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Annual Report
Johns Hopkins Bloomberg School of Public Health
Year 1(2010/2011)
Nutrition CRSP - Africa

Principal Investigator: Keith P West

Team members: Rolf Klemm

Introduction/Overview of Work plan rationale/objectives

Background: Capacity building, operations research and research support to the yet-to-be awarded Community Connectors project are priorities of the Nutrition CRSP-Africa activities. Specific needs in each of these areas require further elucidation, particularly with respect to research support to the Community Connectors program because the RFA for this activity was only recently issued (September 2011).

Section 1: Research Activities

<u>Proposed Activity</u>	<u>Actual Activity Undertaken</u>
Participate in the workshops organized by Tufts to identify research & TA agenda	Participated in 2nd CRSP Uganda Workshop-July 2011 Meetings with faculty at Makerere University (School of Food Tech and Nutrition Science and School of Public Health)
Assess the availability and quality of existing data from Uganda-based projects to address info gaps	Cross-sectional cluster survey from 2007 in two Southwest districts- Kanungu & Kiboga (n ~300/district, infants (0-6 m, & preschoolers 6-59 m, and mothers) 2008 Food Consumption Survey data in Central Kampala), Southwest (Bushenyi and Hoima) and North (Kitgum and Lira) regions among WRA (n~300 per region), infants/young children 6-23 m (n~140/region), preschool-age children 24-59 m (n= 170/region)

Develop a list of research, TA & training priorities	<p>Potential Analyses identified but not yet finalized:</p> <ul style="list-style-type: none"> • Comparison of high vs. low IFA adherers • Factors associated with VAS coverage • Association between infant anthropometric status and consumption of minimally adequate diet • Estimates infant dietary adequacy at different breast milk intake levels <p>Training needs identified:</p> <ul style="list-style-type: none"> • Exposure to population-based research in nutrition (Bangladesh) • Biostatistics, data analysis
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Section II: Capacity Building Activities

<u>Proposed Activity</u>	<u>Actual Activity</u>
Identify potential candidates for short or long-term training	<p>Interviews with faculty from Makerere University (School of Food Tech and Nut Science and School of Public Health) indicate the desire and need for:</p> <ul style="list-style-type: none"> • Exposure to population-based research in nutrition. Tentative plans are being made to send 1-2 faculty to the JiVitA research site in Bangladesh • Data analysis capabilities to analyze dietary intake data

Outputs

1. Trip Report of July 2011 visit and participation in Research Priorities workshop.
2. Data, codebooks, protocols and questionnaires for the following accessed and discussed for analysis for N/CRSP and possible publication:
 - Cross-sectional cluster survey from 2007 in two Southwest districts- Kanungu & Kiboga (n ~300/district, infants (0-6 m, & preschoolers 6-59 m, and mothers)
 - 2008 Food Consumption Survey data in Central Kampala), Southwest (Bushenyi and Hoima) and North (Kitgum and Lira) regions among WRA (n~300 per region), infants/young children 6-23 m (n~140/region), preschool-age children 24-59 m (n= 170/region)
3. Candidates were identified for short and long-term training.

**Annual Report
Harvard School of Public Health
Year 1(2010/2011)
*Nutrition CRSP - Africa***

Principal Investigators:

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Team members:

Nilupa Gunaratna, PhD Research Associate	Henry Wamani, MD, MPhil, PhD Co-Investigator (Makerere)
Andrew Thorne-Lyman Teaching Fellow	David Guwatudde, PhD Co-Investigator (Makerere)

Introduction/Overview of Work plan rationale/objectives

Section I: Research Activities

Our first objective in Year 1 was to build our existing collaboration with Makerere University School of Public Health (MakSPH) and other Ugandan partners. We have done so, working with Dr. Henry Wamani and Dr. David Guwatudde, planning field research in southwestern Uganda under the CRSP, and submitting a proposal in response to the RFA issued by the CRSP in Uganda. We have also developed links with CRSP leaders and researchers at Tufts University and visited the Department of Community Health at Mbarara University of Science and Technology (MUST) to explore interest in possible future collaboration.

With our colleagues at MakSPH and Tufts, we have developed objectives and plans for research and training in Uganda, which we are now implementing. In June-July 2011, our research team met with partners at Makerere University in Kampala, attended the first CRSP workshop in Uganda in June 2011, and made a field visit to southwestern Uganda. We have also sought to increase expertise in agriculture and food science on our team, seeking the involvement of Dr. Bernard Bashaasha from the School of Agricultural Sciences and Dr. Joyce Kikafunda from the Department of Food Science and Technology at Makerere University.

Our main research objective in Year 1 was to conduct a preliminary survey on

agriculture, nutrition, and health among nutritionally vulnerable groups in a rural district of Uganda. We originally planned to conduct this survey in Iganga and Mayuge Districts in eastern Uganda, where Makerere University has established a demographic surveillance system and where members of our research team have conducted past research in agriculture and nutrition. However, as CRSP and USAID expressed interest in conducting such an assessment in either southwestern or northern Uganda, we worked to identify a suitable new study area in the southwest, gather background information, develop contacts with district-level officials, and prepare logistics to conduct research activities there.

Concurrent with the issue of the Community Connector RFA, the focus areas in the southwest have been decided to be in districts that we have not chosen for our planned assessment. We are therefore evaluating with our Ugandan colleagues another change in study location. Selection of a study site given the evolving focus of the larger CRSP and preparations needed to begin research in a new geographical area are challenges we hope to address in the first part of Year 2.

The goal of the assessment is to provide a baseline for evaluating interventions that integrate agriculture, nutrition, and health. It will involve randomly sampled children under two years of age and their mothers or primary caregivers and will assess agricultural activities, food security, diet, feeding practices, health, and nutritional status using anthropometry and biochemical indicators in these nutritionally vulnerable groups. One objective is to identify household agricultural activities, practices, and technologies that are associated with better household food security, quality of diets, health, or nutritional status. If possible, we will examine changes across seasons, issues of gender, and access to health care. The findings will be used to identify integrated interventions that could have a nutritional or health impact in these populations. We have developed aspects of the protocol and sampling plan, and the work will continue in Year 2.

Section II: Capacity Building Activities

One of our objectives in Year 1 was to identify, together with our partners in Uganda, Nutrition CRSP, and USAID, the needs and opportunities for capacity building. We are exploring roles in CRSP research activities for a PhD student or junior faculty at Makerere University. Among candidates we have identified from the School of Public Health, we are working on selection, logistics, and budget for one person to attend courses and conduct collaborative research at Harvard School of Public Health during the spring 2012 term. Course taken could include nutritional epidemiology, nutritional problems in less-developed countries, or biostatistics, and ultimately depend on the individual's and MakSPH's interests and long-term goals. It is anticipated that this individual, who will be a PhD student or faculty member, will subsequently be prepared

to develop a similar course(s) that will build the relevant curriculum at Makerere. Training at the Bangalore Boston Nutrition Collaborative may be another option. We also seek to engage Masters Students and staff in the field research.

Outputs

While our workplan had not explicitly outlined outputs, we had described a number of goals in the narrative of the workplan and have addressed the status of these goals at the close of year 1 as outlined below:

- 1. To conduct a baseline survey that will (a) assess nutritional status and food security among nutritionally vulnerable groups in a rural area of Uganda, (b) examine the relationship between agricultural activities and production and the food security and nutritional status of these groups across seasons, and (c) identify, jointly with Ugandan partners, the Nutrition CRSP, and USAID, priorities for future collaborative research.**

The efforts towards this objective have been aligned with the RFA awarded to MakSPH in collaboration with HSPH. Year 1 funds are supporting planning and preparations for the larger survey under the RFA award. We are initiating this baseline survey in close collaboration with colleagues at MakSPH and Tufts to ensure relevance of this activity to the Community Connector.

- 2. To strengthen our existing collaboration with Ugandan partners.**

This has been achieved and will continue in Year 2, while new linkages have been developed with the School of Agricultural Sciences and the Department of Food Science and Technology at Makerere University.

- 3. To address capacity building needs by (a) identifying, jointly with Ugandan partners, the Nutrition CRSP, and USAID, opportunities for capacity building that are relevant to Uganda, (b) creating training opportunities through implementation of the baseline survey, and (c) identifying at least one individual to come to Boston for short-term training in nutritional epidemiology or other relevant topic(s).**

Training at HSPH in Boston is planned for 2012 to coincide with the schedules of eligible MakSPH students/faculty. We additionally will have involvement of MakSPH personnel as the baseline survey commences in Year 2.

Vignettes

Dr. Nilupa Gunaratna from HSPH and Dr. Henry Wamani from MakSPH traveled to southwestern Uganda on June 30-July 1, 2011, visiting rural areas around Mbarara and Bushenyi. Meetings with health and district-level officials, as well as discussions with colleagues in the Department of Community Health at MUST helped to identify several agricultural, health, and nutritional issues in this region that could be investigated further in a baseline assessment.

As has been discussed at various CRSP meetings, the southwest is an area of relatively high agricultural productivity. Bananas (matooke) are the major crop, along with cereals including maize and other coarse grains. There is also some cash crop production (tea and coffee), and the region is a traditional cattle area (Ankole Sub-region). Challenges identified by district agricultural officials include banana wilt for matooke production, *Striga* for cereal production, tsetse fly for livestock, and declining soil fertility for all crops.

Child undernutrition, particularly stunting, is high in this region. Medical staff at local health centers cite poor quality of diets, particularly of complementary foods, and tightly spaced pregnancies, which affect maternal nutritional status before and during pregnancy and lactation, as possible contributing causes. Health centers receive cases of severe malnutrition year round, and while those cases are referred to the hospital in Mbarara, children may not be taken there due to prohibitive transportation costs.

**Annual Report
Tuskegee University
Year 1 (2010/2011)
Nutrition CRSP Africa**

Principal Investigator: Eunice Bonsi

In the first year the Nutrition CRSP Africa project, the main goal of Tuskegee University was to identify the best approach to improving maternal and child nutrition outcomes at scale in both countries. Within that context, the university is focusing primarily on academic institutional capacity-building and exploring future possible applied research activities.

Objective activities and accomplishments:

- **Conduct site visit and meet with stakeholders in Uganda in May-July, 2011:**

This was accomplished through the attendance of the May workshop and the development of collaborations with the Department of Food Technology and Nutrition at Makerere University. Contacts include Dr. Margaret Kabahenda and Dr. Joyce Kikafunda. The PI also met with the Head of Department and Dean to inform them about Tuskegee activities within the context of the Nutrition CRSP-Africa and to discuss potential contributions from the Department within the project.

- **Review institutional capacity development for training relevant to nutrition and agriculture.**

A review of course program offerings relevant to nutrition and agriculture identified the following gaps that could be filled through the N/CRSP. The Department of Food Technology and Nutrition at Makerere University is designated as the National Center for Food Processing and Research, therefore their efforts and training are focused on equipping the Center and training graduate students to manage the Center. It was discussed that the Government wanted to emphasize food processing throughout Uganda because of so much food waste (loss in storage and processing) in the country. By locating the processing Center at Makerere University, they expect local processors and students to be trained through hands-on learning at the University. The following activities are underway at the Center (in collaboration with Tuskegee):

Technical training on food processing equipment: Plans are underway for joint on-the-job training of the different food processing equipment that have been located by the Government at the center.

Training course needs in the areas of food processing and packaging, sanitation training were identified for course development. This could be a “quick win” Food Processing curriculum design in particular, direct input into Certificate level

diploma in Food Processing programs being taught at Makerere University and others. Review of capacity needs, curriculum content, and potential for offering institutional affiliation and some teaching will be explored.

The above sub-course development was not met because the faculty at Makerere needed to consult with their counterparts at the Government level for approval and support for Certificate course either for students or as a continuing education unit for processors. Also, they want the course to be developed after their faculty has visited with Tuskegee University and trained through a short course training program in the US.

- **Recruit students for graduate study at Tuskegee University**

This objective was accomplished with discussions on Departmental committee to identify and select potential students who could be trained. The committee met, reviewed and selected two students who will apply to graduate school at the Department of Foods and Nutritional Sciences at Tuskegee University. In addition, three students, **Carol Auma, Joel Tumwebaze, and Arthur Banoonya** have applied to graduate school at Tuskegee University for admissions. The PI is in contact with Dr. Margaret Kabahenda.

Applied Research

- **Review the proposed USAID/Uganda Community Connector (Community-Level integrated nutrition and agricultural interventions) plan which addresses recently announced Feed the Future (FTF) (livelihoods) activities for possible research activities.**

This review was not carried out because the RFA was not awarded until late in the fiscal year, and the Community Connector RFA had not been issued. We hope to collaborate with Harvard to embark on some degree of activities after we have obtained and reviewed their household data collection instruments that was developed and validated which potentially could be used at sites located in geographic locations where N/CRSP-Africa will be active.

- **Engage in basic research and data collection on malnutrition in children and their families with the support of in-built data collection of USAID/Uganda program activities that are specific to geographic areas targeted by the N/CRSP-Africa project**

We have reviewed the project site and come up with a research agenda that we want to start collecting data for. It is to analyze the effect and impact of gender, cultural beliefs and food availability on family feeding behavior or food choices. How do gender, cultural beliefs and food availability affect Consumption and Nutritional deficiencies of families? Planning of this research activity will be conducted in Year 2.

**Annual Report
DAI
Year 1 (2010/2011)
Nutrition CRSP Africa
November 21, 2011**

Principal Investigator: Kathleen Kurz
Team members: Cheryl Doty
Barbara Seligman

Introduction/Overview of Workplan Rationale/Objectives

Moderate malnutrition in the first 1000 days of a child's life is a huge problem in the developing world affecting up to half of children under 2 years old, including Uganda, with long term consequences in educability, adult work productivity, and ultimately income and national capacity. While best programming methods have been identified for many of the essential nutrition actions – e.g., breastfeeding, micronutrient tablet provision – the way forward to recommend improving complementary feeding practices is much less clear. Behavior change for complementary feeding within households has been difficult to achieve at scale, as has been the development and production of commercial products affordable to resource-poor families who need it most.

The objective of the proposed work is to build the capacity of individuals currently or potentially working in agribusiness as employees, managers or entrepreneurs to produce and market nutrient-rich complementary foods with a focus on promoting foods that rely on local agriculturally-based products. As a first step in Yr 1, we described the context of complementary feeding in Uganda, as described below.

John Bowman led the DAI portion of the Nutrition CRSP project at its inception. When he left DAI, Barbara Seligman picked up the reins until Kathleen Kurz joined DAI as nutritionist. DAI sought to staff the project with a nutrition-agriculture duo, and in June Cheryl Doty joined the project as the agriculturist with a speciality in agribusiness and public-private partnerships. Seligman continued to support the project.

Section I: Research Activities

After preparation, Kathleen Kurz and Cheryl Doty went to Uganda in June 2011 to investigate firsthand the demand and supply factors of fortified complementary foods. We had meetings with industry, university, NGOs, government, and UN players. We also attended the Nutr CRSP stakeholders workshop in Kampala organized by Tufts University June 28-29, 2011.

We learned there that a somewhat broader focus would be needed to take into account a policy environment that did not yet allow the full development of a

market for fortified complementary foods that could be affordable to resource-poor families whose children need it most. For example, the notion of what constitutes an adequate composition of complementary foods was not clear to industry, nor the process by which commercial products should be certified. Certification was further confused by the WHO International Code of Breastmilk Substitutes banning the advertisement of foods complementary to breastfeeding. In addition, public awareness in Uganda about complementary foods and feeding does not seem high enough to build a platform for commercial complementary food products.

Hence, we decided to compile what was known about complementary feeding and foods from key informants like those we interviewed in June and from documented sources into a situation analysis. An analysis of gaps, challenges, and opportunities regarding complementary feeding and foods in Uganda would help identify the niche DAI would fill on this topic in Year 2 of the project and beyond. We fully expect that the planned market analysis of commercial complementary foods will be a feature of our Year 2 work, including investigation of the demand for complementary foods. In addition, we will complete the situation analysis of complementary foods and seek the input of key Ugandan nutrition specialists, especially as it relates to Uganda's recently completed Mother , Infant and Young Child Nutrition (MIYCN) strategy. The first draft of the situation analysis will be prepared by DAI by the 1st quarter of Year 2 .

Section II. Capacity Building Activities

DAI did not conduct capacity building activities in Year 1. We anticipate capacity building activities in the subsequent years as the complementary feeding component of Nutrition CRSP develops.

Year 1 Objectives per Year 1 Workplan

As indicated below, most objectives were begun, but not completed.

Objectives	Activities begun in Year 1
Develop an inventory of commercially available nutrient dense products/complementary foods in the marketplace that are attractive to rural households	X
Analyze existing sources of data regarding affordability of nutrient dense/complementary foods	X
Identify educational institutions and private-sector based trade associations interested in partnering to develop or upgrade agribusiness curricula and knowledge/skill base.	X
Promote ownership of program concept and process by holding workshop with partners to review results and recommendations	
Plan cases studies intended to augment and enhance instructional materials used by key agribusiness training institutions	
Identify key relevant constraints to increasing competitiveness, marketability, and scale in the production of nutrient-dense foods.	X

Outputs

Draft of the situation analysis on complementary feeding and foods in Uganda will be completed in the 1st quarter of FY12. The Year 2 workplan will also be completed.

Vignette

One of our observations is that there is a tremendous amount of capacity in nutrition and related fields in Uganda, and an ever-strengthening government structure to continue to overcome the remaining hurdles. It would seem that the Nutrition CRSP could make a difference by analyzing the landscape for key gaps in knowledge, policy, practice and key bottlenecks in progress, and seek to fill the gaps and assist our Uganda colleagues to free the bottlenecks.

Annual Report
Purdue University
Year 1 (2010/2011)
Nutrition CRSP - Africa

Principal Investigator: **Gerald Shively, Purdue University**

Overall objective (as stated in Year 1 work plan):

"The primary year 1 objective is to initiate research planning and establish research partnerships. The goal of this work plan is to work closely with the ME and project partners to initiate new collaborations and strengthen existing collaborations with Ugandan partners around the topic of agriculture and nutrition. We will work to identify local needs and opportunities for research and capacity building."

Partial yet still substantial overall progress achieved, as detailed below.

Specific objectives (as stated in Year 1 work plan): research

We will work closely with the ME and project partners to identify the current state of knowledge and research gaps, in anticipation of launching research on nutrition interventions.

Progress achieved, as detailed below.

Specific objectives (as stated in Year 1 work plan): education

We will work closely with the ME and project partners to (i) assess potential for recruiting students to a variety of appropriate academic programs (assisting in identification of potential student pools and recruitment), and (ii) help in assessing what curricula exist (and upgrades are needed) in-country and in the immediate region relating to agriculture and economics. We will collaborate with (and guide) in-country partners and consultants undertaking stocktaking of curriculum gaps and needed course-work and/or degree programs.

Progress achieved, but key impediments encountered, as detailed below.

Introduction/Overview of Work plan rationale/objectives

The primary year 1 objective was to initiate research planning and establish research partnerships. The overall goal of the effort was to work closely with the ME and project partners to identify topical areas for focus, collect background information and data, and establish new collaborations around the topic of agriculture and nutrition. The specific research objective was to identify the current state of knowledge and research

gaps, in anticipation of launching research on nutrition interventions. The specific education objectives were to (i) assess potential for recruiting Ugandan students into a graduate degree training program in Agricultural Economics at Purdue University and (ii) help in assessing what curricula exist (and what upgrades might be needed) in Uganda.

Section I: Research Activities

Focal area: Identification of priority research areas

Activity 1: We proposed to initiate a review of the literature on nutrition, agriculture and relevant topics for Uganda, including published (peer reviewed) literature and unpublished (gray cover) documents. Work on this review has been initiated but not completed. We anticipate that a paper entitled “A Review of Food Security and Human Nutrition Issues in Uganda”) will be submitted for review and eventually posted as a Global Nutrition CRSP project working paper, once that series has been established.

Focal area: Synthesis of existing programs and projects

Activity 2: We planned to review existing socioeconomic datasets for Uganda, including datasets with possible nutrition components for subsequent analysis or follow-on data collection. We also intended to examine the feasibility of using existing data to derive appropriate USAID indicators for Uganda. During the year we made substantial progress in cataloging two large country-wide datasets available for Uganda (the Demographic and Health Surveys (DHS) and the Uganda National Household Survey (UNHS)). DHS survey data are available for 1988, 1995, 2001, 2006, and the most recent round, conducted in 2009. Several rounds are geo-referenced and are publicly available. Characteristics of the sample include data covering abortion history, anemia and anemia testing, anthropometry, birth registration, cause of death, early childhood education, HIV knowledge and testing, malaria, micronutrient intakes, reproductive calendar, TB, tobacco use, vitamin A, and maternal mortality. The UNHS datasets were collected in 1992, 1996, 1999, 2002 and 2006 and include a partial panel data component. The UNHS includes information on a range of household welfare indicators, including income, consumption, housing, labor market participation, education and health. We have secured access to these datasets and anticipate analyzing the data in subsequent years of the project.

Focal area: Discrete socio-economic analysis

Activity 3: Although it was not part of the original work plan, we capitalized on an opportunity to undertake data collection in Uganda in the summer of 2011, in conjunction with (and funded by) the AMA BASIS CRSP. For this effort we are working in collaboration with Dr. Pam Jagger (UNC-Chapel Hill). We collected data in 6 villages in western Uganda, repeating a sample of 175 households that had been visited in 2003 and 2007. We developed a new section for the questionnaire focusing on fuel prices,

fuel use, cooking technologies, meal response and health impacts (using questions patterned on the Uganda DHS survey). We anticipate that this effort will provide evidence regarding potential health and nutrition impacts from changes in fuel prices through food choices, meals and air quality. Based on initial results, we may expand the scope of this research in subsequent years, perhaps focusing on USAID community connector pilot districts.

Lessons learned and challenges in implementing proposed activities

Delays in initial approval and launch of the project created impediments to project start-up, but no further complications are anticipated. Scheduling travel during the academic calendar to coincide with availability of partners is will likely be an on-going challenge.

Solutions/resolutions applied or to be applied

Travel and in-country meetings will be planned in advance and allow for contingencies.

Section II: Capacity Building Activities

Focal area: *Degree training*

Activities: Our specific education objectives were to (i) assess potential for recruiting Ugandan students into a graduate degree training program in Agricultural Economics at Purdue University and (ii) help in assessing what curricula exist (and what upgrades might be needed) in Uganda. Activity 4: We have expanded our initial set of collaborators at Makerere University in Uganda and will be partnering with Drs. Dick Sserunkuma and Bernard Bashaasha. Dr. Bashaasha has not indicated interest or need for curriculum review at Makerere. To date, one Ph.D. student in the Department of Agricultural Economics at Purdue University received partial support from NCRSP for degree. Patrick Ward completed his Ph.D. degree in October 2011, and will be joining the staff of IFPRI in New Delhi (providing potential synergy for NCRSP work plan activities in Nepal). Considerable effort has been devoted to identifying a student from Uganda for degree training at Purdue. At the time of writing, several Ugandan students were considering applications but questions remain regarding their preparation and suitability for graduate study in the U.S. Provided admission can be obtained, it is anticipated that the first graduate student will begin M.S. training at Purdue in January 2012. However, in the absence of qualified students from Uganda, it will be necessary to support non-Ugandan students to achieve project goals. When appropriate and feasible, preference will be given to African students.

Lessons learned and challenges in implementing proposed activities

Identifying well-prepared Ugandan students for graduate degree training in the U.S. is a significant challenge and is likely to remain so.

Solutions/resolutions applied or to be applied

Efforts and networking continue.

Outputs

Ward, P. and Shively, G. 2011. "Migration and Land Rental as Risk Response in Rural China." West Lafayette, IN: Department of Agricultural Economics.

Ward, P. and Florax, R. 2011. "Agricultural Productivity and Anticipated Climate Change in Sub-Saharan Africa: A Spatial Sample Selection Model." West Lafayette, IN: Department of Agricultural Economics.

Vignettes

At Makerere University several M.S. students are being provided with research support by Tufts. In consultation with Dr. Bernard Bashaasha, Dr. Shively will be participating as a committee member for several of these students. We hope to showcase students' NCRSP-supported research in a one-day workshop at Makerere University in 2012.