

# Scaling project – Final report

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**Project title:** Broadening the scaling of Banana Xanthomonas Wilt (BXW) management in East and Central Africa

Project start and end date: Jan 2018 – Dec 2020 NCE for Rwanda to 31-03-2020

Project leader: Boudy van Schagen / Anne Rietveld

Project lead organization: Bioversity International

**Partners:** National Agricultural Research Organisation (NARO), International Institute of Tropical Agriculture (IITA), Rwanda Agricultural Board (RAB), Institut National pour l'Etude et la Recherche Agronomiques (INERA), Inspection Provinciale de l'Agriculture, Pêche et Elévage (IPAPEL), DPEA

Country(ies) of intervention: Uganda, Burundi, Rwanda, DR Congo

Total budget: \$563.474

Total co-investment: \$133.527 and in kind

Date of submission: August 20<sup>th</sup>, 2020



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# Progress and results

#### Outputs

# 1. SDSR (Single Diseased Stem Removal) validated scaling strategy and Site-specific theories of scaling / Three sub-national scaling strategies

The initial scaling strategy proposed in the project proposal was fine-tuned and detailed in several participatory stakeholder workshops both on project and country level. Specific scaling strategies were developed for Burundi, Uganda and DRC which are narrated in the individual country end-of-project reports uploaded in MEL.

#### 2. Decision-support tools for BXW management developed, tested and used

The partner project ICT4BXW developed an app to support decision-making on BXW control for Rwanda. It has been tested with extension officers in the project sites and is available in the android / apple play-stores.

#### 3. Validated partnership models and engagement mechanisms for scaling

Partnership models and engagement mechanisms were narrated and analyzed in the joint paper of this batch of Scaling Fund projects led by Seerp Wigboldus. Title: *"Capacity to scale innovations for sustainable development - a partnership perspective and case studies in Africa".* 

#### 4. End-user BXW management options / Fine-tuned SDSR approaches

Trials for testing different BXW control packages (Single diseased Stem Removal (SDSR) and Complete Mat Uprooting (CMU)) were conducted in Rwanda in order to generate evidence in favor of SDSR for presentation to RAB and ministry of agriculture Rwanda. Control packages were assessed on basis of effectiveness and labor time / costs associated with the control. Results are available in a technical report and are summarized in a brief which is currently with RTB to be edited. A journal article is in preparation.

#### 5. Documentation shared, learning intended to guide other RTB scaling efforts

One journal article (Wigboldus et al.,) has been submitted to the journal of Agriculture and Human Values (AHUM) and two more papers are in preparation. One is led by Guy Blomme and is about the trials conducted in Rwanda. One is led by Francois Iradukunda and is about the Scaling process in Burundi. The latter with tentative title: *"Scaling is a Learning Journey: Lesson from Scaling Management Practices to Control Banana Xanthomonas Wilt (BXW) Disease in Northeast Burundi"* has been accepted as oral presentation at the CABI conference Plant health, Agriculture and Bioscience which will take place in The Hague 9-11 September 2020.

Two briefs were prepared over the course of the project; one lead by Boudy van Schagen and published in 2019 and one lead by Anne Rietveld specifically about BXW control in Rwanda titled: *"SDSR – A superior technology to control BXW in Rwanda"*. The latter is not yet published.

#### 6. Rwanda national BXW management policy recommendation

Together with partner project ICT4BXW and partner Rwanda Agricultural Board (RAB) this project has been advocating for including SDSR in the national official policy for controlling BXW in Rwanda. Apart from the brief mentioned which was directed at Rwandese policy-makers, plans were underway to organize an event

(lead by RAB) to present results from the trials and discuss the control. The event was postponed first because the agricultural departments were preoccupied with the imminent locusts' threat and second because of the COVID 19 pandemic. Since the project has ended. We are hopeful that RAB will nevertheless organize the event after COVID 19 measures have been ended.

#### 7. Endline survey / evaluation (data)

For all three countries with farmer activities an end of project evaluation was conducted. In Burundi and DRC, the evaluation consisted of a quantitative survey and the thus generated databases have been uploaded in MEL. For DRC, we conducted the CIALCA appraisal in ODK with added question specifically about BXW. This data will contribute to the CIALCA database and facilitate future planning and analysis. For Uganda, a qualitative evaluation was conducted by means of FGDs. Results for all three countries have been narrated in the end-of-project reports uploaded in MEL.

#### Outcomes

#### Project reach in brief

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|   | Burundi | DRC    | Uganda | TOTAL   |
|---|---------|--------|--------|---------|
| Farmers directly reached  | 17,492  | 19,875 | 7,500  | 44,867  |
| Farmers reached through communication<br>campaign or indirectly through fellow<br>farmers | 69,000  | 81,000 | 20,000 | 170,000 |
| Extension staff having received training<br>on BXW management / SDSR                      | 230     | 148    | 66     | 444     |
| Number of key partners  | 7       | 7      | 11     | 25      |

| PLANNED  | REALIZED   |
|--|--|
| 56,861 households* have adopted<br>gender- responsive BXW cultural control<br>packages tailored to their production and  | A total of 64.865 farmers was directly reached through training, demonstration, visit or interactive radio-discussions.  |
| livelihood systems, with gender-<br>differentiated labor division and decision making.   | In Burundi alone, over 70.000 farmers received either direct training or were informed / trained by fellow farmers.  |
| (*By country: Burundi 19,720, DR Congo<br>22,856, Uganda 14,285, In Rwanda we<br>expect to influence at policy level and, if<br>successful, we will specify the number of<br>beneficiaries in a progress or final report). | Over 450 extension staff received training on BXW / SDSR in Burundi, DRC and Uganda.   |
|  | In Both Uganda and DRC, intensive interactive radio<br>campaigns reached large numbers of people; e.g. 20.525<br>people interacted (called-in / send messages; attended life<br>on-site talk shows) with the radio campaigns in Uganda. The<br>informative song composed by the DRC scaling champion<br>became popular on local radio and was/is also broadcasted<br>without financial incentive to the radio station. |
|  | <b>DRC: 19,875 households</b> engaged in direct interventions<br>meaning they either or both participated in trainings and or<br>had BXW-diseased stems / plants cut and male-buds<br>removed in their banana plantation. Other projects products<br>included 10.000 Factsheets in 3 different languages; two  |

| PLANNED   | REALIZED   |
|---|--|
|   | radio messages (theatrical) and a song which were<br>broadcasted on 2 popular local radio stations and a video.<br>Through these products a multifold of the 19,875 households<br>were reached.  |
|   | A total of 148 local agronomists were trained in SDSR. These<br>agronomists cut almost 3.5 million BXW diseased stems<br>together with community members (farmers) and removed<br>135.000 male buds in BXW infested plantations in the project<br>sites. These plantations served as demonstrations, built the<br>community moral to control the disease and directly helped<br>to curtail spread of the disease.  |
|   | BXW incidence in sampled households (N=440 of which 55% followed training on BXW control) in project sites, went down from 17% to 2%. <b>68% applied SDSR</b> , another 10% applied CMU or a mix of SDSR and CMU (DRC country report). This shows adoption of SDSR also beyond the directly targeted farmers.  |
|   | <b>Burundi:</b><br>Through the Amashiga pathway, 3,692 farmers were trained.<br>Through the Bureau provincial de l'environnement,<br>d'agriculture et de l'elevage (BPEAE) of Muyinga pathway,<br>230 field agricultural extension agents (AEAs) and 60 BXW-<br>affected 'model' farmers per AEA (13,800 farmers) received<br>training. In total 17492 farmers received training directly.<br>The BPEAE trained 'model' farmers reached an additional 5<br>farmers on average bringing the total on approximately<br>69.000 farmers. In addition, 20.000 factsheets were<br>distributed. |
|   | The households interviewed (N=309) were randomly selected among 13,800 households (HHs) trained and followed by scaling partner BPEAE. number of HHs having BXW on-farm reduced from 57% to 10% and the incidence level on the remaining 10% with BXW went from medium to low.   |
|   | BPEAE officials estimate that currently 70% of all farmers in Muyinga province are using SDSR (Total population 630.000).  |
|   | <b>Uganda: 7500 farmers</b> were directly reached through trainings and visits. Over <b>20.000 Farmers</b> participated in radio campaigns on BXW and SDSR. 66 extension agents received ToT on BXW control and SDSR. 126 demonstration trials were established. FGD evaluation result indicate renewed interest among farmers to invest / restore banana production now that they have a package to control BXW at their disposal.  |
| 25 institutions (including NARS) use<br>increased capacity to innovate in Burundi,<br>DR Congo and Uganda: given the<br>complexity of gender-responsive scaling,<br>using action research and social learning | <b>Burundi partners included:</b> CRS, USAID, BPEAE ISABU,<br>Reseau Burundi 2000 plus, Ministry of Agriculture and<br>Ministry of Environment, Agriculture and Livestock  |

| PLANNED   | REALIZED  |
|---|---|
| approaches will build soft-systems skills in<br>core scaling partners from public and<br>private sectors, civil society, and academia<br>for translating and adapting research for<br>real-world application  | Key partner BPEAE expressed surprise and gratitude that<br>with the limited resources they had been able to achieve<br>very good results. It strengthened their belief in the own<br>organization and capabilities. A more thorough analysis of<br>partner engagement in Burundi can be found in both the<br>forthcoming papers of Wigboldus et al., and Iradukunda et<br>al., Although scaling in the province of Muyinga was very<br>successful, on national level SDSR has not yet been<br>integrated in policy. In a policy-maker event organized in<br>2019 government representatives urged for more testing in<br>other provinces in collaboration with the NAR ISABU. |
|   | <b>DRC partners include:</b> INERA Mulungu, IPAPEL, Projet Agricole de Buhengere/Katana (PABU), Food for the Hungry International-Walungu, ADE in Mudusa and Miti sites, and CADI inter-association in Miti and local leaders in all project sites.   |
|   | INERA-Mulungu has accepted an internal policy that prescribes to integrate promotion of SDSR in all banana-related (future) projects.   |
|   | Uganda partners include: NARO, IITA, Banana agronomy<br>project, Uganda Banana cooperative Union, RUHEPAI,<br>Isingiro District Local Government, Vision group,<br>Bunyangabu District Local Government, KRC, Kyassaga<br>CBFO, Radio Musana, Nakaseke District Local Government  |
|   | NARO and the ministry of Agriculture invested in BXW control for over decade; initially promoting CMU to control BXW, they have currently adjusted recommended practices and now promote a hybrid of CMU and SDSR.  |
| 25 partners (including NARS) and<br>development organizations in Burundi,<br>DR Congo and Uganda employ new skills<br>to identify and evaluate BXW threat (early<br>warning), and lead farmers and extension<br>service providers to identify appropriate<br>technology options for intervention. | One of the main assets of this projects was the increase in<br>human capacity to identify and control the disease. <b>Over 450</b><br><b>extension staff received training.</b> Especially in Burundi and<br>DRC where knowledge on BXW control was very limited, this<br>is key to future efforts to identify and control the disease. All<br>key partners (INERA-Mulungu in DRC, BPEAE in Burundi and<br>NARO in Uganda) have included SDSR as standard control<br>measure for BXW and have integrated it in their standard set<br>of banana management set of good practices.  |
| Rwanda adopts an <b>evidence-based BXW</b><br><b>management policy</b> which recognizes that<br>existing policy has high costs and is unlikely<br>to eradicate BXW permanently, and which   | Improvements have been made towards promoting SDSR as<br>national management policy for BXW but continuous efforts<br>are needed to have this formalized in official regulation.<br>Achievements:   |
| includes SDSR as a legitimate approach for controlling the disease.   | <ul> <li>An ongoing policy dialogue with the ministry of<br/>Agriculture and with RAB about BXW and SDSR</li> </ul>   |

| PLANNED | REALIZED   |  |  |  |
|---------|--|--|--|--|
|         | <ul> <li>Permissions of ministry of Agriculture to trial SDSR in 4 sites and to promote SDSR in project sites of ICT4BXW project</li> <li>RAB was closely involved as direct partner in BXW trials and has become a supporter of SDSR</li> <li>Evidence of superiority of SDSR over CMU has been generated and is currently in the process of being published (both a brief and scientific article)</li> </ul> |  |  |  |

#### Impact

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**Burundi:** In the province of Muyinga, approximately 65% of banana-growing households have been reached by the project and BPEAU estimates that 70% of all banana producers were applying SDSR mid-2019. On the last field visit of the project leader in September 2019, no BXW-diseased plant nor male bud could be seen in any of the banana plantations passed by and visited in the province of Muyinga. A lot of newly planted banana fields were observed. In discussions with farmers and BPEAE staff a strong impression was given that farmers are motivated to restore former banana plantations and invest in improved cultivars such as FHIAs. The fact that they have a cost-effective and feasible method to control BXW (namely SDSR) has played a key-role in the renewed trust in banana as preferred food and cash crop. BPEAE staff became strong supporters of SDSR and even as SDSR has not yet been officially integrated into national policy, the high number of staff trained will certainly promote SDSR also in new postings in other provinces. Already they had received informal requests for advice from colleagues in other provinces facing BXW. Also, the head of the banana program of ISABU the Burundi NAR, has bought into SDSR. BXW is not (yet) a large problem in most of the country's provinces but when incidence increases, interest from other provinces in SDSR will certainly increase as well. When it happens, BPEAE is ready to mobilize staff trained in Muyinga and built on the lessons learned.

In Burundi, the scaling targets have been largely surpassed. This is not only the projects doing but also reflects the importance that farmers' and other stakeholders attach to the banana crop. Farmers were eager to learn about SDSR in order to save their banana plantation which they consider a key-asset of their livelihood.

**DRC:** The scaling team in DRC made a large physical effort to limit spread of the disease by cutting sick plants and removing male buds. In part of the project sites, local leaders were convinced by the results and implemented local by-laws prohibiting NOT to apply SDSR on sick plants. In these communities, banana production will certainly be restored. Close to 80% of all farmers sampled (N=440) in 41 villages in 3 territories post-intervention, currently applies SDSR (70%) or a combination of SDSR and CMU (10%) whereas only 55% of the sampled farmers received direct training in the 2 years preceding the survey. Scaling targets were met in DRC and additionally ten-thousands of people were informed through radio campaigns. With the high incidence of BXW in some of its provinces, isolation of many farming communities from radio / extension and low capacity of extension officers it remains likely though that hotspots of BXW will remain. Although good progress has been made in DRC, continuous effort and investment is likely to be needed to reach farmers beyond the project sites and support national services.

**Uganda**: Uganda has been controlling BXW for over a decade, but control used to be very labor and cost intensive. This has led farmers, especially in areas where banana production is less commercially oriented, to abandon banana and or specific banana cultivars, such as Kayinja, which are highly susceptible. The adjusted recommendations make banana production in the face of BXW threats much more attractive and it is indeed concluded in the evaluation that farmers are restoring banana plantations. For instance, in the project sites in Luwero and Banyangobo districts, in Central and Western Uganda respectively, 25-50% of banana producers were estimated to have abandoned banana because of BXW, now over half of these have again planted

banana because of renewed confidence in the crop. In other areas, applying the new recommendations, saves farmers time and money and thus allows for higher incomes. From the end-line it was shown that farmers have increased capacity to identify disease symptoms and that they performed regular (daily) checks. The number of banana meals eaten per day / week increased Increasing food security in the area (Technical report qualitative end-line). The government of Uganda with its different agencies and programs, is well situated to take on further scaling of the BXW control package.

. Contraction

**Overall Impact:** Aim was to recover banana productivity for 56,861 households in DR Congo, Burundi, and Uganda, delivering increased food and income (by the end of the project in December 2019). This target was largely met and surpassed already only in Burundi. When taking the modest estimate of 100.000 farmers / households to have recovered banana productivity and using the same numbers as in the proposal (0.5 Ha/p) for our calculation, we estimate that for an area of 50.000 Ha banana productivity was recovered. In the proposal a USD / Kg price of 0.3 was used in calculations but current prices (based on Uganda) prices are closer to 0.2 USD / kg. The proposal estimated recovery to be in the range of 1-2t/ ha. The value of this recovered production (using \$0.2 / kg and average productivity increase of 1t and of 2t / Ha) in USD ranges from 10 to 20 Million USD for the total area per year and from 100-200 USD per farmer per year. When we use the original pricing of 0.3 USD / Kg this 15 Million and 30 Million USD respectively and 150-300 USD per farmer per year. The estimated return on RTB investment therewith ranges from a minimum of 19:1 to 53:1.

With regards to institutional change and the integration of BXW control packages based on SDSR in national policy we expect that SDSR will be integrated in Rwanda and Burundi policies in the future. The threat the disease poses to banana production in terms of severity will certainly play a role in determining the speed with which this will happen. In Uganda, a hybrid control package is promoted and BXW control is already a priority for relevant government stakeholders. In DRC, our local government partners INERA and IPAPEL have integrated SDSR as the control package for BXW in their policy but their (financial) capacity for further scaling is severely limited.

# Reflections and learnings about scaling and Scaling Readiness

#### Innovation package

For the first project workshop, which took place in March 2018 in Nairobi, a scaling readiness assessment for the BXW control package 'SDSR' was conducted. This entailed identification of the following core innovations; 1) regular cutting of symptomatic stems at ground level, and their subsequent removal, 2) sterilization of cutting tools using fire, and 3) early male bud removal using a forked stick. These core innovations can be supported by complementary innovations that could be applied in different combinations and intensities as local contexts require. In a later workshop in Uganda for instance, the following complementary innovations were identified: (i) Avoiding animal browsing by tying them up (ii) Using clean seed/planting materials (iii) Bending leaves instead of cutting in infected fields in contexts where banana is intercropped with annual crops (e.g. beans) to increase light (iv) Training on how to use forked stick (v) Training on disease recognition and epidemiology and (vi) Demand-specific extension and knowledge sharing.

The core innovations themselves have not been changed over the course of the project, although their level of 'use' has increased as a result of scaling. There were indications though in the form of feedback from farmers channeled through our partners, that core innovation #2 'sterilization of cutting tools using fire' proved problematic when implemented over a longer period (reported in all 3 countries). The frequent burning of the blade of metal tools, turned it blunt and made it prone to breaking. Farmers complaint about the extra costs this implied; buying new panga's more regularly than before. And for some farmers, especially the poorer segments, this might be a reason to avoid this practice all together. Since this came up at the end of the project during evaluation, the core-innovations were not adjusted. Bending leaves instead of cutting them could reduce the need for cutting and thus the frequency of burning. For harvesting however and for core innovation #1 'regular cutting of symptomatic stems at ground level, and their subsequent removal' a panga or other metal tool is essential. Alternatives are limited as buying better quality panga's which do not deteriorate with burning or using chlorine solutions for disinfection of cutting tools are equally or even more costly.

In Uganda recommended practices differed slightly from the other countries (Burundi and DRC). In Uganda, farmers are recommended the following; in a field with low BXW incidence, the diseased plant and its mat should be uprooted completely. This is a remnant of the formerly promoted BXW control package 'Complete Mat Uprooting' which was heavily promoted by the Ugandan government for about a decade. In fields with higher BXW incidence SDSR is currently recommended as described above.

Apart from the challenges around core innovation #2 'sterilization of cutting tools using fire'; farmers in Uganda also commented on core innovation #3 early male bud removal using a forked stick. The issues encountered revolved around two things 1) the physical hardship associated with the practice and 2) the forked stick. With regards to 1) farmers complained of getting stiff necks when practicing #3 in a whole plantation; being stung by bees; getting the bud in their face when it drops down; and it being 'hard and heavy' work in general. With regards to the forked stick; these sticks were difficult to find especially in deforested areas, and because they were rare, they often got stolen (also to be used as fuel wood).

With regards to core innovation #1 'regular cutting of symptomatic stems at ground level, and their subsequent removal', farmers in some areas of Uganda are still applying some of the older, often traditional, practices to cure BXW (mostly proven ineffective) in addition. After cutting off the sick stem, they for instance chop it in small pieces and let it sundry to avoid further contamination and / or they sprinkle the pieces with a mixture of ash, pepper and urine. In the project site of Kabarole district, women reported to cut all stems of a mat after identifying one sick stem because they expected the others to get sick quickly as well. Although these practices are not wrong; they do require more labour which makes the package as a whole less efficient.

Because SDSR is much quicker and less laborious compared to CMU, farmers can control BXW more costeffectively. This is a great advantage when promoting SDSR with farmers who have been sensitized on CMU before. Also, because the banana mats are spared with SDSR, farmers are much more willing to comply then when they are told to uproot or in other words destroy their banana plants and or whole plantation.

Because banana is a very important crop in the region, both for food security and income but also for sociocultural reasons, farmers are generally motivated to control BXW. Because of its value which reaches beyond economics, it is not easily replaced by other crops. This has facilitated the scaling of SDSR enormously.

In Rwanda, readiness of the innovation was directly (and primarily) linked to governmental approval. In order to get this approval, a very different scaling strategy was developed then for the other countries in which scaling was directed at farmers and farmers' adoption of the innovation. The scaling strategy in Rwanda was focused on convincing the government of the superiority of SDSR over CMU with the ultimate aim of making SDSR official government policy. In order to get this approval, we needed to generate evidence through banana production trials in different agro-ecological zones in Rwanda on efficiency and costs (including labour) on both CMU and SDSR as remedy for BXW. You could argue that innovation readiness for scaling SDSR in Rwanda was low but has now increased, since we validated the superiority of SDSR over CMU in the Rwandan context.

#### Partnership strategy

Partnership strategies varied for the different countries.

#### DRC

It was in DRC that SDSR was first tested and piloted in collaboration with INERA-Mulungu the NAR of DRC. Naturally the collaboration with INERA continued also for this scaling project and INERA delivered the Scaling Champion or in other word the person in country who was to lead the scaling activities. INERA works closely with the national extension service IPAPEL, they have a lot of field staff and these were trained on BXW / SDSR to conduct the actual cuttings and train farmers. During the project, additional partners were engaged in one or more of the different project sites. For instance, a local project of Food for the Hungry incorporated promotion of SDSR into their livelihood project in one of the project sites. The local chiefs also played a keyrole in mobilizing farmers and enticing them to try out SDSR.

The scaling team in DRC probably had the hardest task, since BXW spread in eastern-DRC is wide and incidence is high, the territory is enormous, infrastructure is bad, institutional support is minimal and violent conflict and human disease (ebola) were impacting mobility and security of staff. What stood out is the creativity of the scaling champion and the rest of the team in finding opportunities to reach farmers and mobilize local support. The song which was composed and recorded by the scaling champion, with a local chief singing the lead vocal is an example of this. Although the idea for this initially met with skepticism on the Bioversity side, we were positively surprised by the quality and effect of the song (which became a modest local hit) and it proved that trusting your main partner can lead to unexpected but wonderful results.

#### Burundi

In Burundi, Bioversity collaborated in a large USAID funded project executed by CRS called 'Amashiga' since 2016. The work package led by Bioversity, piloted SDSR in Muyinga province through farmer learning groups with 90 farmers. Amashiga project became a co-funder of this scaling project and reached slightly below 4000 additional farmers before the close of the project end of 2018. Apart from CRS, Amashiga worked with a local NGO called Reseau Burundi 2000 plus to scale SDSR. BPEAE, the government extension agency was a new partner that got involved specifically for this project. Because of their extensive farmer network, they were a logical choice. Both the scaling champion in Burundi (Bioversity staff) and BPEAE staff assigned to the project were enthusiastic about the collaboration and about the results. In a partnership assessment conducted with

BPEAE in November 2019, BPEAE especially praised the open collaboration and offered strong learning to BPEAE in management and planning.

#### Uganda

In Uganda the scaling of SDSR was integrated into the BMGF-funded Banana Agronomy project led by NARO in collaboration with IITA. This way SDSR, or rather the hybrid package developed by NARO was integrated in a wider set of banana management practices promoting productivity overall. This had advantages and disadvantages. An advantage was for instance that this project could benefit from facilities set up by the Banana Agronomy projects such as demonstration plots. A possible disadvantage was that there was no particular focus on BXW and this project had less ability to influence activities compared to Burundi and DRC.

#### Overall

This scaling fund project approached partners as real partners rather than sub-contracted agents tasked with specific activities. This approach allowed for initiatives from all partners which was appreciated by all.

#### Scaling strategy

**Burundi:** Figure 1 summarizes the scaling strategy, which used two pathways. One pathway built upon the activities initiated under the Amashiga project and the second pathway was specific for this scaling project. Both relied on cascading training which was identified by BPEAE as a key factor in the success of the project. The strategies were not changed over the course of the project and achieved the goals set. A third pathway, less elaborated in the proposal, was the policy influencing with the aim of integrating SDSR into national policy as the package for controlling BXW.



Figure 1 Scaling strategy Burundi

**DRC:** In DRC the scaling strategy consisted of the following 1) identification of project sites on basis of set criteria; 2) Selection of IPAPEL staff to be involved in project; 3) Development of training material, factsheets, posters and audio material for radio campaigns; 4) ToT for selected IPAPEL staff on BXW and SDSR; 5) Sensitization of local authorities in selected sites and 6) selection of households / farms for interventions (including recording of incidence) and mobilization of farmers for trainings; 7) First round of cutting diseased banana plants on selected farms combined with training to field staff and farmers; 8) Second round of cutting

diseased banana plants on selected farms and evaluation; 9) Activities supported by radio campaigns consisting of role-play theater with 2 different scripts both in two languages and a song with lyrics in two languages. Key stakeholders in all processes were INERA, IPAPEL and Bioversity International. The scaling strategy was implemented as planned; first in one out of 3 territories and subsequently in the other two project sites (territories).

**Uganda:** The strategy in Uganda was based on ToT of so-called 'scaling agents' who on their turn trained farmers in project sites. Training were supported by the demonstration plots established and several farmer visits organized around good banana management practices overall. Scaling materials were developed together with scaling agents in a participatory workshop. Strong emphasis was put on interactive radio campaigns using local radio stations and their local 'fan club'. Radio teams from 5 different radio station in 3 different districts moved to farmer fields to broadcast live discussions on BXW / SDSR to which farmers could call in to ask questions or make a comment. The performance of scaling agents and number of farmers reached was monitored during regular meetings on project site level. Members of the scaling team from all partners communicated through a whatsapp group to exchange experiences, challenges and information. The strategy was conducted as planned.

#### **Scaling Readiness**

The Scaling readiness assessment was conducted first in the Nairobi workshop of March 2018 and then refined in the Kampala workshop of April 2018. The individual country teams tailored to their specific contexts for all three countries. 'Rich pictures' and 'visions of success' were produced for each of the three countries in a participatory manner with various stakeholders. Reports and individual scaling strategies detailing this have all been uploaded to MEL in 2018/2019. Further country Scaling Readiness workshops were subsequently convened in Uganda and in DR Congo, which lead to different insights into the relative innovation bottlenecks For all countries there were at least three common core-innovations were identified. In Uganda, these core innovations were 'ready' but had low 'use'. The strategy was therefore very much on strengthening farmer awareness and training. In DR Congo, tool sterilization was immediately identified as having a low readiness due to reports of weakening and rapid blunting of cutting tools as a result of disinfection in fire. A dual-pronged scaling strategy was developed, aiming to improve or substitute the innovation in the longer term (through student research), and also by creating a novel intervention strategy that would help to demonstrate to affected households the value of adopting the complete innovation package despite the increased cost of tool sharpening or replacement.

Using Scaling Readiness proved useful to identify country context differences - including differences in innovation readiness – and to formulate scaling strategies uniquely adapted to each. The strategies demanded entirely different modes of engagements with partners and farmers and was particularly innovative in DR Congo were cutting brigades were employed as service providers to inspect and cut with the community, rather than only relying on farmer volition.

Although Scaling Readiness was not fully developed as a methodology and was piloted in the framework of this project, it is clear that by enabling a structured analysis of the innovation package forced critical thinking around appropriate scaling strategies and the role that the different partners would have to play in the scaling process. It was complicated though, and not all stakeholders followed the process at all times or were interested to dive into details. Scaling readiness also does not allow for a critical reflection on the desirability of scaling the innovation in question nor does it help to identify specific target groups.

## Financial update

| Categories                         | Y1 Budget<br>(USD) | Y1 Expenses<br>(USD) | Y2 Budget<br>(USD) | Y2 Expenses<br>(USD) |
|------------------------------------|--------------------|----------------------|--------------------|----------------------|
| Personnel                          | 70,996             | 37,546               | 89,693             | 94,048               |
| Collaborator Costs – CGIAR Centers |                    |                      | 39,798             | 22,679               |
| Collaborator Costs – Others        | 76,071             | 74,466               | 48,102             | 67,981               |
| Supplies and Services              | 65,231             | 40,240               | 56,915             | 63,728               |
| Training / Workshop                |                    |                      |                    |                      |
| Operational Travel                 | 28,000             | 34,100               | 19,000             | 27,584               |
| Depreciation                       |                    |                      |                    |                      |
| Sub-total of Direct Cost           | 240,298            | 186,353              | 253,508            | 276,020              |
| Indirect Costs/Institutional       | 28,904             | 28,829               | 40,764             | 44,384               |
| Overhead (15%)                     |                    |                      |                    |                      |
| TOTAL – all Costs                  | 269,202            | 215,182              | 294,272            | 320,404              |

The carry forward from 2018, in the amount of \$54,295 as approved, was added to Year 2 Budget. Carry forward from 2019, in the amount of \$19,872, to allow CGIAR Collaborator to finalize final deliverables is now with CIP for approval. A 3-moth NCE with IITA-Rwanda was signed to allow the Rwandese scaling team to complete activities.

The level of co-investment mobilized is presented in table X. Only the monetary co-funding has been included. In all four project countries, in-kind co-funding took place as well. In Uganda, the Scaling Fund activities joint forces with the Banana Agronomy project team of NARO/ IITA and good therefore mobilise many more 'scaling agents'. In Rwanda, the scaling team aligned objectives with the ICT4BXW project and had a joint workplan with partner RAB. In DRC, INERA co-funded staff time.

| Categories                 | Main activities covered and geographical scope                 | Y1 Expenses<br>(USD) | Y2 Expenses<br>(USD) |
|----------------------------|--|----------------------|----------------------|
| CRS (USA - USAID) AMASHIGA | Financed one of two<br>scaling pathways in<br>Muyinga, Burundi | 124,403              | 9,124                |
| TOTAL – all co-investors   |  | 124,403              | 9,124                |