four FFSs has also been done in Kibirigwi, Matunguu, Kangundo and Kathiani and will be launched in April 2004. In the lake zone of Tanzania a training of trainers’ workshop on FFS has been conducted and ground working is progress in preparation for launching of FFSs. In both Kenya and Tanzania FFS manuals are being developed for local use in the two countries based on Elske van de Fliert and Ann R. Braun’s field guides and technical manual “Farmer Field School for Intergrated Crop Management of Sweetpotato.”
- A training of trainers’ workshop on sweetpotato processing was held from 1st to 6th March 2004 at KARI – Katumani Research Centre. The participants included five Home Economics Extension officers from the Ministry of Agriculture, two sweetpotato breeders, two food scientists and one social scientist all from KARI. The main trainer was Mrs Rhoda Nungo, an experienced food scientist based at KARI’s western Kenya centre in Kakamega and the principal investigator for the project. The participants were informed that KARI’s root and tuber programme undertakes to develop high yielding, high quality sweetpotato rich in vitamins/minerals, particularly orange-fleshed varieties. The objectives and goals of the McKnight CCRP sweetpotato project and activities planned to achieve them were explained. Participant were trained in processing and storage of sweetpotato products based on the manual “Sweetpotato Processing and Storage: Training Manual for extension” currently being developed by the trainer. The participants then entered into a hands-

on practical session where they made and evaluated 14 sweetpotato products. A panel comprising staff member of the KARI – Katumani research centre were used to assess the products developed by the participants. A final evaluation of the course indicated that participants’ expectations were met. Subsequent follow up has indicated that all the extension officers trained have already carried out processing and storage demonstrations for their farmers. The officers have also ensured that the processing activities have also been included in the FFSs curriculum planned for this season.

Sweetpotato (Uganda)

- In late February 2004, Farm Africa/Maendeleo Agricultural Technology Fund (MATF) approved USD 122,370 for the project, “Promotion of orange-fleshed sweetpotato (OFSP) varieties through schools in urban and peri-urban communities of Kampala, Uganda” to run for two years, 2004 and 2005. Launched in 1985, FARM is a registered charity committed to the small farmers and herdsmen of Africa. It has expanded rapidly in four countries: Ethiopia, Kenya, Tanzania and South Africa, with a head office in London. Officially launched in April 2003, the MATF - managed by Farm Africa and supported by The Gatsby Charitable Foundation and The Rockefeller Foundation - supports the transfer of innovative agricultural technologies through the provision of small grants. MATF has so far funded a variety of innovative agricultural projects in Kenya, Tanzania and Uganda aimed at improving agricultural practice throughout East Africa. The approved project aims to contribute to wide spread growing of OFSP varieties for household food security and improved nutrition among urban and peri-urban agriculture (UPA) communities in Kampala city covering 10 schools and 500 communities. The project has six project partners with different roles: 1) Makerere University Department of Agricultural Extension/Education (DAEE)- will coordinate the project 2) The International Potato Center (CIP) 3) The Sweetpotato Program of the National Agricultural Research Organization (NARO) 4) the NGO, Joint Energy and Environmental Project (JEEP) 5) The Urban Agriculture Department of Kampala City Council (KCC) and 6) Schools. The project will use rapid multiplication techniques and disseminate two OFSP varieties [Kakemega (SPK004) and Ejumula] already widely tested in different agroecologies of Uganda by mainly the McKnight Foundation support.
- On March 11, 2004 the Honorable Minister of Agriculture, Animal Industries and Fisheries, Dr. Kisamba Mugerwa, officially launched the use of OFSP at Lwabenge sub-county headquarters, 20 km from Lukaya town in Masaka District in central Uganda. Participants included local farmers and their leaders, district leaders and administrative staff, technical staff, and selected contact farmers. The speakers included the Masaka district healthy personnel (healthy situation of the district), Mrs. J. Ssekiyanja (the experience of using OFSP for nutrition and generation of income), Dr. Robert Mwangi (status of vitamin A in Uganda and potential of OFSP to combat vitamin A deficiency). Mrs. Ssekiyanja had a display of various sweetpotato products of which OFSP juice was the most popular. The whole function was conceived and organized by the Project Manager of World Vision, Masaka Food security Project, after visiting the Sweetpotato Program at Namulonge.
- The Government of Uganda Plan for Modernization of Agriculture and the National Agricultural Research Policy 2003 calls for a review of the National Agricultural Research Organization (NARO) and reorganization. The new policy requires a research framework that addresses the needs and opportunities of the farming community and agri-business through creation of an integrated, participatory and sustainable market-responsive and client-oriented agricultural research system that

enhances private sector participation. The Government of Uganda is currently undertaking a functional analysis of NARO and its institutes. The Ministry of Public services heads the exercise. The functional analysis team collected data from NAARI (22- 24 March 2004). The sweetpotato (SP) program and its partners (e.g. farmers, NGOs, private sector, processors, exporters) were selected as one of the programs to look at critically because of its successes. The team was very impressed by one of the farmer's groups "Bagya Basaaga orange fleshed SP growers and processors". The group sells fresh SP roots and processed products, and although marketing has problems members of the group were happy with their improved incomes. The choice of SP by the functional analysis team as a crop to show the impact of research illustrates that the McKnight Foundation and other donors that are investing in SP research in Uganda already have signs of positive impact of their investment.

Tef (Ethiopia)

- The National Research Review meeting for the coming cropping season (July-December 2004) was held from January 9-12, 2004, and all the planned activities of the tef project were approved.

Wolbachia (China)

- After rounds of internet communication, the 2003 annual progress report was completed and submitted to the McKnight Foundation. It has been granted that the project will extend for six months with no cost to the foundation, in order to fulfill the goal of the project.
- Preparation at the field site in Yunnan and laboratories in Shanghai has been made for field experiments in the new rice season. Several experiments has been designed to test the efficacy of oligopeptides on inhibiting virus transmission by insect, and to study the dynamics of Wolbachia in plant hopper population.