The RTB Program: Making it work in Uganda

Seminar Report

18 April 2013

Hotel Africana, Kampala
Seminar Recommendations: Key issues to make RTB work in Uganda

1. Promotion and awareness of RTB products and technologies.
2. Strengthen innovation brokerage, connecting innovators with users.
3. Commercialize RTB seed systems to meet the triple challenge of quality, quantity and timeliness of RTB planting material.
4. Work from production and consumption ends of the value chain to manage the high perishability of RTB products.
5. Support Uganda’s integrated farming systems through integrating crop and livestock research.
6. Integrate farmers in all steps of the research process – co-creation of approaches and solutions by researchers, farmers and other stakeholders.
7. Align with national agriculture policy and investment planning (DSIP).
8. Build RTB partnerships with key stakeholders in the value chain.
9. Strengthen information flows and learning across ongoing RTB-related projects and programs.
10. Link research with training institutions to strengthen RTB technical capacity in agricultural service sectors (including research, extension).
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1. The CGIAR Roots, Tubers and Bananas Research Program: Making it work in Uganda.

Dr. Graham Thiele, RTB Director, gave a 50 minute presentation on the background, objectives and progress of the RTB Program. The presentation can be accessed on the RTB website: www.rtb.cgiar.org.

**QUESTIONS FOR CLARIFICATION FOLLOWING THE PRESENTATION:**

Q: Can you explain the prioritization of constraints and research needs for bananas through the online survey? Why wasn’t availability and uniform quality of planting materials included?

A: The presentation gave only a summary of the survey results. We would have to look at the full results to get a more complete picture of what was mentioned by respondents.

Q: What is the timeframe for the RTB Program?

A: Initially three years, 2012 – 2014. The planning time frame for the Intermediate Development Outcomes, however, is up to 10 years – and our indicators need to reflect this.

Q: What is your strategy for partnerships in the Program, in particular what is the role of advanced research institutions and universities?

A: During Program development so far, we have collected many ideas on partnerships and now need to bring these together in a partnership strategy. ARI’s and universities are important partners.

Q: What is the funding arrangement for the Program – how does it exactly work?

A: All bilaterally funded research on RTB crops by individual CGIAR centers and their partners is to be considered as RTB Program funding. For example, the
funding from BMGF to CGIAR centers for sweetpotato or cassava research is to be counted as RTB funding.

We speak of three ‘windows’ of funding: Window 1 to the whole CGIAR system, Window 2 to individual CRP’s (such as the RTB Program), and Window 3 through specific bilateral projects to individual CG centers. The RTB Program funding draws on opportunities through all three windows. Overall, funding to all CRP’s is projected to rise to $1bn by 2014. There is a clear expectation that the funding share for non-CG partners will be increased.

The ‘small grant’ projects I showed in the presentation have already been funded, though they are limited – amounting to $3m.

Q: Some important constraints for developing RTB crops are not captured in the presentation. We need to look beyond technologies for getting the yields up – take a value chain perspective and improve marketing of roots and tubers and better understand the economics. Otherwise, farmers may get discouraged from producing RTB crops after a short time.

GT: yes, these value chain constraints are very important. To increase productivity won’t be enough. At the moment, value chain research is not as well elaborated or funded as the biological research. To improve adoption and consumption will require increasing the demand and this is an important research area.

Q: You emphasized the advantages of the CGIAR reform and CRPs. What are possible disadvantages of the CGIAR reform and CRPs?

A: We need to be careful that we don’t increase the costs of coordination of cross-commodity programs, when quick and significant gains can be made through crop-specific research. There clearly is continued need for crop-specific research. We need to understand where crosscutting research can add value and how to make this work during planning and implementation. Donors, for their part, have emphasized that a real step-change towards integration is required to improve impacts from CGIAR work. That’s why the CRP’s emphasize integrating research across CG centers and crops, as well as integrating better with national research programs and other partners.
Q: Constraints for banana are many more. Each discipline and partner brings a different perspective.

A: We can’t expect all constraints to show in the top-5 list through surveys like this. You will have to identify and address additional constraints along the way.

Q: You mentioned that you visited the cassava project in Iganga and the challenges there. This is a good example for the need for follow-up research projects. Unfortunately, what the previous project achieved has mostly broken down by now.

A: Yes, there are some real lessons that we need to learn from. In future, whether in Iganga or elsewhere, we need to think about integration with extension services and the scaling-up potential of our intervention much more thoroughly.

Q: Can you say something about donor coordination at high levels? We have seen that donor approaches can be fragmented – interested in supporting breeding only, or post-harvest management.

A: Yes, the reality is that donors are not well coordinated. The CGIAR Found Council is meant to strengthen this at system level. But each CRP still needs to coordinate and advocate for its own ‘Portfolio Investment’. For example, the Gates Foundation invests heavily in RTB crops – but by supporting different CG centers individually on specific crops. We want to change this and approach the Gates Foundation for joint-up RTB portfolio support. In the past, donors created fragmentation of CG investments and, hence, of research efforts. In addition, different donors have related differently to the CG funding reform. We can see ‘Window 1’ donors, like DFID who support the CG at system level, we have mixed ‘Window 1/Window 2’ donors like the Swiss who combine system-level support with financing of specific CRP’s, and we have ‘Window 3’ donors such as the Gates Foundation who continue to channel their support through specific bilateral projects with individual CG centers. We need to bring all these donors around a table and there will be an opportunity to do this in Montpellier in June. All types of donors are needed, but it is important to bring them together behind and integrated portfolio support mechanism. Otherwise we won’t get the full benefit from the CGIAR reform and the CRP approach.
Q: Will the CGIAR eventually become one body?

A: It is safe to say that the different centers will be around for some time to come. But we need to change the way we work together and think about ourselves as a CGIAR community. Secondly, we need to create ‘community’ around RTB – comprising both CG centers and our research partners.

Q: Uganda provides an excellent illustration of the importance of integrated research approaches. Smallholder farming systems here are highly integrated, and not just through different crops, but through livestock as well. Evaluation of our previous research program (CIALCA) has shown that crop-livestock research is very limited. We need to change this. For example, the CRP on Livestock and Fish is working with pig farmers in rural and peri-urban areas in Uganda. There is great scope for linking with the RTB Program to improve utilization of RTB crops as animal feed. We should evaluate new varieties as potential sources of feed, and sweetpotato vines for silage, for example. Cassava leaves, banana peeling, coco yam leaves also are being used as animal feeds, but we don’t understand how effective this is and how it can be improved.

A: I fully agree. When CRP’s map their resources, splits and gaps in research agendas can occur. Post-harvest utilization of RTB crops is a good example for this. At the moment, the RTB partners may not have a lot of expertise, but this is an important area of research where we need to link with the Livestock and Fish CRP.

2. Examples of current RTB research in Uganda

Several research institutions and development organizations presented a short profile of their RTB related work. These are attached in Annex 1 of this report.

3. Discussion of future RTB research priorities in Uganda.

Participants exchanged their views on future priorities for RTB research and development in Uganda. The top 10 priorities discussed are as follows:
1. Promotion and awareness of RTB products and technologies. We need to create greater understanding of the benefits and contributions of RTB crops as well as of their continued research and development needs.

2. Strengthen innovation brokerage, connecting innovators with users. RTB innovation is happening in many places in Uganda, but these efforts and achievements are not linked up or coordinated, and they are not connected to farmers and other operators who would apply these new technologies.

3. Commercialize RTB seed systems to meet the triple challenge of quality, quantity and timeliness of RTB planting material. Availability and quality of planting materials continue to be a bottleneck across RTB crops. Getting farmers and other private sector enterprises engaged in the production and distribution of planting materials is a key challenge. Research needs to identify and test different options for RTB crops.

4. Work from production and consumption ends of the value chain to manage the high perishability of RTB products. The second major bottleneck for RTB development is the perishability of produce at the post-harvest stage. The solution will come from a combination of improving: crop varieties, harvesting, post-harvest handling, market chain organization, and post-harvest and processing technologies.

5. Support Uganda’s integrated farming systems through integrated crop and livestock research. Uganda exemplifies on-farm integration of RTB crops, as well as integration with livestock production. With increasing land shortage, managing integration and intensification effectively becomes an even greater priority.

6. Integrate farmers in all steps of the research process – co-creation of approaches and solutions by researchers, farmers and other stakeholders. Farmers have direct knowledge of RTB crops in their locations and are experimenting with solutions to technical and organizational challenges they are facing. Harnessing this knowledge and these ideas is key to unlocking the potential for RTB development and to ensuring that promising new technologies and practices are being adapted to a wide range of conditions.

7. Align with national agriculture policy and investment planning (DSIP). For RTB crops to receive policy and financial support, RTB research needs move in step with national policy development. Continued evidence-based policy dialogue and dissemination of research results are required.
8. Build RTB partnerships with key stakeholders in the value chain. RTB research needs to strengthen its partnership with other stakeholders in the value chain, including farmer organizations, processors and trader associations. An RTB ‘community of practice’ needs to emerge.

9. Strengthen information flows and learning across ongoing RTB-related projects and programs. Information and knowledge on RTB is mainly locked up in projects and programs and information flow between these research efforts and to the wider stakeholders is limited. For identifying further research priorities, it is very important that knowledge and experiences are shared.

10. Link research with training institutions to strengthen RTB technical capacity in agricultural service sectors (including research, extension). The technical capacity of extension and other service sectors is limited when it comes to RTB crops. Advances made in research take a long time to inform and strengthen these services. This needs to be accelerated and strengthened.
Annex 1: Profiles of RTB related work in Uganda

1. BIOVERSITY INTERNATIONAL – UGANDA OFFICE: PROFILE OF ACTIVITIES IN 2013

Scope of work: Bioversity activities cover the east and central African (ECA) countries e.g. Uganda, Rwanda, Burundi, Tanzania, Kenya, Democratic Republic of Congo and Ethiopia. Some projects e.g. management of Banana bacterial wilt have a regional scope whereas others are country specific. Banana is Bioversity Uganda’s research mandate crop.

Mode of activities: Bioversity has been directly and indirectly (through research partners) involved in generation of technologies/research along the banana chain link in ECA. Key research partners include National Agricultural Research Institutes (NARS), local NGOs, government extension bodies and training institutions e.g. KARI in Kenya, NARO in Uganda, IRAZ in Burundi, Catholic University of Graben in North Kivu, Democratic Republic of Congo (DRC), Hawassa University in Ethiopia, etc. Work with partners is implemented through LOAs signed between Bioversity and partners.

Constraints addressed

- Capacity building of NARS, NGO’s and other partners through training
- Improving the research capacity of NARS – through establishing/equipping laboratory facilities
- Abiotic constraints: - Banana Xanthomonas wilt (BXW) and Fusarium wilt (in ECA region); Banana Bunchy Top Disease (BBTD; in DRC, Burundi & Rwanda); the Banana weevil and nematodes; collection, characterization and conservation of Musa germplasm; Banana seed systems; Banana marketing and gender issues in banana production and marketing among others.
Current activities

- BXW epidemiology and management studies – e.g. BXW systemicity, interaction with abiotic factors, role of endophytes in disease incidence/severity, evaluation different control options, evaluation of wilt-escaping germplasm etc.
- Evaluation of a field detection tool (polyclonal antibody) on farm
- Collection, conservation and characterization of *Musa* germplasm in the region in the *Musa* regional collection at Mbarara, Uganda
- Molecular and morphological characterization of east African diploids and triploid land races including the east African highland banana (EAH)
- Evaluation of east African diploids for pollen fertility, yield and meiotic compatibility with east African triploids and against key biotic constraints
- Studies to understand the demand and access of disease-free planting material by smallholder farmers in an informal seed sector systems
- Simpler, cost effective macro-propagation options suitable for resource poor farmers being tested
- Conventional breeding work for weevil, Fusarium wilt and black sigatoka resistance
- Molecular breeding for resistance to weevils and nematodes – One Closed Field trial established
- Agro-ecological intensification studies
- Learning and Experimentation Approaches For Farmers (LEAFF), a framework that involves farmers in generation, fine tuning and adaption of research outputs is further being evaluated and will be tested on other crops.
- Up to 7 PhD students and 5 Msc students being trained

2. BioCrops (U) Ltd

Current Activities

BioCrops Uganda Limited is a Ugandan agro-biotechnology R&D company founded by Dr. Geoffrey Arinaitwe and Dr. David Talengera, plant scientists with long experience in agriculture, plant tissue culture and biotechnology. The company was registered in 2008 and is located at Plot 235 Kyadondo, Kabaga-Namalere, Wakiso District, 15 KM off Bombo road.
Vision: to be the leading regional provider of high quality crops, bio-commodities and distinctively dependable solutions to our customers’ agricultural and environmental needs.

Mission: to contribute to Uganda’s economic development through production, promotion and dissemination of high quality crops and superior bio-commodities to the agricultural sector.

Current activities

The company uses tissue culture technology to mass produce disease and pest free planting materials of economically important vegetatively propagated crops, such as bananas and sweetpotatoes. Clients include government agencies, NGOs, Farmer groups, individual farmers, research institutes e.g. NARO and international organizations e.g. International potato Centre (CIP).

Other services offered include:

- Expert technical consultancy in crop production and biotechnology
- Stewardship training in biotechnology and plant tissue culture

Under CIP-Uganda’s support, BioCrops is working with Makerere University to refine the tissue culture protocols for mass production of quality declared sweetpotato planting material. BioCrops is also working with Coalition for Health Agriculture and Income Network (CHAIN) to promote the technology of tissue culture derived clean planting material to the farming community.

3. NATIONAL CROP RESOURCES RESEARCH INSTITUTE (NACRRI) OF UGANDA SWEETPOTATO PROGRAMME

Brief Profile of Current Activities (2013)

The sweetpotato program of the National Crop Resources Research Institute conducts strategic research to develop varieties that are acceptable to consumers/end-users; the varieties should be resistant to sweetpotato weevils, sweetpotato virus disease (SPVD) and have desirable nutritional quality, agronomic and culinary traits.
Current activities: Research

- Generation of breeding populations through making specific crosses
- Duplicating and maintaining local germplasm collection in field, tissue culture and screen house
- Evaluating new promising clones in multi-location on-station and on-farm trials for adaptability and acceptability.
- Participatory variety selection on-farm and on-station.
- Transformation of local popular cultivars with main focus on somatic embryogenesis using two protocols.
- Agronomic evaluation of transgenic F1s (transgenics x locals) planted in level II screen house.
- Evaluating mechanisms of resistance to sweetpotato weevil
- Using bioassays to assess interactions of Bt and other SP chemical compounds on C. brunnneus.
- Phenotyping /Genotyping of 287 F1 progenies of New Kawogo and Beauregard

Current activities: Capacity building (human resource)

Three Students are doing their PhD research (entomology, breeding, transgenic breeding), and 1(transformation) has submitted his thesis.

Varieties released so far: Bwanjule, New Kawogo, Sowola, Wagabolige, Tororo-3, Tanzania (1995); NASPOT 1, NASPOT 2, NASPOT 3, NASPOT 4, NASPOT 5, NASPOT 6 (1999); Ejumula, Kakamega (2004); NASPOT 7, NASPOT 8, NASPOT 9 (‘Vita’), NASPOT 10, (‘Kabode’), Dimbuka – Bukulula (2007); NASPOT 11(2010).
Current Research Activities

- HarvestPlus Challenge project entitled Optimized processing technologies for high quality orange fleshed sweetpotato (OFSP) flour; Dec 2012 – Dec 2013

Overall objective is to establish optimum processing options and storage technologies that yield high quality orange-fleshed sweetpotato (OFSP) flours.

The project specifically entails optimizing

(i) an assortment of pre-treatments and drying technologies for production of high quality OFSP flour;

(ii) storage and packaging technologies to enhance shelf-life of OFSP products (shreds/crimps, chips and flour).

- Norwegian Program for Development, Research and Education (NUFU) project entitled Technological significance of endogenous amylases on stored sweet potato roots and its products; 2009 to 2013

Overall objective is to establish the effect of endogenous amylases on sweet potato roots during development and storage and its influence on carbohydrate components.

The project specifically entailed the following:

(i) Amylolytic activity and carbohydrate characterization of selected orange and non-orange-fleshed sweetpotato.

(ii) Characterize sweetpotato amylolytic activity and carbohydrate content during root development under various postharvest handling and storage conditions.

(iii) Utilize endogenous amylases to develop a weaning porridge.
ASARECA project entitled Incubation of value added products from indigenous sweet potato processed products (amukeke) to be established as SME; 2010 – to date

Overall objective is to improve existing indigenous processing technologies to widen options for marketing these indigenous products.

5. FAO CURRENT ACTIVITIES ON ROOTS, TUBERS AND BANANA

Introduction: Usually, activities undertaken by FAO are guided by the government strategies and development plans. Presently, FAO program is largely in support of the Development Strategy and Investment Plan (DSIP) and National Development Plan (NDP). The programming is geared at meeting the outcomes stipulated by the United Nations Development Assistance Framework (UNDAF).

Priority Areas: Through the FAO Country Program Framework (2010-2014) that is aligned to the DSIP/NDP, FAO’s focus is on five priority action areas:

- Policy, Strategy and Planning
- Production and Productivity
- Value addition, agro-processing and marketing
- Agricultural knowledge, information and education
- Sustainable Natural Resource Management

Current Activities

These current activities are largely with respect to ongoing regional projects on cassava, bananas and value chain projects where potatoes is one of the commodities.

Cassava

- Capacity building of public and private sector actors including farmers on integrated cassava production and pest/disease management. Farmers, extension workers both Govt and NGO in the region trained in disease identification with focus on CBSD.
- Multiplication and distribution of NASE 13 and 14.
- Facilitating mapping and certification of the multiplication sites.
- Support to National Cassava Sector Coordination meetings held by the National Cassava Steering Commission
- Formulation of the cassava strategy supported, review is ongoing.
- Undertaking CBSD/CMD awareness campaigns.

**Potatoes**

- Capacity building of value chain actors (seed potato and ware potato)-farmers etc.
- Initiating/building input and output market linkages (KAZARDI, agro-input dealers Nandos in Kampala, Mugenga holdings).
- Formalization of linkages with NAADS.

**Bananas:**

- Building farmers, key stakeholders and government capacity to prevent, mitigate and respond to banana pests and disease epidemics.
- Building on farmer knowledge and skills in control of BXW and other banana pests and diseases.
- Support to putting in place effective coordination mechanisms mostly at district and lower local government level.

**Implementation arrangements:**

- Collaboration/partnerships with implementing partners-NGOs, private sector institutions, government at national (MAAIF, NARO etc) and district local governments.
- Field activities undertaken by implementing partners are supported by FAO sub-offices in different parts of the country.
- Approaches used mainly involve farmer field school methodology and value chain approach to program design, implementation and monitoring.
6. **What KilimoTrust is doing in regard to RTB in Uganda (EAC)**

Our Core Business is making agricultural markets (esp. the EACM) work better for the reduction of poverty and elimination of hunger

**Vision**: Broad-based wealth creation in East Africa through agriculture and agribusiness development

**Mission**: Catalyze the growth and competitiveness of strategic agricultural sectors for the benefit of a large number of people in East Africa

Program Design is driven by Diagnostics & Analysis THAT
- Define and quantify market opportunities
- Define and quantify potential, comparative advantages and constraints
- Produce business briefs NOT policy briefs
- Support availability and access to technical and business support services

**WHY MARKETS?…BECAUSE, in general:**
- Producers rarely adopt productivity enhancing technologies - where there are poor linkages to profitable cash markets
- When they have done this they ended-up with the ‘fallacy of composition’ – in that
- Less income is earned as more is produced

**WHY REGIONAL MARKETS?…**
- International markets for food commodities are very thin – less volumes produced enter markets outside countries of production
- Small markets are not beneficial for sector development
- Specifically for food, it is easier to achieve food security through large markets

**Regional Trade Plan into Practice, KT …**
- Is leading in analysis and diagnostics of Staples with EAC as the unit of analysis; with the purpose to;
- Provide the evidence for selecting the most strategic commodities for trade-based & comparative-advantage–based food and nutrition security in the region – using three main criteria:
  - Potential for competitive and profitable markets,
  - Likelihood of benefiting large numbers of people, and
Effective utilization of comparative potential of the different agro-ecologies of the region.

What have we done so far?
- Preliminary Scoping and Analysis of Food Commodities that are Strategic to the EAC
- Region (From 40 to 9)
- Approved Revised Strategy, it was decided to undertake more detailed scoping and analysis on (ten) nine commodities; selected
- From the top 12 of the preliminary ranking of 40 commodities;
- On the basis of modified five criteria.

7. SASHA Project

Outline of CIP/Uganda activities on Sweetpotato for RTB Program Discussion 18 April 2013, Kampala

Two main projects:

I. TITLE: Sweetpotato Action for Security and Health in Africa (SASHA)  
Focus of Project: Breeding and Varietal Improvement, and Breeding Weevil-Resistant Sweetpotato (WRSP)

Implementing organization/local partner(S): National Agricultural Research Organization (NARO)/National Crops Resources Research Institute (NaCRRRI), and other national sweetpotato breeding programs in East and Central Africa

Time period (Phase 1, is 5 years): Now in year 4, funded by Bill and Melinda Gates Foundation

GOALS/OBJECTIVES:
- a) Develop populations for sweetpotato virus disease (SPVD) resistance and quality characteristics for East and Central Africa. A major objective of the regional sweetpotato breeding efforts based in Uganda at Namulonge, supported by CIP-headquarters is to improve the efficiency of breeding for SPVD resistance through marker-assisted selection (MAS).
- b) To develop weevil-resistant sweetpotato varieties for Sub Saharan Africa within 5 years.
ACTIVITIES:
Breeding
a) We characterized a total of 150 sweetpotato parents at Namulonge characterized using 25 simple sequence repeat markers.

b) In April/May 2012 we planted:
   i) two crossing blocks in 80 parents and 50 parents for population improvement for sweetpotato virus disease resistance.
   ii) Observation trial of 36 families (1,490 genotypes) at Namulonge, Serere and Kachwekano.
   iii) Preliminary yield trial of new sources of SPVD resistance from Lima, 47 families (36 genotypes) from Lima harvested in Feb/March (3rd season) at Namulonge, Serere and Kachwekano;
   iv) Total of 28 promising genotypes planted at NaCRRI for final evaluation

c) We evaluated in a field trial field symptoms and virus titer accumulation in 12 promising genotypes for sweetpotato disease resistance (SPVD) using quantitative reverse transcription polymerase chain reaction (qRT-PCR).

b) Backstop national program sweetpotato breeding activities in Ethiopia, Rwanda, Kenya, Tanzania, and Uganda

Biotechnology approach for sweetpotato weevil resistance
   i) Established regeneration and transformation protocols in laboratories in Uganda and Kenya
   ii) Assessed efficacy against weevils of the high expresser events (gene constructs) through artificial diets

II. Title: Delivering and Disseminating Biofortified Crops in Uganda (USAID funded)

   Partners: HarvestPlus, CIP, NARO/NaCRRI, Makerere University, and BioCRops

   Project areas: Dissemination of orange sweetpotato in Northern and South West Uganda (project is for 5 years, now in year 2)
8. ILRI

“The Roots, Tubers and Bananas (RTB) Program: Making it work in Uganda”: *The potential contribution of the International Livestock Research Institute (ILRI)*¹

Danilo Pezo and Emily A. Ouma
ILRI, Kampala, Uganda

In 2012, the International Livestock Research Institute (ILRI) started in Uganda two R4D projects working with pigs (the Smallholder Pig Value Chains Development in Uganda [SPVCD], and the Safe Food Fair Food [SFFF] projects), which cover several aspects of smallholder pig systems such as production, provision of inputs and services, marketing, animal health and food safety. These projects are part of Livestock and Fish, by and for the Poor (CRP 3.7) and Agriculture for Nutrition and Health (CRP 4.3), respectively. Besides those projects, ILRI has been participating in other research projects in Uganda, such as the East African Dairy Development (EADD) project, the Characterization of Dairy Cattle Genetic Resources, as well as in two animal health projects working on the Epidemiology and Control of African Swine Fever and the Control of the Peste Des Petite Ruminants.

Both, the SPVCD and EADD have identified the importance of crop-livestock interactions in smallholder farming systems where RTB, especially sweet potatoes, cassava and bananas are present. Among those interactions, the most relevant are the role that crop residues play in animal feeding, as well as the use of animal manure as organic fertilizer.

The two R4D projects working with pigs operate in three districts: Kamuli, Masaka and Mukono, covering three value chain domains based on classification by ILRI: rural production for rural consumption (rural– rural), rural production areas targeting urban area consumption (urban– urban), and urban and peri-urban production for urban consumption (urban– urban); and found that in all the value chain domains bananas, cassava, sweet potatoes and other tubers, as well as small animals (i.e., pigs, poultry) are relevant for food security and for improving the livelihoods of poor rural families.

Even though crop and livestock are part of the farming systems, there is little research in Uganda on the interactions between those sub-systems, and the same has been identified by the CIALCA project, a consortium comprising three

CGIAR centers (IITA, Bioversity International and CIAT) that works with national partners in Rwanda, Burundi, and the Democratic Republic of Congo.

Based on previous experiences developed by CIP, ILRI and partners in South East Asia, China and East Africa, as well as by CIAT and other research centers in Latin America, there is a clear potential for improving the use of RTB in livestock feeding, resulting in improved livestock performance, economic benefits for poor farmers, as well on alleviating negative environmental impacts of the non-appropriate use of crop residues. In fact, under the SPVCD we are going to test best-bet interventions that respond to constraints identified in the In-depth Value Chain Assessments, and among those are means to improve the use of either cassava leaves, sweet potato vines and banana peelings as part of pig diets.

We found that there is also lack of information on the yield and feeding value of crop residues for new RTB germplasm, as well as on nutrient cycling in integrated crop-livestock systems, areas in which ILRI and other partners from the livestock sector could work together with the crop breeders, agronomists, soil scientists and social scientists.

9. CHAIN UGANDA

The major objective of CHAIN is to build and/or strengthen sustainable community based seed systems for the major vegetatively propagated crops

Outputs todate

i. Availed 1,600 bags of sweet potatoes vines to 15 farmer organisations in Mpigi, Mityana, masaka and Nakaseke who are multiplying clean planting materials.

ii. Enabled 6 farmer groups access 2400 clean banana tissue planting seedlings who are community seed multipliers. Consequently, over 18,000 suckers have been sold from seed multipliers.

iii. We have established functional partnerships with key stakeholders in rural area development; namely local governments, NAADS, NARO, Makerere university, Uganda Martyrs university, BIOCROP, SNV, harvest plus, NGOs and private exporters (Ice Mark).

How we do it?

i. Training and sensitizing farmers on the use of quality declared planting materials;

ii. Demonstrating the advantages of quality declared planting materials through demonstrations (control quality declined materials);

iii. Facilitate meetings and training of partners to enhance production and networking;

iv. Facilitate exchange visits.
v. Create database for the different value chain actors and identify new actors;
vi. Identify, select and train key farmers to become community based commercial “Seed” growers.
vii. Provide technical and financial support to emerging seed multipliers.
viii. Link potential buyers to multipliers (creation of potential buyers’ database, promotions exhibitions, and publicity/adverts).
Annex 2: Seminar Agenda

09:00 – 09:15 Introductions

09:15 – 10:00 The RTB Program: presentation by Dr. Graham Thiele, RTB Director

10:00 – 10:30 Questions for clarification

10:30 – 10:45 Tea break

10:45 – 11:45 RTB research and development in Uganda: Current activities by Research Institutions, Private Sector, and Civil Society

11:45 – 12:30 Discussion on ‘Making the RTB Program work in Uganda’

12:30 – 13:30 Lunch
## Annex 3: List of participants.

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<th>Title</th>
<th>Institution</th>
<th>Email</th>
<th>Skype</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Piet Van Asten</td>
<td>Systems Agronomist</td>
<td>IITA</td>
<td><a href="mailto:p.vanasten@cgiar.org">p.vanasten@cgiar.org</a></td>
<td>piet-kampala</td>
</tr>
<tr>
<td>2</td>
<td>Mukasa Settumba</td>
<td>Senior Lecturer</td>
<td>Makerere University</td>
<td><a href="mailto:sbmukasa@agric.mak.ac.ug">sbmukasa@agric.mak.ac.ug</a></td>
<td>settumba.mukasa</td>
</tr>
<tr>
<td>3</td>
<td>Christine Alokit Olaunah</td>
<td>Assistant Director, Agricultural Production System</td>
<td>Kilimo Trust</td>
<td><a href="mailto:calokit@kilimotrust.org">calokit@kilimotrust.org</a></td>
<td>christine.alokit</td>
</tr>
<tr>
<td>4</td>
<td>Walter Ocimati</td>
<td>Research Associate</td>
<td>Bioversity International</td>
<td><a href="mailto:w.ocimati@cgiar.org">w.ocimati@cgiar.org</a></td>
<td>ocimatiwalter</td>
</tr>
<tr>
<td>5</td>
<td>Dennis Ochola</td>
<td>Research Assistant</td>
<td>Bioversity International</td>
<td><a href="mailto:d.ochola@cgiar.org">d.ochola@cgiar.org</a></td>
<td>danazarite</td>
</tr>
<tr>
<td>6</td>
<td>Martin Ameu</td>
<td>Programme Associate</td>
<td>FAO</td>
<td><a href="mailto:m.ameu@fao.org">m.ameu@fao.org</a></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Charles Musoke</td>
<td>Seed Systems Specialist</td>
<td>HarvestPlus Uganda</td>
<td><a href="mailto:charlesmusoke@yahoo.com">charlesmusoke@yahoo.com</a></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gorrettie Ssemakula</td>
<td>Head of Sweetpotato Program/Breeder</td>
<td>National Crops Resources Research Institute</td>
<td><a href="mailto:nankingag@yahoo.com">nankingag@yahoo.com</a></td>
<td>gorrettie. Ssemakula</td>
</tr>
<tr>
<td>9</td>
<td>Joseph Paschal Bbemba</td>
<td>Market and Product Development Specialist</td>
<td>HarvestPlus Uganda</td>
<td><a href="mailto:j.bbemba@cgiar.org">j.bbemba@cgiar.org</a></td>
<td>Joseph.Bbemba</td>
</tr>
<tr>
<td>10</td>
<td>Grace Babirye</td>
<td>Project Coordinator, DDBC Project</td>
<td>VEDCO</td>
<td><a href="mailto:babiryegrace@yahoo.com">babiryegrace@yahoo.com</a></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>David Slane</td>
<td>Chief of Party</td>
<td>IFDC</td>
<td><a href="mailto:dslane@ifdc.org">dslane@ifdc.org</a></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Robert Mwanga</td>
<td>Sweetpotato Breeder</td>
<td>CIP-Uganda</td>
<td><a href="mailto:r.mwanga@cgiar.org">r.mwanga@cgiar.org</a></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Annet Babirye Taulya</td>
<td>Research Assistant</td>
<td>IITA-Uganda</td>
<td><a href="mailto:annetbabirye2@yahoo.com">annetbabirye2@yahoo.com</a></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Sam Namanda</td>
<td>Seed Systems Specialist</td>
<td>CIP-Uganda</td>
<td><a href="mailto:s.namanda@cgiar.org">s.namanda@cgiar.org</a></td>
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<td>SN</td>
<td>Name</td>
<td>Title</td>
<td>Institution</td>
<td>Email</td>
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<td>15</td>
<td>Julius Okello</td>
<td>Impact Assessment Specialist</td>
<td>CIP-Uganda</td>
<td><a href="mailto:j.okello@cgiar.org">j.okello@cgiar.org</a></td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Sarah Mayanja</td>
<td>Regional Research Assistant</td>
<td>CIP-Kampala</td>
<td><a href="mailto:s.mayanja@cgiar.org">s.mayanja@cgiar.org</a></td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Joel Mawano</td>
<td>Programme Director</td>
<td>Chain Uganda</td>
<td><a href="mailto:admin@chainuganda.org">admin@chainuganda.org</a></td>
<td>joel.mawano</td>
</tr>
<tr>
<td>18</td>
<td>Gerald Kyalo</td>
<td>Field Crop Agronomist</td>
<td>CIP-Uganda</td>
<td><a href="mailto:g.kyalo2@cgiar.org">g.kyalo2@cgiar.org</a></td>
<td>gerald.kyalo</td>
</tr>
<tr>
<td>19</td>
<td>Danilo Pezo</td>
<td>Project Leader</td>
<td>ILRI</td>
<td><a href="mailto:d.pezo@cgiar.org">d.pezo@cgiar.org</a></td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Ibrahim Wanyama</td>
<td>Research Associate</td>
<td>IITA-Uganda</td>
<td><a href="mailto:i.wanyama@cgiar.org">i.wanyama@cgiar.org</a></td>
<td>wanyama Ibra</td>
</tr>
<tr>
<td>21</td>
<td>David Talengera</td>
<td>Technical Director</td>
<td>BioCrops (U) Ltd</td>
<td><a href="mailto:dtalengera@yahoo.com">dtalengera@yahoo.com</a></td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Titus Alicai</td>
<td>Research Officer</td>
<td>National Crops Resources</td>
<td><a href="mailto:talicai@hotmail.com">talicai@hotmail.com</a></td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Alex Barekye</td>
<td>Research Officer</td>
<td>NARO</td>
<td><a href="mailto:a.barekye@kari.go.ug">a.barekye@kari.go.ug</a></td>
<td>barekye</td>
</tr>
<tr>
<td>24</td>
<td>Michael Batte</td>
<td>Research Officer</td>
<td>IITA-Uganda</td>
<td><a href="mailto:m.batte@cgiar.org">m.batte@cgiar.org</a></td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>Joseph Mudiope</td>
<td>Agric and Environmental Coordinator</td>
<td>Millenium Villages Project</td>
<td><a href="mailto:joseph.mudiope@milleniumpromise.org">joseph.mudiope@milleniumpromise.org</a></td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Agnes Namutebi</td>
<td>Senior Lecturer</td>
<td>Makerere University</td>
<td><a href="mailto:asnamutebi@agric.mak.ac.ug">asnamutebi@agric.mak.ac.ug</a></td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>Simon Heck</td>
<td>Deputy Program Manager</td>
<td>CIP-Uganda</td>
<td><a href="mailto:s.heck@cgiar.org">s.heck@cgiar.org</a></td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Graham Thiele</td>
<td>Director</td>
<td>CGIAR Research Program, RTB</td>
<td><a href="mailto:g.thiele@cgiar.org">g.thiele@cgiar.org</a></td>
<td>graham.thiele</td>
</tr>
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