



RTB Workshop Report

Moving from Tools to Deliverables and Outcomes

**Proceedings of the annual meeting of cluster
CC2.1 (Improving RTB planting material and
access to new varieties)**

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and M. McEwan

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and Bananas



RTB Workshop Report

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www.rtb.cgiar.org

Web page of the workshop: <https://sites.google.com/site/rtbseedssystemsworkshop2018/>

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Acronyms

CC	Cross-cutting cluster
CIAT	Centro Internacional de Agricultura Tropical
CIP	International Potato Center
CNFA	Cultivating New Frontiers in Agriculture
DVMs	Decentralized vine multipliers
EEID	Ecology and Evolution of Infectious Diseases
EU	European Union
FGD	Focus group discussion
GIZ	German Corporation for International Cooperation
GTIL	Genetics Technologies International Ltd
IITA	International Institute of Tropical Agriculture
INA	Impact Network Analysis Tool
KEPHIS	Kenya Plant Health Inspectorate Service
KIT	Royal Tropical Institute
MEC	Means-end-chains
MEL	Monitoring, evaluation, and learning
MSU	Michigan State University
NA	Network analysis
NGO	Nongovernmental organization
NL NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek
NSF	National Science Foundation
PIM–RTB	Policies, Institutions and Markets—Roots, Tubers and Bananas
PPT	PowerPoint
RTB	Roots, Tubers and Bananas
SWOT	Strengths, weaknesses, opportunities, and threats
UF	University of Florida
VPC	Vegetatively propagated crops
WTP	Willingness to pay
WUR	Wageningen University

Abstract

Twenty-eight members (11 women, 17 men) of the CGIAR Research Program on Roots, Tubers and Bananas (RTB) crosscutting cluster (CC) 2.1 **Quality seeds and access to improved varieties**, attended the workshop “Moving from Tools to Deliverables and Outcomes” on 27–30 March 2018, in Nairobi, Kenya. Participants were from Bioversity International, International Center for Tropical Agriculture (CIAT), International Potato Center (CIP), International Institute of Tropical Agriculture (IITA), University of Florida (UF), and Wageningen University (WUR). The participants reflected on advancing the development and application of tools that are part of the RTB crop seed systems toolbox. Topics for discussion included the completeness of the toolbox, how to prioritize tools, and exploring possible synergy between the tools and ensuring their applications. As to this last point, participants agreed that it is time to work on the next version of the RTB toolbox in order to make the tools applicable for those beyond the core RTB CC 2.1 group—namely colleagues from other flagships and their collaborators in seed system interventions. Importantly, participants also acknowledge that outcomes are relevant when assessing the performance of this crosscutting cluster. Outcomes need to be documented.

During the week, participants reviewed the various tools and shared experiences and results from the first applications. Some ideas and basic designs of new tools were presented. Deliverables for 2018–2019 were reviewed.

A learning journey was organized with a field trip on day 2. Preparation for the trip, and reflections afterwards about the trip, contributed greatly to participants’ collegial discussion and sharing of their experiences.

The main outputs from the workshop were:

1. A consolidated RTB toolbox-project matrix, which will help to plan activities in 2018–2019.
2. An agreed effort to build RTB toolbox v2 for application beyond RTB CC 2.1.
3. A renewed commitment to improve efforts at internal and external communication.

Acknowledgments

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Program

Agenda (Tuesday March 27th–Friday 30th, 2018)

Venue: Azure Hotel, Nairobi, Kenya

DATE	SUBJECT
<i>DAY 1: Tuesday 27th</i>	
<i>0800–0815</i>	Registration
<i>0815–0900</i>	<ul style="list-style-type: none"> • Welcome and introductions (Jorge Andrade-Piedra) • Workshop objectives and process (Margaret McEwan) <ol style="list-style-type: none"> a. What do we want to achieve in this workshop? b. Defining time slots for bilateral meetings c. Building the glossary • Recap on research questions agreed in previous workshop (proceedings here) (Conny Almekinders)
<i>0900–1030</i>	Session 1: Use and validation of tools in different projects/interventions: Update on 2017 activities and plans for 2018–2019: (Jorge Andrade-Piedra) Interventions: <ol style="list-style-type: none"> 1. Sweetpotato in Ethiopia (Margaret McEwan) 2. Potato in Georgia (Jorge Andrade-Piedra) 3. Cassava in Nigeria (Hemant Nitturkar) 4. Cassava in Vietnam (Erik Delaquis) 5. Sweetpotato in Lake Zone Tanzania (Kwame Ogero) 6. Yam in Nigeria and Uganda (Lava Kumar) 7. Potato in Kenya (Elly Atieno) 8. Potato in Ecuador (Israel Navarrete) 9. Banana in Cameroon, Nigeria, and Uganda (Aman Omondi/Lucy Mulugo)
<i>1030–1100</i>	Tea/coffee break
<i>11.00–1300</i>	Session 2: Plenary discussion and reflection on the use of the tools: Sharing experiences, drawing lessons, and plans for use in 2018–2019 (Conny) <ol style="list-style-type: none"> 1. Seed degeneration models, management performance mapping, thresholds for certification, and standard datasets 2. Small-N case study, seed tracing 3. Choice games 4. Means-end-chains 5. Gender tools
<i>1300–1400</i>	LUNCH
<i>1400–1500</i>	Continued session on tool reflections <ol style="list-style-type: none"> 6. Impact network analysis, seed networks, and standard datasets [+ expert elicitation] (Karen Garrett, Kelsey Andersen) 7. Multi-stakeholder framework (Jorge Andrade-Piedra)

DATE	SUBJECT
1500–1530	Plenary discussion and reflection: Toward cross-crop analysis of seed system performance
1530–1600	TEA BREAK
1600–1700	Session 3: Preparation for field trips a. KEPHIS b. GTIL
1700–1715	Wrap up of day
DAY 2: Wednesday 28th	FIELD TRIP
1330–1430	LUNCH AT HOTEL
1430–1500	Group reflection after learning journey
1500–1600	Plenary: group feedback on learning journey
1600–1615	TEA BREAK
1615–1715	Open for small group/bilateral discussions
DAY 3: Thursday 29th	ITERATION ON Research Questions AND TOOLS
0800–0815	Recap from day 1, program of day 3
0815–0845	Reflection on the toolbox purpose and content: Any emerging research questions; are our tools relevant; what are gaps in our toolbox?
0845–0945	Session 1. Update on new projects: 1. Gender and the moral economy of sweetpotato vines: A study in Tanzania (M. McEwan) 2. Integrating gender into Kenya's evolving seed policies for roots and tubers (Netsayi Mudege) 3. Seed systems in Haiti (James Fulton and Joubert Fayette) 4. PIM-RTB-VPC: Making seed systems and markets for vegetatively propagated crops (VPCs) work for the poor (M. McEwan)
0945–1100	Session 2. Update on potential new tools for RTB cross-crop seed systems: 1. Seed tracker (Lava Kumar) 2. Seed flow mapping (Hemant Nitturkar) 3. Tracking costs for early generation seed production (Srini Rajendran) 4. RTB Scaling Fund: Readiness for Scaling Tools (Margaret McEwan)
1100–1130	COFFEE/TEA BREAK
1130–1230	Potential new tools for new RTB cross-crop seed systems 1. RTB seed multiplication techniques and seed production pipelines
1230–1300	Organization for open space time in afternoon; possible topics include: - Tool description

DATE	SUBJECT
	<ul style="list-style-type: none"> - Tool user guides - Tool reflections - Planning for tool applications
<i>1300–1400</i>	LUNCH
<i>1400–1530</i> <i>1530–1630</i> <i>1630–1715</i>	Bilateral discussion on seed tracing; seed flow mapping; NA-INA Bilateral discussion on willingness to pay; choice games; real experiments Bilateral discussion on outcomes
<i>1715–1730</i>	Wrap up and plans for Friday
<i>1830</i>	Group dinner
DAY 4: Friday 30th	
<i>0645–0745</i>	Bilateral discussions on gender & ME vines; decentralized vine multipliers (DVMs) & buyers
<i>0800–0810</i> <i>0810–1030</i>	Recap from day 3 Discussion of activities for 2018
<i>1030–1100</i>	COFFEE BREAK
<i>1100–1200</i> <i>1300–1400</i>	Bilateral discussions on INA data structures Bilateral discussions on gender analysis tools
<i>1300–1400</i>	LUNCH
<i>1400–1500</i>	Discussion on resource mobilization <ul style="list-style-type: none"> • Continued work on tools and applications • Proposal/Concept Note development
<i>1500–1600</i>	Internal communication and knowledge management <ol style="list-style-type: none"> Feedback on the website Planned communication activities
<i>1600–1615</i>	TEA BREAK
<i>1615–1700</i>	Reflection on progress with the Toolbox Action points and final wrap up

DAY 1: TUESDAY MARCH 27

Jorge Andrade-Piedra opened the workshop, and Margret McEwan presented its objectives:

- Progress and learning about the application of RTB seed tools
- Identification of (research) gaps and potential additional tools
- Further development of the glossary (Appendix 3)
- Bilateral discussion/planning
- Reviewing deliverables and outcomes
- Finalize plans for 2018 and 2019

Conny recapped on the status of RTB toolbox process. The “dinosaur” is a map of the seed value chain as used in the Lunteren workshop. It had cards of tools that can be used to address research questions related to a particular part of the seed system. In Lunteren 2017 the group ended up with six main clusters of research questions:

1. Seed system characterization, sources, and flows
2. Farmers’ preferences and choices
3. Seed degeneration in the seed value chain
4. Seed degeneration in the field
5. Decentralized multipliers and business
6. “Higher level” questions

RTB CC 2.1 researchers are now testing and validating the tools to answer these research questions. The next session gives updates of each intervention and tools applied.

SESSION 1: USE AND VALIDATION OF TOOLS IN DIFFERENT PROJECTS AND INTERVENTIONS

The matrix was built again on the basis of the update of the seed interventions (Figure 1, also see Appendix 1). In Lunteren people signed up for tools that they wanted to use in their projects. This time we filled in what has been done, what we are currently doing, and what will be done in the future. The various projects presented their updates, according to the workshop program:

1. Sweetpotato in Ethiopia (Margaret McEwan): [PPT Presentation](#)
2. Potato in Georgia (Jorge Andrade-Piedra): [PPT Presentation](#)
3. Cassava in Nigeria (Hemant Nitturkar): [PPT Presentation](#)
4. Cassava in Vietnam (Erik Delaquis): PPT Presentation
5. Sweetpotato in Lake Zone Tanzania (Kwame Ogero)
6. Yam in Nigeria and Uganda (Lava Kumar): [PPT Presentation](#)
7. Potato in Kenya (Elly Atieno): [PPT Presentation](#)
8. Potato in Ecuador (Israel Navarrete): [PPT Presentation](#)
9. Banana in Cameroon, Nigeria, and Uganda (Aman Omondi/Lucy Mulugo)

Some points from the discussions followed the presentations:

- Some questions arose about the outcomes of the different tools and interventions. It was agreed to discuss later in the workshop how the outcomes of the RTB CC 2.1 will be documented as it is one of the objectives of the workshop (Thursday session 3, discussion 3).
- It was proposed to add an integrated Seed Health Strategy to the toolbox.
- Extensive sampling on diseases to create a model is very expensive and, in some places, not allowed. Jorge explained that in the Georgia project they will use the methodology of expert knowledge on diseases.
- The difference between tools and approaches was raised in the discussion. It was agreed to follow up with this topic later in the workshop.
- In the toolbox we have impact network analysis (INA) but not network analysis (NA). The difference between these tools, and in regard to seed tracing, was discussed briefly. We agreed to address this issue in one of the bilateral meetings (Thursday session 3, discussion 1).
- With “willingness-to-pay” you might not capture all the information. It was suggested to ask farmers not only about willingness to pay but also willingness to plant and address the following questions: Are farmers willing to use their resources on this seed? Do you need additional labor and resources for that variety or crop and are farmers willing to invest that? Besides, planting material of the formal sector usually has to be purchased more often—are farmers willing to do that?
- Donors might be included in the stakeholder list of the RTB Framework.



Figure 1. The matrix of the interventions and tools is updated according to the information given in each presentation about the progress of the interventions.

SESSION 2: REFLECTION ON USE AND DEVELOPMENT OF THE TOOLS (PART 1)

In the second session the progress on the different tools was discussed. Each presentation was followed by a short Q&A period. Some points that emerged include:

Seed degeneration model by Karen Garrett

- a. How can the model be adapted to multiple diseases?
- b. Which data are required for management performance mapping? Layers about, for example, climate are simpler than layers about what people like. But it is possible if you collect the right household data.
- c. Are there any degeneration datasets other than for potato, and which potential datasets are there that could be put into the model to reach deliverables? The existing datasets on seed degeneration should be collected to discuss what is possible in terms of using this method. Therefore, we should start sharing information and datasets with the UF team.
- d. It is possible to make a link at policy level on phytosanitary and bring in an economic layer.

Small N case study by Conny Almekinders ([PPT Presentation](#))

- e. Seed tracing is one form of small N studies.
- f. Seed tracing (small N) and the first step of INA are quite similar, depending on what you want to show.
- g. Small N case studies pay attention to socioeconomic differences among people: we want to understand social patterns and relations.
- h. How many n = small N? In social science you have single n cases as well. At the moment you reach “saturation” in answers is the right moment to stop; but this is difficult to design your study on.

Choice games by Erik Delaquis ([PPT Presentation](#))

- i. Playing a game is somehow different from the reality “on the ground” because farmers see it as gambling and get too much into the game.
- j. Next time the design of the experiment will be narrowed down to one aspect because now it looked as if some farmers only focused on the scenarios and others on the probabilities.
- k. Is farmers’ understanding of diseases considered in the method? In the Vietnam case an abstract disease was used.
- l. The choice games put an extra dimension into willingness to pay since you ask them what they are willing to pay under certain conditions.
- m. The choice games also have an educational purpose.
- n. Choice games could be combined with action research, where seed is actually sold to compare the results of the game with what is happening in the real situation.
- o. It can be a challenge to find good enumerators because they have to ask exactly the same questions in the same way; training and scripts are needed.

Means-End-Chains by Fleur Kilwinger ([PPT Presentation](#)):

- p. Farmers assessed whether something was certified potato seed by planting in the field instead of looking at the label.
- q. The studies include social differentiation.

- r. The focus is on farmers' perception of seed. It is suitable for complementing with testing of new varieties in the field.

INA by Karen Garrett and Kelsey Andersen ([PPT Presentation](#)):

- s. This tool might soon be ready to go public since there are already some publications in which the tool is used.
- t. More databases also on other types of data then disease spread can be given to the team to make a scenario.

SESSION 3: PREPARATION FOR LEARNING JOURNEYS

Participants had signed up for one of the two field visits the next day, either to Genetics Technologies International Ltd (GTIL) or Kenya Plant Health Inspectorate Service (KEPHIS). The group was divided into the two smaller groups according to their choice of visit. To prepare for the excursion each group had to think about 10 questions they want to ask, who will ask them, and who will take notes (Figure 2).



Figure 2. The participants of the workshop are preparing for the field visits to GTIL and KEPHIS.

DAY 2: WEDNESDAY MARCH 28

FIELD TRIPS

Images from the KEPHIS field trip.



Images from the GTIL field trip.



Reports of the field trips to KEPHIS and GTIL are found in Appendix 6.

SESSION 1: REFLECTION ON THE FIELD TRIPS

After the field trips to KEPHIS and GTIL, the participants got together and shared their experiences. From each group, one participant presented the highlights. Eric Delaquis¹ has since written a blog post about the visit to GTIL, and James Fulton, Elly Atieno, Sarah Mayanja, and Rene Bullock agreed to write a blog post on the visit to KEPHIS.

Discussion points after the presentation on the visit to GTIL:

- GTIL is more a service provider than a private business (donor-subsidized private sector).
- The demand for planting material from GTIL is driven by other players in the value chain, and we need to understand who these players are.
- To be sustainable GTIL has to start marketing their products in case funding or the projects stop.
- GTIL currently has no seed tracing strategy, nor are they completely sure where the planting material goes after it has been delivered to Kisima Farms.
- More organizations like GTIL are needed to create demand for quality seed.
- The group learned about the importance of private sector partners and to do more advertising for products.

Discussion points after the presentation on the visit to KEPHIS:

- KEPHIS does not sufficiently consider the informal seed system. The tools from the RTB toolbox could help KEPHIS to better understand seed systems (including the informal system).
- Seed policy in Kenya is focused on the formal sector. In some cases, it is acknowledged there is an informal sector, but not in all higher management circles.
- The county government and CIP are the main clients of KEPHIS. A new client is One Vision.
- Are there tools in the toolbox that sufficiently address these changes in the policy, players, and private sector?
- Would it be possible to visualize changes in the seed network and help actors make the right decisions? We have tools like INA (who is in the network), seed degeneration (who else produces clean seed in the network?) and means-end-chains (MEC) (why do farmers do what they do—source formal or informal, for example?), which could be helpful in advising people in making decisions.
- Policy aspects of regulatory frameworks, as in the case of KEPHIS, will be addressed in the PIM–RTB collaboration.

In general, all participants agreed that the field trips had been very effective and stimulated discussion among everyone who participated.

SESSION 2: REFLECTION ON USE AND DEVELOPMENT OF THE TOOLS (PART 2, CONTINUED FROM DAY 1)

Gender tools by Netsayi Mudege:

- a. What is the outcome of the tools if policies are not implemented/enforced? The policy should be changed before implementation and enforcement.
- b. Do the tools require a social scientist to be implemented? They are designed to be used by anybody who can read; however, for the analysis a specialist is needed.

¹ www.rtb.cgiar.org/blog/2018/04/11/business-case-seed-public-private-partnership-takes-root-kenya/

- c. The tool should be used in combination with a strengths, weaknesses, opportunities, and threats (SWOT) analysis and other tools for policy-making.
- d. The tools can be used in combination with INA, MEC, 4-Square method, and small N studies.
- e. A draft of the tool description should be added to the RTB toolbox.
- f. The tools are currently still in development.
- g. Interventions need to be identified for which the tools can be applied.

RTB Multi-stakeholder framework by Jorge Andrade-Piedra:

- h. The method is for designing, evaluating, and analyzing interventions. An analysis of 13 case studies has been done.
- i. Gender aspects should receive more emphasis in the tools.
- j. Different types of stakeholders are invited (only the ones invited participate) and a discussion is held. There are no estimates of numbers of each stakeholder—for example, six nongovernmental organizations (NGOs) are involved. If numbers could be estimated, the INA method could be used.
- k. Are stakeholders willing to talk? You might not always get everybody in a workshop. Sometimes you can only call them, and sometimes you meet them at a bar. It depends on which type of stakeholder. It is a guiding tool not a protocol.
- l. Are we ready to share this tool outside RTB? This question will be discussed in the scaling readiness session (Thursday session 2, presentation 3).



Figure 3. Presentations are given on new tools and interventions.

DAY 3: THURSDAY MARCH 29

After the start of the day's workshop participants briefly reflected on the events of the previous day. Thereafter Conny explained that the following presentations were geared toward thinking about (1) new initiatives and how they might be relevant to the toolbox and (2) potential new tools.

Both points will be addressed in session 1: New Projects and session 2: New Tools and RTB Cross-Crop Seed Methods. After the presentations we will have more insights into how complete the toolbox is and what is still missing.

SESSION 1: NEW PROJECTS

In this session five new projects and three new tools were presented. They could potentially yield additions to the toolbox, as new tools or as opportunities to apply new tools. Each presentation was followed by a short discussion. Some points that emerged were the following:

Presentation 1: Gender and the moral economy of sweetpotato vines: A study in Tanzania by Margret McEwan ([PPT Presentation](#)):

- We tried to identify if sales increased or decreased by calling sellers on the phone; but this turned out to be too difficult and another approach is being tested. However, it is still challenging since most sellers don't know their customers and they don't keep records.

Presentation 2: Seed systems in Haiti by James Fulton and Joubert Fayette ([PPT Presentation](#))

- Participatory epidemiology is a tool that can be added to the toolbox. It uses expert elicitation at a local level. For this work, however, you must establish some confidence with the people whom you work with.

Presentation 3: PIM-RTB-VPC: Making seed systems and markets for vegetatively propagated crops (VPCs) work for the poor by Margret McEwan ([PPT Presentation](#))

- One of the outcomes of the project is a tool (policy analysis) to analyze regulations.

Presentation 4: Potato in India by Jorge Andrade-P. ([PPT Presentation](#))

- Opportunities for research in these projects is limited. Donors want to use tools that produce outcomes. Therefore, we should think about how the RTB toolbox can support such an intervention and whether there is room for it from the donor's perspective.

Presentation 5: Integrating gender into Kenya's evolving seed policies for roots and tubers by Netsayi Mudege ([PPT Presentation](#)):

- One of the expected changes after using these tools is that the way policymakers and stakeholders think has changed.
- A new development is that documentaries are made instead of papers and policy briefs. This is because decisionmakers often do not read (or rely solely on) such documents. To have more impact we want to show them short documentaries where they can hear the farmers talk.

SESSION 2: NEW TOOLS AND RTB CROSS-CROP SEED METHODS

Presentation 1: Lava Kumar with "Seed Tracker" ([PPT Presentation](#))

- Training for the use and handover of the tool is considered for national partners in Nigeria.

- There is space to include input-costing.
- Obligatory data entry by all users is required for the Seed Tracker tool to work.
- Informal seed is defined as seed that is not “on the radar.” Registration of data in the Seed Tracker can make it more visible.
- A lot more people had questions about the Seed Tracker, which will be further discussed in individual feedback sessions.

Presentation 2: Hemant Nitturkar with “Seed Flow Map Tool” (PPT [Presentation](#))

- Motivations for farmers to buy clean planting material, besides health quality, are variety and price. Maybe a farmer will invest in a low-quality planting material but from a preferred variety.
- The model does not take price into account, only volume; it focuses on production planning, not pricing. It was noted to be careful not to omit prices and quality in the model.
- The use of this tool is, for example, as a project planner to better understand the system. The Seed Tracker could follow up on this. Information and calculations from the Excel sheets can be transferred to the forms of the Seed Tracker.

Presentation 3: Margret McEwan with “Readiness to Scale” tool (PPT [Presentation](#))

- With this tool we can find out if the tools in the RTB toolbox are ready for scaling. It is important to connect the tool with behavior/attitude models to see how people respond to the innovation.
- The inputs that the tool requires are quite time-consuming, and further development and simplification still are needed.
- The tool also requires that partners stay interested in the innovation to follow the innovation process.
- Is there enough attention in relation to gender (i.e., tooling the tool)? More interaction between clusters 5.3 and 5.4 is needed.

Presentation 4: “Multiplication pipelines” by Erik Delaquis and Lava Kumar (PPT [Presentation](#))

Erik and Lava had observed that their ideas on tools for planning and tracking the “seed pipeline” had much in common. They therefore worked on merging their ideas into a single-session presentation, focusing on how they could make the tool work across crops.

- The tool can be used by any seed producer (private/national agricultural research institute).
- The tool needs to be tailored to the specific crop. Crops are different but still have generic factors. This reduces costs for adapting the tool. See, for example, similar earlier work done by genebanks.
- Similar tools may be in use. Important in this tool is that all the costs are covered at each step.
- KEPHIS likes to explore use at larger scale.
- The tool is too complicated to be used by farmers themselves. But there is a simplified version they can use, which has been used in Uganda and Tanzania.
- Defining the level of accuracy that is needed to use the tool properly is important for simplification.
- The tool can answer a question like, What is the minimum capacity to run as a business?
- This tool can be added to the toolbox as a cost-benefit tool.
- Synergy for answering a question at level of RTB crops: What is the business strategy at higher level (at early generation materials)?

Presentation 5: Cross-crop/region seed network analysis by Karen Garrett and Kelsey Andersen:

- Karen and Kelsey made a presentation about the possibilities of INA in cross-crop and cross-region analyses. The purpose of the presentation was that participants will develop adapted datasets that can be analyzed with this tool.

- It depends on the collected data if varieties are taken into account in these networks, or if only the general flow of seed is described. It is important to collect the right data because it is critical in case of disease spread if one breeder has a few varieties versus a breeder who distributes multiple varieties.
- Outcomes of these cross-crop analyses are important for big donors, like the World Bank and the Gates Foundation, who want projects in multiple areas. They could potentially be beneficial for policymakers at national level to choose a strategy. Therefore we need to understand the objectives in their agendas since the agenda of the different donors and for the same donors over time might shift and change.
- We need to find those scenarios that we really want to test because the team in Florida is just playing with what is possible. We should start testing scenarios of relevance to this cluster.
- One example of what can be researched with the tool is how can we make seed systems work for the poorest of the poor (societal objective)? Or how can we feed the world by 2025 (production objective)?
- The discussion about these questions is too long to capture at this moment and requires a longer brainstorming session. It is important to keep this discussion going.
- The idea is that when your dataset is uploaded into a certain format on the website, you can get the results with only a few clicks. A timeline is still missing for this; the end of phase 2 of RTB should be a feasible timeline.

Link to the presentations: <https://www.dropbox.com/home/Cluster%20CC2.1/phase%202%20-%202017-2022/workshops/nairobi%20workshop%20march%202018/Tool%20updates/Potential%20New%20Tools>

SESSION 3: PLENARY DISCUSSIONS ON THREE SELECTED TOPICS

Earlier on the first day suggestions had been made for using the open space in the workshop. Three sessions were planned and participants interested in these sessions were invited to stay and discuss. The topics of the sessions were based on questions that had emerged earlier during the workshop but took too much time to discuss at that time yet needed more attention.

Discussion 1: Seed tracing, seed flow mapping, network analysis, and impact network analysis by Conny Almekinders and Karen Garrett

Conny and Karen had proposed this session to find the commonalities and differences between the various tools with different names that somehow seemed all to relate with how seed was moving through the seed system. They tried to flesh it out, helped by questions from the rest of the group.

- INA is more of an overarching tool that is fed by data collected with other tools and can give an extra layer of depth with scenarios. It is principally “an integration tool.”
- INA can be fed by multiple datasets, either large N or small N, or even hypothetical data.
- Seed tracing cannot integrate biophysical results into the social results; INA can. On the other hand, INA has to be fed by datasets that can be collected by seed tracing.
- If we trace varieties, we usually only trace them for three generations because it is less likely that the name has changed in three steps. It also ensures that we are still talking about the same variety.
- The various tools are complementing each other.
- It has been decided that the dataset of Yenenesh (seed tracing) will be used to understand how much more INA can add to it.

Discussion 2: Willingness to pay/Choice games/Price sensitivity meter by Conny Almekinders

Conny wanted to propose an alternative tool to complement and/or replace willingness-to-pay (WTP) studies, including auctions/choice games. She wanted to use this session to collect ideas and find collaborators to develop or apply the tools.

- We want to know how can we best research if, when, and how many people pay for planting material.
- It matters what type of economy we are focusing on when doing this type of research.
- Also, over time prices that people want to pay may differ. How to deal with it is a point that has to be addressed while further developing these methods.
- Systematic review can be done for WTP. Differences in time when farmers express their willingness to buy and when they *actually* buy seed emerge when research is carried out in different periods. The time difference has to be taken into account while researching; how exactly to do that has to be discussed.
- WTP studies usually require large numbers of respondents and are therefore costly and time-consuming; however, other approaches exist, such as focus group discussions (FGDs). We need to find out how we can conduct reliable WTP studies that require less time and money. (Enoch can be contacted for more information on WTP studies.)
- It would be interesting to find out what is the difference between willingness and ability to pay.
- Price sensitivity could be an alternative to try out and include in the RTB toolbox.

Discussion 3: Outcome discussion by Jorge Andrade-P

Jorge explained that eventually the outcome of our work is important for the cluster. We are not only expected to have deliverables and outputs. We are expected to have an impact that results from or is an effect of applying our outputs. We need to prepare ourselves for documenting outcomes and changes. This does not necessarily have to be in an scientific journal. It can also be on webpages, blogs, policy briefs, RTB working documents, popular magazines, social media, newspapers, and the like.

- The theory of change can be used to estimate the expected impact.
- We don't have enough evidence that people outside our cluster are using the tools we develop.
- The outcome of using the tools is valuable if it brings changes, but these changes should be documented.
- We need some kind of indicator that shows the changes.
- There is a difference between research outcome and development outcome.

An updated version of the toolbox, including the new interventions and tools, can be found in Appendix 1.

DAY 4: FRIDAY MARCH 30

The day started with a short recap, including a reflection on the previous day and anticipation of the final day of the workshop. The following points were highlighted:

- We need to identify complementarity of tools and how to combine them (e.g., seed tracing/INA, WTP/choice experiments)
- By initiating joint projects, we will create synergies between the projects and tools. Therefore, it is very important to develop new proposals in the cluster.
- New tools (seed multiplication calculation, costing) were presented during the previous days. These should be considered for the application of the toolbox.
- We need to define clear outcomes of our work in CC2.1.
- The online platform is very useful for internal communication, but we also need to think of how to communicate the work of the cluster to the wider public (e.g., develop strategies for sharing case studies).

Topics covered on the previous days that were perceived important for follow-up were collected in a “Parking List” (Appendix 3). The open slots in the agenda for Friday were used to pick up these points for further discussion in the plenary.

SESSION 1: DISCUSSION ON DELIVERABLES

In a session facilitated by Jorge Andrade-Piedra, the group reviewed the inputs to the cluster. The budget for operations allows one more event (such as this meeting) in 2018. It will be decided later how this opportunity could be used.

Discussion about tools, interventions, and monitoring

- There are too many tools/interventions. We need to prioritize which ones to focus on.
- Many tools are already in use and partly applied in ongoing projects.
- Some tools are overlapping (e.g., WTP, choice games); in other cases, there is synergy between tools (e.g., Small N and INA). It is about approaches.
- There is a need to group tools according to (1) their purpose and field of application (e.g., tools for gender, tools for seed flows), (2) use in research or development outcomes, or (3) user groups.
- Thinking about next users: When (s)he opens the toolbox, groups of tools may be there for particular purposes, for particular moments in the intervention cycle. We need to clarify before we go public.
- We need to prioritize while using tools and apply them according to a project’s need.
- Examples of systematic descriptions from other initiatives/toolboxes were suggested to be used to orient our toolbox. We concluded that the current tool description sheet of CC2.1 toolbox may already cover those aspects.
- Training needs to be given on how to use the tools.
- Not only the toolbox should be shared, but also the insights/results from the work in which we applied the tools. Answers on research questions we got through application of the tools presumably also have an impact and are part of the toolbox.
- Different users may require different descriptions and language.
- Lava, Aman, Eric, Hemant, Rene, Karen, Conny, and Jorge will work on grouping the tools. They will develop a communication concept for the Toolbox v2 and a training event on how to use the toolbox as a new deliverable. And although some aspects of this newly defined deliverable were already in deliverable 2.1.1.1

(which was due in 2017), the team will address the topic on a wider scope (e.g., by developing a website and a training event on the use of the tools).

- Reporting: Milestones by August; Deliverables by December. Milestones in addition to deliverables for this year are needed and were discussed by the group.
- Deliverables should be defined at an adequate level (not microproducts).
- A tool to show progress of activities in the cluster is needed. This should be a lighter version of the current reporting system in RTB CC2.1.
- Planning for each person and resources to be used is not clear at this moment. More joint planning of activities, based on the toolbox and use of resources (time, expertise, money), is needed to get our deliverables and capitalize on synergies.
- Bilateral meetings and discussions on joint activities were done in this workshop, but we need more communication beyond the meeting.
- All deliverables should have a cross-crop perspective.

Defining your deliverables and looking for outcomes

Jorge facilitated an exercise in which the cluster members formulated and pinned their deliverables for 2018, including collaborators, focus crops, and which tools they will use. The team grouped the deliverables according to the tools that will be applied (Figure 4).



Figure 4. Participants clustered their deliverables on the pin board.

Box 1: Seed degeneration studies:

During the discussion, the topic of seed degeneration studies was raised by the group and suggested as new deliverables:

- Describing degeneration in different agro-ecological zones in relation to trials would be important; modelling could provide some information on that.
- Cost-effective measures for “simple degeneration study” would be needed. Ongoing studies/experiments are too expensive. More information (also on socioeconomics) on farmers level across different countries and crops also is needed.
- Datasets from different studies could provide answers to that and combine findings from different studies (e.g., with INA). This deliverable would be for 2019.
- Existing datasets from Israel could be a starting point for such a study. Results can guide the work if we need to invest more in breeding, management, or seed systems.
- For crops with disease resistance (e.g., cassava in Nigeria), no significant reduction of yield can be expected along the seed value chain. Focus should be on management.
- A deliverable for 2020 could be a good model that indicates minimum level of seed required to reach productivity potential for decision-making.

After presenting to the plenary, participants were asked to share descriptions of their deliverables with Jorge and Rosemary for discussion and uploading of the final deliverables to the MEL site (monitoring, evaluation, and learning, [here](#)). A list with deliverables compiled by Jorge can be found in Appendix 5.

During the session additional points related to the Toolbox in general were raised and discussed in the group:

- Expand seed degeneration studies (see Box 1 above).
- Models for selecting/monitoring Village Seed Entrepreneurs/Decentralized Vine Multipliers (VSEs/DVMs) are important for the cluster.
- The seed flow map has worked in BASICS and should be used with other projects/crops to become a part of Toolbox v2. Excel sheets from different projects (e.g., on sweetpotato in Lake Zone) already exist since 2009 and have been adapted to changing conditions in earlier initiatives.
- The seed flow map could be integrated with tools for calculating seed multiplication rates and costs.
- It was questioned how results of research studies can lead to outcomes in the light of having a project that lasts only 3 years. This can be addressed with capacity development components in the projects for others (e.g., partner organizations) that can apply the results/tools on long term.
- Good examples across the different tools are needed to demonstrate outcomes.
- Deliverables are going to be uploaded onto MEL, which will be re-opened in June.
- It was emphasized that milestones (for internal use to plan until the end of the year) and monitoring/tracking would be needed so that, for example, the WUR team can engage in and support the process.

- The document “Business case” (on RTB CC2.1 website under documents) contains a theory of change with products, research outcomes and development outcome to which the deliverables of the cluster contribute. Participants were asked to look into this document to orient their work and deliverables.

SESSION 2: INA DATA STRUCTURE

Kelsey Andersen presented an Excel sheet based on which data should be collected in RTB seed interventions. The sheet included a description of the dataset, metadata, and data on seed transactions. In the session the datasheet was adapted to include additional aspects based on comments/ideas from group. These included characteristics (gender, sex) and relationship of other person involved in transactions, reference period for transactions, payment modalities (monetary, gift, exchange), variety, point of sale, and distance and time to seller.

Points from the discussion:

- Reference units could be used for local measurements of volumes (e.g., bags, bundles) according to the specific context. Also, the local units could be used in the model.
- The structure of the spreadsheet can be adapted to the specific context of the study.
- Price variations throughout the season are captured with actual price on a specific date. Price averages instead of actual prices would not be suitable for the dataset.
- Each survey would be for one crop only, but can be extended to multiple crops.
- R has good tools for data-cleaning that can be applied to these datasets.

SESSION 3: GENDER TOOLS

Susan Ajambo, Netsayi Mudege, and Sarah Mayanja organized a role-playing exercise to present a tool for gender research in seed systems (Figure 5). Sarah facilitated a structured FGD with farmer seed producers in which participants described different steps in the process of seed production. The involvement of men and women (incl. the level of intensity and gender constraints) was assessed, first in a mixed group and later with the group of women only.

Figure 5. Role-playing of FGDs with farmer seed producers.



Netsayi continued with a presentation on the methodological approach of gender tools—how to apply them and what type of data can be collected—with some examples from studies in Uganda ([PPT Presentation](#)).

Points from the discussion:

- The type of FGD as presented in the role-playing session was adapted from value chain analysis to seed systems and can be used to involve different actors (e.g., seed traders, producers, etc.).
- General skills for FGDs are required and persons in the field have to be trained in this.
- Contradictions in the FGDs in the field may occur, but should be teased out in the discussion.
- There is a tendency to get normative practices in FGDs, rather than what individuals actually do. Cards for “private votes” are a method to also include individual household experiences in the discussion, but would be difficult to be applied with this tool.
- Different answers/statements from men and women are not contradictions but different perceptions.
- A SWOT analysis could be integrated into the tool, or the aspect of strengths added in the discussion when applying the gender tool.
- The duration of the exercise in the field is 1.5–2 hours.

SESSION 4: RESOURCE MOBILIZATION

Jorge shared the section of the RTB CC2.1 website with the list of funding opportunities. The group collected and discussed ideas for funding opportunities for new projects on RTB seed systems (see table below).

Donor	Call	Date	Main Idea, Crops, and Consortia
NL NWO	Research on seed systems and other aspects of propagation	12 April 2018	Farmers demand for seed; Netsayi & Conny
			Propagation models for seed; Elmar, Dinah, Utrecht
			Alternative seed quality measurement systems in Nigeria and Kenya; cassava, sweetpotato, potato (Kalpana S.); KIT and IITA
			Banana and cassava in Vietnam, using toolbox; CIAT (Erik), Bioversity, WUR
United States Agency for International Development	Seed Systems Call (The call has more focus on development than on research)		Two consortia are preparing proposals at the moment: 1. CNFA, MSU, KIT: CGIAR would have a role as resource provider; capacity statements from CGIAR are sought. 2. Catholic Relief Services and others: established methods/tools to evaluate system; limited focus on Feed the Future countries.
GIZ	No cross-crop opportunities, but can use some CC.1 tools. International Potato Innovation Group.	Probably some funding in June	6 countries sub-Saharan Africa and India. (Elmar)
NSF (EEID)	1. Plant, human, animal health: link to infectious disease in seed systems. Funding designated to specific countries.	November 2018	Karen Garrett

Donor	Call	Date	Main Idea, Crops, and Consortia
	2. Rapid proposal opportunities. Needs interesting scientific framework (they like social-biophysical integration).		
EU Horizon 2020	Food Systems Africa (EU and African consortium required; focus on nutrition and food processing)	February 2019	Tom and Conny will explore opportunities to engage in call
	Sustainable Intensification (focus on African soils)		Elmar
McKnight Foundation			Jorge will check with Rebecca
LeapAgri	Example of getting closer to end users of toolbox or link into existing projects	End of 2018	Restriction of 7% overhead costs only. CGIAR needs to link early to identify partners to cover funding gap on overhead or use Window 2 Funds from RTB. Elmar says that we can find ways to make it happen. Tom will track call announcements.
Bellmont Forum	Focus on Food Security and Africa	End of 2018	Tom will track call announcements.

SESSION 5: COMMUNICATION AND KNOWLEDGE MANAGEMENT

Rosemary Kihui gave a presentation on types of communication and how to develop a communication strategy, and facilitated a reflection and brainstorming exercise for improving the internal communication in the CC2.1 Cluster ([PPT Presentation](#)):

- What is going well? What are we telling who well? What are the results?
 - Several platforms for communication, including workshops and websites
 - Seed system stories
- Are there gaps?
 - People are spread across different clusters and their websites; interconnections between different clusters are needed.
 - Alert when there is something new on the website (but not possible with Google sites). Alert could also include others via subscription on website.
 - Communication across clusters is still limited.
 - Newsletter or monthly report on what is happening in the activities (e.g., 5 bullet points/ short stories); also link to the RTB website and popular articles.
 - Newsletter to inform about the updates on the website on a regular basis.
 - Updates on what is new in Dropbox.
 - Webinars (these are difficult, however, as we are all in different time zones).
 - Communications on the partnerships as information to share in the cluster.
- What is your “blue sky” scenario for communication within seed systems (envisioned ideal state)?
 - Internal messaging systems (SLACK, www.slack.com) and “hologram” for updates.

Points from the discussion:

- Google sites is a temporary system until a solution from CGIAR is developed. Update system can be configured and should be worked out with a smaller group.
- Dropbox: Some documents are embedded on the website, but everyone should have access to both systems.
- Going public with website requires definition of target group. We decided that the website should stay internal for now.
- The use of the Google site and Dropbox should be promoted more actively in the cluster.
- Most of us are members of other clusters and can initiate cross-cluster communication. Key persons are Norbert for yam, Kwame/Margaret for sweetpotato, and Ally for potato.

Action planning

Action points were discussed in the group and consolidated in the table below:

What	Who	By When	Comment
Proceedings	Conny, Fleur, Tom	2 weeks	Rosemary will do the formatting and final editing
Training workshop on R and INA	Kelsey, Karen	4 April 2018	Rosemary will write a note on the event
Intervention updates, tool reflection, tool description sheet	Rosemary	6 April 2018	Conny to send reflection sheet
Proposal to NWO	Erik	12 April 2018	
Deliverables	Jorge	3 April 2018	
Access to Dropbox, website, Zotero	Rosemary	4 April 2018	
3 Blogs (workshop, field visits)	Rosemary	6 April 2018	Rosemary to define an outcome story or similar for monthly distribution
Webinar	Jorge	30 June 2018	
Outcome stories for 6 tools (Multistakeholder Framework, Gender, INA, Degeneration studies, MEC, Seed Tracker) - Video, blog	Rosemary	30 September 2018	Definition and examples of outcomes
RTB Annual Meeting	Elmar	October 2018	

Evaluation

For the evaluation participants were invited to write their comments on cards and stick them on the three boards in the back of the room (see Appendix 2).

Closing of the workshop

Jorge thanked the participants and organizers; the efforts of the hosts, Margaret and Rosemary, were especially appreciated. Elmar had the final word and wished everybody a good trip back home.



Appendix 1: Matrix of the seed system interventions and tools

	RTB framework	INA	Choice Games	Small-N Surveys	Seed Tracing	cross crop Monitoring	Baselines (Large-N)	Seed Degeneration	Performance Mapping	Thresholds Certification	4-Square Method	Gender Constraints	Policy Analysis	
Sweet potato	Done (draft review)	to plan			to plan		Done (draft review)							Integrated health strategy
Ethiopia								to plan	to plan ?					Export situation
POTATO	Done (draft review)	ongoing (draft review)												
Georgia				Done	to plan ?									
Cassava														
Nigeria				ongoing	Shadows of potatoes under 2000-2000			to plan (ongoing)	ongoing					
Sweet potato														
Ake region				to plan	to plan			to plan						Will impact to pay??
YAM														Business case tools??
Nigeria & Uganda														
Potato		to plan				ongoing								
Kenya														
Potato	Done				to plan			to plan						Cost-benefit tools (2011)
Ecuador														
BANANA														Scaling readiness Tool
CAMEROON				medium N Done				to plan						
BANANA	Done				ongoing		WTFly Done				Done	Done		P-tools (4/2011)
UGANDA														
Policy analysis														
Ken-Nig-Viet										to plan				
Cassava														
Vietnam		part 1/11 (done) 2/11 (to plan)	Done				Done							

	Crop	Area	Person	RTB framework	INA	Choice games	Small-N Surveys	Seed tracing	MEC	Base-end lines (Large-N)	Seed de-generation	Per-formance mapping	Treshold certification	4-square method	Gender tools	Policy analysis	New tools	
	Sweet po	Ethiopia	Margret	Done (under analysis)	To plan			To plan		Done (under analysis)							Integrated Health Strategy	
	Potato	Georgia	Jorge	Done (modified)	Ongoing (expert elicitation)						To plan	To plan?					Expert elicitation	
	Cassava	Nigeria	Hemant				Done	To plan?									Willingness to pay	
	Sweet po	Tanzania	Kwame				Ongoing	To plan			To plan (Completion)	Ongoing					Business case tools	
	Yam	Nigeria/Ugar	Lava				To plan	To plan			To plan						Seed tracker	
	Potato	Kenya	Elly		To plan				Ongoing								Seed flow mapping	
	Potato	Ecuador	Israel	Done				To plan			To plan						Cost benefit tools	
	Banana	Cameroon/B	Aman		To plan		Done (medium N)				To plan						Scaling readiness tool	
	Banana	Uganda	Lucy	Done				Ongoing	Ongoing	Done	To plan			Done	Done		Participatory tools	
	Policy An	Ken/Nig/vie	Jorge										To plan					
	Cassava	Vietnam	Erik		Ongoing part 1 done part 2 to plan	Done				Done								

Appendix 2 Evaluation

I really appreciated this workshop because ...

- Diversity of ideas, richness of experiences
- Excellent logistics
- The discussion around the toolbox was much more focused than in the previous workshop
- Inspiration and new knowledge
- To interact with inspiring people
- The workshop was interactive - a lot of sharing experiences
- Tools in use → Pathway towards OC
- The people + motivation + enthusiasm
- Bringing the different seed systems partners together
- Deconstructing the dinosaur into tools and potential actions
- Learning new methods and techniques
- Open discussions on the complementarity of tools
- Enough time for in-depth review & discussion
- The feeling of having seen my friends
- Interacting and learning about work done by other centers and partners and how it complements our work
- The “open” sessions which were well organized & informative
- The effective organization of the schedule and good timekeeping
- Friendly meeting and capacity to accommodate diversity of crops and technologies
- Energy levels and team spirit
- Interesting insights in the work of others with the tools
- The interactive sessions & (tasty food!)
- The vigor among participants
- Presentations on tools
- The learning journey experience
- Meeting the colleagues I will be working with to more comm./KM work/understanding the needs
- The open discussion was great as the team has to identify weak areas before outside stakeholders point it out to us.

This workshop was really important to me because ...

- I would get interesting ideas
- I could connect with people in similar projects
- Learning about CC 2.1 in an interactive dynamic way
- Networking
- Learned about some interesting tools
- It gave me a better understanding of CC 2.1
- I learned about more seed systems tools being used
- It's great to talk face-to-face about how to achieve goals + outcomes
- I got to know the people in the group and their activities better
- Reconfirmed commitment to common purpose
- I had time to discuss with team members I had not met in a long time
- I was presented with nice overview of what others are doing & how it relates to my work
- The good interaction
- I got a better understanding of the various tools
- Learning the jargon/formative feedback /nudge
- The new tools that I learned
- I was able to understand the toolkit and the adoptability
- I learnt on new tools I can use in seed system research
- I developed new ideas on tool-use in my coming projects
- It broadened my understanding of the various tools

I would have liked this workshop even more if...

- More presentation of research outcomes

- If were in my time zone ☺
- Some “customers” need to be invited
- Regular communication & timely invite to the workshop
- Even more time for bilaterals
- We focused more on building few “flagship” proposals/projects integrating centers and tools
- Comparison of crop-specific “dinosaurs”
- Agenda was very fully elaborated in advance and instructions for presentations sent be before workshop
- Earlier notification and planning
- Outscaling gurus participated
- Invitation had come a bit earlier
- Increased participation of all; same people tended to be more active
- There was more group work instead of plenary discussions
- The training in the different tools was included
- I would have had to register using a link ☺
- It was a day less
- It took fewer days (max 3)

Appendix 3 Parking and Glossary

Parking

- How will we document outcomes which are already result of applying tools? What kind of outcome/time frame/method?
- Alternatives to WTP studies
- Exchange of data sets
- For a sustainable seed system to be set up, a commonly understood terms list (glossary) is needed (e.g., “outgrower” vs. “contract grower”; “ratooning”).

Glossary

- Accelerated value chain development (AVCD)
- Willingness to pay
- Seed networks
- Socio-economic network
- Biophysical network
- Qualitative and quantitative approaches
- Willingness to pay \neq demand (?)
- Outgrowers
- Contract growers
- Ratooning
- Output
- Outcome
- Tools
- Approach
- Large N studies
- RMT = resource mobilization tracker

Appendix 4 Participants

1	Maroya	Norbert	IITA	Nigeria
2	Bullock	Rene	IITA	DR Congo
3	Kumar	Lava	IITA	Ibadan, Nigeria
4	Ajambo	Susan	Bioversity	Uganda
5	Kikulwe	Enoch	Bioversity	Uganda
6	Omondi	Aman	Bioversity	Benin
7	Almenkinders	Conny	WUR	Wageningen NL
8	Pircher	Tom	WUR-Hohenheim	Germany
9	Fleur	Kilwinger	WUR	Wageningen NL
10	Garrett	Karen	UF	Florida, US
11	Andersen	Kelsey	UF	Florida, US
12	Fulton	James	UF	Florida, US
13	Fayette	Joubert	UF	Florida, US
14	McEwan	Margaret	CIP	Nairobi, Kenya
15	Kihiu	Rosemary	CIP	Nairobi, Kenya
16	Ogero	Kwame	CIP	Tanzania
17	Sila	Moses	CIP	Mwanza, Tanzania
18	Namanda	Sam	CIP	Kampala, Uganda
19	Schulte-Geldermann	Elmar	CIP	Nairobi, Kenya
20	Atieno	Elly	CIP	Eldoret, Kenya
21	Andrade-Piedra	Jorge	CIP	Lima, Peru
22	Navarrete	Israel	CIP	Quito, Ecuador
23	Rajendran	Srini	CIP	Nairobi, Kenya
24	Mayanja	Sarah	CIP	Kampala, Uganda
25	Nittukar	Hemant	RTB-CIP	Ibadan, Nigeria
26	Delaquis	Erik	CIAT-Vietnam	Vietnam
27	Mudege	Netsayi	CIP	Kenya
28	Mulugo	Lucy	Makerere University	Uganda

Appendix 5 Preliminary list of deliverables for 2018/2019

Deliverable	Name	Organization	Crop	Type	Comment
INA analysis for multiple seed system studies with other groups as primary author/researcher	K. Garrett	UF	Cross-crop	Report	
INA technical and user-friendly papers clarifying methods	K. Garrett	UF	Cross-crop	Manuscript	
SE Asia cassava seed systems INA	K. Garrett	UF	Cassava	Manuscript	
Ugandan sweetpotato seed network INA	K. Garrett	UF	Sweetpotato	Manuscript	
Input on analysis for multiple seed degeneration studies with other groups as primary author/researcher	K. Garrett	UF	Cross-crop	Report	
Management performance mapping for potato in Ecuador and Kenya	K. Garrett	UF	Potato	Paper	
Comparative epidemiology in RTB crops	K. Garrett	UF	Cross-crop	Manuscript	
Understanding seed degeneration for crop performance mapping in Tanzania and Uganda	K. Ogero	CIP	Sweetpotato	Paper	
Socioeconomic factors affecting demand and movement of quality seed at the Lake Zone, Tanzania	K. Ogero	CIP	Sweetpotato	Manuscript	
Review about potato seed systems and seed degeneration	I. Navarrete	CIP	Potato	Manuscript	
INA for seed potato system in North Rift region of Kenya	E. Atieno	CIP	Potato	Manuscript	
Network analysis across sites, disease challenges and crops	A. Omondi	Bioversity	Banana, sweetpotato	Dataset and report	Already in MEL
Toolbox V2	J. Andrade	CIP	Cross-crop	Website	
Gender-responsive characterization of sweetpotato seed systems in SNNPR	M. McEwan	CIP	Sweetpotato	Manuscript	
Testing gender-responsive tools: seed tracing, four square and engendered RTB framework	N. Mudege	CIP	Banana, sweetpotato	Report	
Gender tools applied on gender and moral economy of sweetpotato Lake Region	M. Sila	CIP	Sweetpotato	Paper	
Sociocultural and economic aspects influencing seed yam replacement and seed flows at community level in Nigeria	R. Bullock	IITA	Yam	Report	2019

Deliverable	Name	Organization	Crop	Type	Comment
Understanding farmer use of different seed qualities using means-ends-chain technique	E. Atieno	CIP	Potato	Manuscript, database	
Financial feasibility study for public and private sector who produces RTB crops	S. Rajendran	CIP	Cross-crop	Manuscript	
Economic analysis for alternative seed multiplication techniques	S. Rajendran	CIP	Sweetpotato	Manuscript	2019
Business cases and pipeline production models in Vietnam and Cambodia	E. Delaquis	CIAT	Cassava	Manuscript	
Performance of seed value chain in Nigeria	N. Maroya	IITA	Yam	Report	2019
Gender integration across all tools in the tool box	N. Mudege	CIP	Cross-crop	User manual	
Training on the application or implementation of gender-responsive tool	R. Bullock	IITA	Cross-crop	Training manual	

Appendix 6 Reports of Learning Journeys

GTIL

The team arrived at GTIL on 28 March 2018, and met with Ms. Judith Kilonzo, a laboratory manager. We started with introducing team members and discussed GTIL's infrastructure facilities and type of business partners. Ms. Kilonzo led our team and showcased the activities done by GTIL. During this tour the team asked following questions:

1. How do they estimate price? They estimate cost of production and profit margin to determine the price. The price for potato in-vitro plantlet is 30 KSH per plantlet, whereas for apical cutting is 15 KSH per cutting; 27 KSH for aeroponic minitubers (NB: 250 tubers/plant). 150 KSH for hardening plantain and 120 for cooking banana; 100 KSH for dessert banana (exchange rate 100 KSH equal to \$1 on 28 March 2018). The price for other crops varies based on work load and involvement of resources such as electricity, inputs.
2. What are the current seed major market segments? The major buyers of potato seed are donors, international organizations (e.g., CIP), large farmers, and Kisima Farm. During this process, Kisima multiplies potato seed and sells Generation 3 seed to farmers at 2,500 KSH per 50-kg bag.
3. What are the marketing strategies? There are two major strategies. First, connecting with Kisima Farm, which is a commercial multiplier and multiplies planting materials to reduce the cost per planting material that can be distributed to farmers for a lower price. Second, GTIL also started working on a public-private partnership model to collaborate with KEPHIS. In addition, they also have their own multiplication field of about 100 acres. Currently, 50% of production in this field is banana. As part of GTIL's service, when farmers buy seed GTIL requests soil samples to provide advice on good agriculture practice. They also have a demo plot for banana.
4. How many varieties do they produce? The focus is on 10 potato varieties, but the nursery had 4 varieties. On the basis of market demand, GTIL will change the varieties and quantity of multiplication.
5. How do they stay disease-free? They have standard protocol for controlling diseases from the in-vitro and multiplication of seed. For example, when they receive materials from their client, they take them to KEPHIS for indexing and cleaning. Once it has been declared virus free and certified by KEPHIS (which is paid for its services), GTIL will multiply the material in their lab. Once plantlets are multiplied in tissue culture, they will be taken further for hardening and then multiplied in the screenhouse. But if there are some orders with short duration, GTIL prefers to opt for apical cuttings method. This method, however, has some challenges, particularly on perishability and transporting the planting materials over long distances.
6. Risk factor: electricity in aeroponic and preparation of media.
7. Future business minimum target is half a million cuttings/seed. However, they always try to achieve more than this. Over time the business has been growing.
8. When did they enter the potato business? In 2008, though GTIL began their business in 1995 working with flowers and sugarcane. They now focus on banana, Irish potato, sweetpotato, and fruit trees (they were planning to do strawberry, too). The biggest component of their business is in banana, which accounts for 50% of their business in terms of production and revenue.
9. What are the expectations of Stokman Rozen Kenya in this partnership? They have an informal mutual understanding to run their business. They don't compete with each other; rather, they complement each other in the market.
10. Ms. Kilonzo asked team members if she could get any support to run their business on plantain. Norman from IITA responded that he will be the contact resource person from IITA's Kenya office. She has a yam variety in their tissue culture lab, but they are not multiplying it and they need IITA's support.

KEPHIS

The team arrived at KEPHIS on 28 March 2018, and met with Florence Munguti, the officer in charge. He welcomed the team and gave an overview of KEPHIS, which touched on various areas. KEPHIS as the national

plant protection organization of Kenya was started in 1951 and served the three East African countries of Kenya, Uganda, and Tanzania. In 1977 it was handed over to KARI (now Kenya Agricultural & Livestock Research Organization) and, in 1996 through act of Parliament, KEPHIS was formed as an independent body. It has offices in various regions within the country and also at specific borders and entry points. The role of KEPHIS is to prevent introduction, establishment, and spread of quarantined diseases in the country. KEPHIS has different stations with mandates on various activities. The plant quarantine and biosafety station has two departments of quality assurance and phytosanitary regulation. The phytosanitary department is further divided into two departments, quarantine and biosafety. The quarantine department regulates movements of seed in and out of the country. Some of the activities of this department is to conduct pest risk analysis to check on probable risks involved in importation of materials into the country. This is done through desk investigations and visits to the involved countries. The department is also responsible for issuing import/export permits. They provide phytosanitary certificates for exporters of food crops and planting materials with the Q-label.

Planting materials are allowed in the country under either of the two quarantine conditions:

- a. Open quarantine. The client is allowed to plant the material in his farm under the supervision of KEPHIS and with frequent assessments visits by KEPHIS staff.
- b. Closed quarantine. The materials are solely under KEPHIS watch and can only be released to the clients when KEPHIS is satisfied that the materials are safe.

The quality assurance department is mostly involved with crops inspections and disease diagnostics. The station has six diseases and pests diagnosis laboratories: (1) virology, (2) bacteriology, (3) mycology, (4) nematology, (5) entomology, and (6) molecular. These laboratories are accredited with international bodies such as ISO accreditation, COMESA accredited- is in charge of training the National Plant Protection Organizations (NPPO) in the region. Currently, they are training 21 countries on sanitary and phytosanitary services. Also, in quality assurance, the station has tissue culture and germplasm conservation labs in collaboration with national and international research organizations on crops (e.g., cassava— IITA, potato and sweetpotato—CIP, Pyrethrum—Pyrethrum Board of Kenya, and passion fruit). KEPHIS is collaborating with CIP on production of pre-basic sweetpotato planting material. The collaboration has led to establishment of a revolving fund mechanism for sustainability when the project ends. This business model will ensure that KEPHIS can run the pre-basic seed production unit even when the project ends through the income generated from the sales of the planting materials.

Question and answer session

The team had questions about various topics. These were answered by KEPHIS staff available:

1. On crops that KEPHIS is focusing on for seed production and inspections

It was explained that the role of KEPHIS is to regulate researchers, breeders, and seed producers to ensure that farmers get the right quality of seed. Inspection is done for all crops produced in the country as required by law. KEPHIS also helps to facilitate trade in crops and crops products to the European Union (EU) and the United States following the EU and US Department of Agriculture directives.

In seed production KEPHIS is only involved in the production of pre-basic seed for sweetpotato. For other crops it collaborates with other organizations in germplasm conservation and rapid multiplication through tissue culture for crops such as potato, cassava, passion fruit, pyrethrum, and sweetpotato.

KEPHIS agreed to engage in production of pre-basic sweetpotato vines since the crop attracts very few private sector investors in seed production. However, CREADIS (an NGO) is in the process of being registered as a certified seed producer of sweetpotato vines. Initially, there was no protocol for certification of sweetpotato; but it now exists after a consultative process of development with different stakeholders.

2. On how KEPHIS deals with the issue of informal seed

KEPHIS does not officially recognize informal seed, hence no seed inspection is conducted on this seed. However, KEPHIS officers sometimes interact with farmers using seed from informal sources during surveys and disease and pests surveillance; they provide some guidance to the farmers. Farmers also request inspection services—in most cases for the incidence of pests and diseases or seed-related problems.

3. On how KEPHIS enforces the regulations

The team was informed that the regulations enforcement among the cereals crops is more advanced, with a compliance rate of approximately 60%. It was, however, noted that for the VPCs the compliance rate was still low, with potato being the one exception. KEPHIS is working closely with police. They also have a legal department that deals with cases. The team was told about a seed company that was being closed for selling fake seed to farmers. KEPHIS feels that the law is lenient to the offenders, and is working with other stakeholders to review CAP 326 seed laws to give KEPHIS powers to prosecute and increase the penalties for offenders.

Team members also shared their countries' experiences on regulations with KEPHIS. For example, in Uganda the laws exist but are not properly implemented. In Peru farmers produce quality seed, but it does not go through the formal system. Yields have been increasing but the percentage of certified seed potato has not. In the US certification is state based and there is no national certification body.

4. On how the revolving fund mechanism works

The team was informed that KEPHIS managed to set up a revolving fund mechanism through the support of CIP and other stakeholders. This arrangement was arrived at as an exit strategy for the project that has been supporting the production of pre-basic seed. This was to ensure that production is sustainable even after the project ends. The team established a revolving fund management committee, which controls the pre-basic seed production business and ensures that proceeds are put back into the production business. In the production cycle, the vines are sold (at 3–4 node cuttings) to DVMs who multiply the vines in net tunnels and then multiply again once or twice in open fields before selling it to other farmers.

5. On customers

The team learned that KEPHIS initially sold the vines at KSH 50/vine for the pre-basic seed. The feedback they received was that the price was too high, hence people were not buying the seed. This initial cost was not based on any calculations. Through the assistance of an economist from CIP, KEPHIS managed to do a unit cost of production which led to the reduction of price to KSH 35. Consequently, more people got interested in purchasing the vines. The break-even price for the pre-basic vine was determined at KSH 7; the price now ranges from KSH 10 to 35. This pricing strategy was developed with NGOs paying expensively for the seed to subsidize the cost for individual farmers.

Initially, the main customers were the NGOs and projects—not a sustainable model. KEPHIS decided to diversify their customer base to include individual farmers and county governments. Counties initially were also getting the vines for free, but they now have to pay for them. (Typically, when farmers get things for free they don't take care of them.) KEPHIS is committed to sustainability of producing pre-basic vines through minimizing cost of production and maximizing on production through training of vines and shifting from pots to beds.

6. On enforcement of laws at the border point

The team learned that KEPHIS has worked closely with their counterparts in neighboring countries to have a one-stop border office between the countries. This helps to fast-track the process of clearance.



RESEARCH
PROGRAM ON
Roots, Tubers
and Bananas

The CGIAR Research Program on Roots, Tubers and Bananas (RTB) is a partnership collaboration led by the International Potato Center implemented jointly with Bioversity International, the International Center for Tropical Agriculture (CIAT), the International Institute of Tropical Agriculture (IITA), and the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), that includes a growing number of research and development partners. RTB brings together research on its mandate crops: bananas and plantains, cassava, potato, sweetpotato, yams, and minor roots and tubers, to improve nutrition and food security and foster greater gender equity especially among some of the world's poorest and most vulnerable populations.

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