

Promoting Sustainable Seed Sector Development



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Lessons learned from the Catalysing Accelerated Agricultural Intensification for Social and Environmental Sustainability (CATALIST 2) project in Burundi, North and South Kivu in the Democratic Republic of Congo, and Rwanda.

Colophon



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List of acronyms

ARDI	Association Rwandaise pour la promotion du Développement Intégré
BAIR	Bureau d'Appui aux Initiatives Rurales
CAPAD	Confédération des Associations des Producteurs Agricoles pour le Développement
CATALIST	Catalysing Accelerated Agricultural Intensification for Social and Environmental Sustainability
DRC	Democratic Republic of Congo
IFDC	International Fertiliser Development Centre
INERA	Institut National pour l'Etude et la Recherche Agronomiques
ISABU	Institut des Sciences Agronomiques du Burundi
KIT	Royal Tropical Institute
LOFEPACO	Ligue des Organisations des Femmes Paysannes du Congo
MFIS	Micro-Finance Institutions
NGOS	Non-Governmental Organisations
ONCCSF	Office National de Contrôle de Certification de Semences (Burundi)
PAIOSA	Programme d'Appui Institutionnel et Opérationnel au Secteur Agricole
PAIPAD	Programme d'Actions aux Initiatives Paysannes de Développement
RAB	Rwanda Agricultural Board
SENASEM	Service National de Semences
SPG	Seed Producer Group
SYDIP	Syndicat de Défense des Intérêts Paysans
WUR-CDI	Wageningen University and Research – Centre for Development Innovation

Executive summary

Summary

High quality seed is the basis for the sustainable increase of agricultural production. Seed quality determines crop yield potential and thus the potential return of investment on land, labour and capital. Assuring access to quality seed is essential in efforts to reduce food insecurity and increase farm-derived income. The challenge facing agricultural development efforts is how to sustainably improve access to quality seed, as part of improving agricultural sector functioning as a whole.

CATALIST 2 has sought to improve smallholder farmers' livelihoods and promote regional trade in Burundi, North and South Kivu in DRC, and Rwanda. Improving availability and use of quality seed was thus an integral component of the CATALIST 2 project.

In this publication, experiences gained in CATALIST 2 are analysed to support the design and implementation of future seed sector interventions. Recommendations in this publication will benefit funders, designers and implementers of seed sector interventions in emerging economies.

The analysis reflected on the following questions:

- 1 How can emerging seed producers' capacity be built effectively for them to become professional seed entrepreneurs?
- 2 Under which conditions is support to group-based seed producers more viable than support to individual seed producers?
- 3 How can temporary project interventions effectively promote the demand for and use of quality seed?
- 4 How can seed sector interventions be gender sensitive so that the potential of women's contribution to the seed sector is realised?
- 5 What are the advantages and inconveniences of integrating a seed sector component in an overarching value chain approach?
- 6 How can seed sector interventions realise a sustainable impact on the agricultural sector?

Capacity building in seed technology and seed entrepreneurship

Training with a parallel focus on seed technology and entrepreneurship best supported seed producers in the professionalisation of their seed enterprises. Involving locally embedded institutions, experts from different disciplines (technical and adult education), and field trainers in the development of training manuals resulted in a balanced capacity building curriculum. In CATALIST 2, this provided a good functional basis for collaboration between seed producers,

service providers and clients. It also stimulated local ownership and hence the curriculum continued to be used post-project. Further, involving seed service providers during training sessions was a successful choice. It paved the way for a continued partnership between Seed Producer Groups (SPGs), reliable sources of quality seed, seed certification services and seed clients.

The training curriculum consisted of modules delivered in chronological order along the production season. This and the practical facilitation tips assisted the field trainers-facilitators in providing an effective and structured training programme.

Selecting participants that have the potential to become seed entrepreneurs and have an ambition to professionalise seed production and marketing is essential for success. A basic level of maths, reading and writing is a minimum requirement. Also of importance is that participants have access to land and capital.

Furthermore, it is best to add extension leaflets to the curriculum for seed producers. This helps seed producers refer to what they learned after completing the training curriculum. Tailoring the curriculum to seed entrepreneurs' diverse needs is essential, since participants have different levels of experience and ambition.

With regard to substantial material support like storage facilities or input provision, it is advised to consider this only for seed entrepreneurs that have already demonstrated some level of commitment to their enterprise. Providing material support at the start of a project creates artificially-functioning enterprises and project dependency. Material support is best provided through co-funding, with significant financial co-investment from seed entrepreneurs.

Working with groups or individual seed producers

CATALIST 2 mainly provided group-based support to seed producers. Although the majority of groups still produce and market seed since the project ended, there are important lessons worth noting on what makes groups function or collapse. The main reason for collapses are poor organisational and financial management. When a group's continuation is essential for intervention impact, emphasis must be placed on building organisational and financial management capacity.

Individual production encourages farmers to perform better. In cases where landholdings are very small, such as in the highlands of Burundi and Rwanda, certified seed production is only possible after consolidating land to realise the minimum land requirements needed for certification. Hence many seed producers in those areas consolidated their plots to become a certified SPG. However in most of these SPGs seed production is performed individually rather than collectively, while acquisition of inputs, training and marketing was often suc-

cessfully done as collective. Future seed sector interventions are advised to also consider providing capacity building support to individual seed producers, who only come together as a group for the purpose of training.

Parallel investment needed in seed production and demand creation

The seed component of CATALIST 2 prioritised capacity building of seed producers, while seed marketing and creating demand for quality seed was given less attention. This was addressed later in the project, but a more balanced approach would have been better. Seed production alone does not change ordinary farmers' seed use. Deliberate efforts are required to promote the use of high quality seed, and thus also increase the market for professionally produced seed.

Creating demand for quality seed is achieved by demonstrations, or 'learning plots', which demonstrate first-hand the added value of investing in high quality seed. Radio, leaflets, 'open farm days' and road-side posters proved effective and relatively cheap to complement field demonstrations. The building of client-supplier relationships is a key element of seed marketing interventions. Open farm days, experimenting with small samples, and local seed sale points were most effective.

Seed traders are influential partners in improving the existing seed market. Excluding them as partners is a missed opportunity for sustainable change. They are locally-present, have a strong networking function and connect farmers, seed producers, other projects and other stakeholders.

Gender and seed sector development

Gender blind seed production interventions tend to result in the exclusion of women seed producers. It is important for projects to make a conscious and explicit decision to target women seed producers or not. Targeting women in seed production requires specific and additional resources. Particular efforts are needed to identify women with the minimum asset base, or supporting groups of women who together can meet the minimum requirements (land, capital, labour). Given the important role of women in seed production, seed extension and production training is more effective if women are enabled to participate. This can be achieved by organising training at a time and location convenient for women seed producers, and by explicitly inviting both husband and wives to trainings.

Seed sector interventions in a value chain project

There are possible synergies between consumption value chain projects and seed sector interventions. Availability of quality seed is a key challenge for consumption chains, while effective seed marketing is a requirement for sustainable seed entrepreneurship. Hence, combining the availability of quality seed with effective seed marketing creates a win-win situation for both types of projects.

If a support programme decides to integrate seed sector interventions with value chain projects, it is important to realise that it takes a minimum of two seasons to make increased volumes of quality seed available. Consumption value chain projects should plan based on the quality and quantity of seed already available and avoid depending too much on a projected increase in the availability of quality seed as a result of project interventions.

CATALIST 2 experiences show that only longer term investments accompanied by substantial resources can solve structural bottlenecks to access and use of quality seed. Training seed producers is not sufficient: investments are needed to establish stakeholder collaboration between seed value chain actors. For some issues such as quality assurance, seed policy change might even be necessary. This is difficult to achieve if seed issues can only be addressed as part of a particular commodity value chain.

For supply to successfully meet seed demand, seed sector interventions need to be integrated into the start of the consumption value chain. Consumption value chain projects need a minimum exposure to the seed sector to understand and overcome constraints hampering the availability of quality seed.

Sustainable impact

It is clear that seed sector development requires time and long-term commitment. Systemic change is needed to sustainably improve seed sector functioning and this cannot be realised in a 3-4 year project. To optimise the chances of sustainable post-project impact the following recommendations are:

- Select promising seed entrepreneurs with the right attitude, capacities and assets.
- Support seed producer professionalisation through tailored training and coaching on seed technology and entrepreneurship.
- Support seed producers to access reliable inputs, in particular early generation seed.
- Link emerging seed producers to seed inspection and certification services.
- Create a habit of paying for (inspection) services.
- Build collaboration between research and seed producers in variety selection.
- Promote the development of decentralised seed quality inspection services.
- Involve a diversity of local organisations in the development of training methods and materials.
- Invest in training of trainers from a diversity of public, private, farmer and non-governmental organisations (NGOs) with a grassroots mandate.
- Invest in quality publications of training manuals for future reference and use.
- Promote debate and collaboration between stakeholders in the seed sector.
- Develop a culture of joint piloting of seed sector innovations by seed producers, research, agriprocessing companies.

The CATALIST 2 project has sought to improve smallholder farmers' livelihoods and promote regional trade (see box 1.1). Experiences from the first CATALIST project – CATALIST 1 - showed that focusing on soil fertility management alone was not enough to facilitate intensification of production. Seed is an essential input in agricultural production, and its quality determines the yield potential of a crop. Sub-optimal seed quality is a major factor in low yields obtained by smallholder producers worldwide. In response to this, improving availability and use of high quality seed became an integral component of the CATALIST 2 project.

BOX 1.1**CATALIST 2: IMPROVING LIVELIHOODS AND PROMOTING REGIONAL TRADE**

CATALIST stands for: Catalising Accelerated Agricultural Intensification for Social and Environmental Sustainability. The CATALIST 2 project, funded by The Netherlands Ministry of Foreign Affairs through the embassy of the Kingdom of the Netherlands in Rwanda and SDC in Rwanda (2012-2016), seeks to improve the livelihoods of smallholder farmers and others in the agricultural value chain while promoting regional trade and business linkages that will support regional peace and stability.

The project's objective is to significantly improve food security in Central Africa's Great Lakes Region by focusing on effective agribusiness clusters, high-demand commodities, existing agro-dealer networks and infrastructure. Using the 'market' as the key driver for agricultural intensification, scarce development resources are maximised through public-private partnerships. By the end of the project, it is estimated that 300,000 smallholder farmers will experience up to 30% increased incomes; an additional 0.42 million tonnes of cereal equivalents will be produced, greatly enhancing food security in the project's target areas.

Key partners of the project are national and international non-governmental organisations (NGOs), Burundi's Ministry of Agriculture and Livestock, DRC's Ministry of Agriculture and Rural Development, Rwanda's Ministry of Agriculture and Animal Resources (MINAGRI), the Centre for Development Innovation of Wageningen University and Research (WUR-CDI), and the Royal Tropical Institute (KIT).

The seed component of the CATALIST 2 project aimed to contribute to improved availability and use of quality seed for smallholder farmers in Burundi, North and South Kivu in DRC, and Rwanda. As such, the seed component of CATALIST 2 implemented a combination of new seed sector interventions and proven effective seed sector activities. These were to:

- Strengthen the technical capacity of seed producers to produce quality seed.
- Support emerging seed producers to become viable seed entrepreneurs through capacity strengthening on seed entrepreneurship, seed marketing, and seed demand assessment.

- Improve the capacity of seed producers and their organisations in financial, human resource, and organisational management.
- Improve seed producers' access to pre-basic and basic seed.
- Strengthen collaborations between stakeholders in the seed value chain.

All too often projects end, staff disperse and the valuable experiences for the design and implementation of future development initiatives are lost. In order to assist designers and implementers of future seed sector interventions, this publication documents findings from CATALIST 2 interventions in Burundi, North and South Kivu in DRC and Rwanda. The publication is aimed at donors and direct implementers of seed sector interventions in emerging economies.

Project implementers, supporters and partners closely involved in the implementation of seed component interventions were brought together to discuss achievements, failures, lessons learned, and potential advice for future seed projects. Represented in the reflection meeting were IFDC seed agronomists and capacity strengthening officer, who were national/regional advisers and coordinators of seed activities. Furthermore, field implementers linked to farmer organisations and NGOs contracted as service providers (TWITEZIMBERE, Amis du Kivu, CAPAD, SYDIP, LOFEPACO, BAIR, ARDI) participated. A representative of the seed certification service of DRC, SENASEM, also participated. In addition, two international experts from CDI and KIT in the Netherlands, who had advised on the design and implementation of seed-related activities, completed the assessment team.



Photo: Rukeba John

Training on the multiplication of cassava cuttings, South Kivu

For each topic, a discussion and writing session gathered experiences, evidence and lessons learned. Finally, participants used storytelling to ensure that collected evidence was substantiated and illustrated with lively examples of real life cases from the field. Information in this publication is based on the draft lessons and supporting stories documented in the workshop. A draft was peer-reviewed and shared with participants before finalising.

The following questions were debated during the writeshop:

- 1 How can emerging seed producers' capacity be built effectively for them to become professional seed entrepreneurs?
- 2 Under which conditions is support to group-based seed producers more viable than support to individual seed producers?
- 3 How can temporary project interventions effectively promote the demand for and the use of quality seed?
- 4 How can seed sector interventions be gender sensitive so that the potential of women's contribution to the seed sector is realised?
- 5 What are the advantages and inconveniences of integrating a seed sector component in an overarching value chain approach?
- 6 How can seed sector interventions realise a sustainable impact on the agricultural sector?

In Chapter 2, this publication begins with lessons learned on capacity building of emerging seed entrepreneurs. Since capacity building was a core area of intervention, achievements are presented next to the challenges faced. Chapter 3 deals with questions related to the conditions under which group-based seed production is a viable option, and under which conditions it is more viable to opt for supporting individual seed producers. Although creating demand for and marketing of quality seed received relatively little attention in the seed component of CATALIST 2, Chapter 4 presents experiences of what worked and what was less effective. Chapter 5 looks at what extent CATALIST 2's seed component was responsive to gender-based constraints that female seed producers face and what opportunities there are to overcome those constraints in a seed project. Chapter 6 reflects on the advantages and inconveniences of integrating seed sector interventions into a consumption value chain approach. Finally, Chapter 7 looks at the sustainable impact of seed sector interventions, considering whether seed producers and project partners continue with production, marketing and use of quality seed after the project ends. The final chapter provides a summary of the main conclusions presented in individual chapters.



Photo: Nduwimana Claudette

A participant inspects her potato tubers, Burundi

Strengthening capacity of emerging seed producers

2.1 Introduction

Practical training and coaching of emerging seed producers was the core focus of the project's seed component. Capacity building in seed technology is invariably included in efforts to promote quality seed production in developing countries. Technical production skills are however only one part of the skillset required for successful seed entrepreneurship. Successful seed entrepreneurship requires additional business management and marketing skills, along with strategic linkages between stakeholders in the seed value chain.

Programme staff of the seed component of CATALIST 2 developed a training curriculum on seed technology and seed business management. Trainers were trained to use these curricula in the field to train SPGs. It was assumed that this would provide structure and quality to the trainings delivered in the field. To complement capacity development efforts in seed technology and entrepreneurship, emerging seed producers were also supported to acquire small equipment, materials and basic infrastructure.

In this chapter the following topic will be explored: *How can emerging seed producers' capacity be built effectively for them to become professional seed entrepreneurs?*

2.2 Activities and Approach

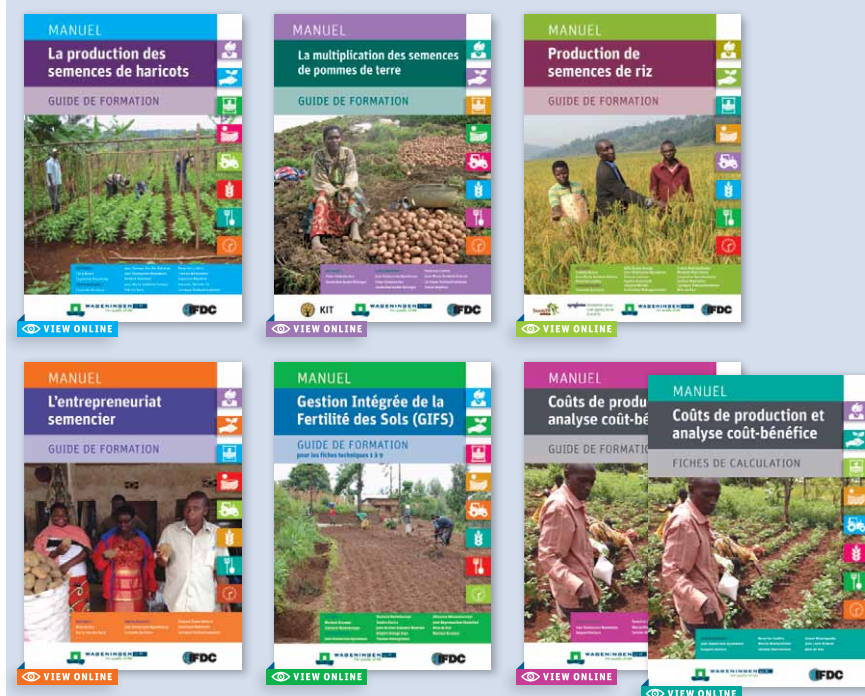
2.2.1 Training of seed producers

In 2012, the seed component of the CATALIST 2 project started with participatory development of training curricula on seed entrepreneurship, quality rice seed production, quality bean seed production and quality seed potato production.

For each identified topic, an interdisciplinary team of agronomists, economists, soil scientists, extension experts and/or capacity building experts, relevant institutional partners such as national seed certification, and/or agricultural research institutes and IFDC implementing partners were invited to participate during the writing process.

Field advisers of partner organisations received 'training of trainers' in how to implement the curricula. Draft manuals were field tested by advisers, whose experiences informed the final evaluation and adaptation before manuals were finalised and published (see Box 2.1).

BOX 2.1 TRAINING MANUALS PUBLISHED



Manuals can also be found online on www.wageningenur.nl/cdi/publications (Publications 2015)

The curricula were implemented using a farmer field school set-up, in which seed producers receive training and debate issues in different half-day sessions throughout the growing season. All activities revolve around group-managed seed production and demonstration plots. Participants, supported by a trainer-facilitator, follow a full production cycle: from land preparation, harvesting, postharvest handling and marketing of produce. Crop-specific training curricula were technical, but also included topics around seed quality management, certification, client orientation and marketing. The seed entrepreneurship curriculum consists of several 2-3 day training sessions in a classroom setting, combined with practical exercises and field visits to observe or experience lessons learned in practice. For instance conducting a seed market survey or visits to professional seed entrepreneurs and seed storage facilities.

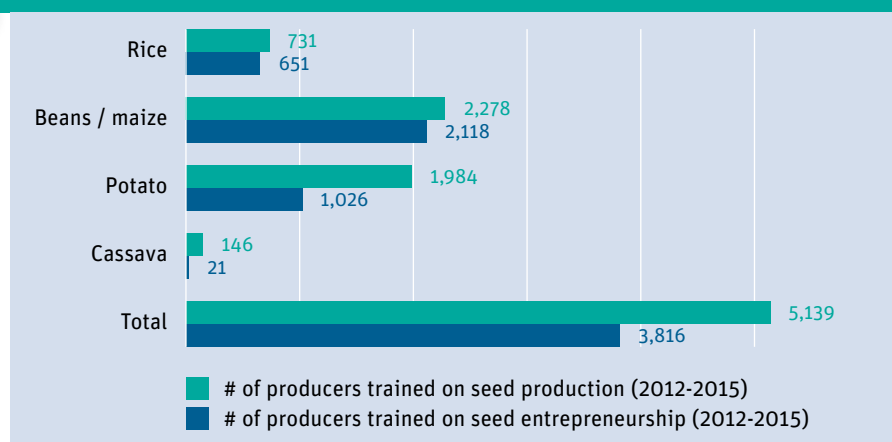
In both crop-specific and seed entrepreneurship curricula, experts were invited to the training sessions where appropriate. Experts such as seed inspectors or certification agents, plant protection services, successful seed entrepreneurs or seed agronomists of agricultural research institutes complemented generic training and facilitation provided by partner organisation trainers-facilitators.

During and after training sessions, follow-up and field visits provided supervision and backstopping to seed producers throughout the production season. It was observed that some topics were not properly understood by the trainees, and in those

cases the backstopping went into more detailed explanations and tailor-made advice. Particularly in South Kivu during the first round of training, the trained seed producers became resource persons in their own right, supporting the training of newly emerging seed producers. They complemented trainers-facilitators' efforts who had received the training of trainers.

Around 5,000 seed producers, largely operating in SPGs, received training on quality seed production techniques, production cost calculation, and how to become viable seed entrepreneurs. 3,816 producers were trained to become seed entrepreneurs and start a profit-oriented seed production enterprise or cooperative. Of the total trained producers, 3,898 were still producing seed in December 2015.

FIGURE 2.1 NUMBER OF PRODUCERS TRAINED AND TYPE OF TRAINING PROVIDED



2.2.2 Material support to seed producers

To complement capacity building, the seed component of CATALIST 2 also provided material support to emerging seed entrepreneurs. Table 2.1 below shows that the resource use in relation to material support was not the same in all four regions.

In Rwanda further material support was provided. This is line with the Rwandese government policy of subsidised input supply and favouring more advanced technical solutions. Rwanda projects invested resources in providing potato seed producers with simple plastic glasshouses for the production of mini-tubers, and farmer groups were assisted by building simple seed stores and rice farmers with seed drying grounds. In addition, inputs, small equipment and materials were supplied to SPGs.

In Burundi by contrast, little was invested in material support and infrastructure. Only inputs for demonstration trials were purchased by the project. No further material support was provided to seed producers. In Burundi the project had more liberty to decide how to apply resources, as there are less pressing policy directives to follow.

In North Kivu seed stores were built and small equipment such as pallets to pile bags on, hydrometers/hygrometers, weighing balances and seed storage bags were provided to seed producers. In South Kivu there were limited investments in materials, other than inputs required for the demonstration field which formed the basis of the seed technology training.

TABLE 2.1 ESTIMATED % DIVISION OF RESOURCE INVESTMENT BY THE CATALIST 2 PROJECT

	Technical training	Entrepreneurship training	Material support
Burundi	60	30	10
North Kivu	60	20	20
South Kivu	60	30	10
Rwanda	60	10	30

2.3 Experiences and lessons learned

2.3.1 Structure and professional training materials contribute to success

The curricula were logically structured according to the different vegetative stages of the target crops, which was appreciated by field-based trainers-facilitators. The manuals were not too focused on technical details, but provided trainers with clear methodologies to facilitate the learning process. Also appreciated was the choice to keep manuals highly practical. Through learning-by-doing, farmers were stimulated to try things and experiment themselves, rather than being forced to listen to theoretical lectures. From these training sessions, farmers built their self-confidence to further develop skills as professional seed multipliers.

Teaching aids for farmers could further strengthen the training methodology according to field advisers. After training, seed producers currently do not have anything to refer to should they need to revisit information.

4. PLAN DE TRESORERIE

	Jan	Feb	Mar	Apr	May	Juin	Juillet	Août	Sept	Oct	Nov	Dec	TOTAL
ENTREES CAISSE													
1.1 Ventes Semences	10 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	240 000
1.2 Retrait Banque	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	60 000
1.3 Crédit	0	0	0	0	0	0	0	0	0	0	0	0	0
SORTIES CAISSE													
2.1 Investissements	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	120 000
2.2 Salaires	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	60 000
2.3 Salaires	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	60 000
RESERVE	0	0	0	0	0	0	0	0	0	0	0	0	0
Balance	0	15 000	30 000	45 000	60 000	75 000	90 000	105 000	120 000	135 000	150 000	165 000	1 650 000

One of the emerging seed entrepreneurs during the seed entrepreneurship training, North Kivu

Photo: Kamale Kambale Jean Marie

2.3.2 Balance between seed technology and entrepreneurship training

The CATALIST 2 experience has shown that new seed producers require crop-specific basic seed technology training. For rice and bean, seed production does not differ much from consumption crop production. Relatively light training on seed technology is enough to understand the small nuances of seed production.

For potatoes the experience was different. Good practices in seed potato production differ substantially from ware potato production. Seed potato production requires a profound knowledge of potato diseases, especially seed borne diseases, and how to control them. In addition, proper storage and sprouting of seed potatoes requires additional skills. Finally the timing of seed potato production under rain-fed conditions is complex as the seed needs to be in the right physiological stage the moment of planting.

Seed marketing is essential for all crops. The only noted difference in marketing rice and bean seed compared to seed potatoes is that the former requires more effort. Marketing seed potatoes is important, but there is a local demand for quality seed potatoes, with smallholders willing to renew their seed stock. For rice and particularly bean seeds, farmers are less used to regular seed renewal, and quality seed marketing requires more effort. Rice seed business management is less complex than bean and potato seed business management, as the rice chain is relatively well-organised compared to potatoes and beans, because farmers already collaborate in water management related to rice seed production.

2.3.3 Selection of beneficiaries

Beneficiaries of seed technology and entrepreneurship trainings were selected based on their potential to become viable seed entrepreneurs. Land tenure, basic education and willingness and ability to invest are essential prerequisites for success in quality seed production. Compared to ordinary farming, seed production is a specialisation which requires a certain asset base, a strong motivation and technical and entrepreneurship skills. Hence, even though the target audience of CATALIST 2 are smallholders, the seed component used criteria such as a minimum access to land and the ability to invest. Seed production as an enterprise is not feasible for the poorest smallholders. Because of these criteria, the seed component is biased towards more entrepreneurial farmers.

2.3.4 Tailoring training to the needs of seed entrepreneurs

Although the seed component targeted more entrepreneurial farmers in the first place, it was observed that farmers with limited writing, reading and maths skills have different training needs. Existing curriculum on seed entrepreneurship contains useful building blocks, but is not suitable for all seed entrepreneurs. For some seed producers, calculations related to seed business management are too complex, while for others not all topics are relevant. A modular training structure, in which seed entrepreneurs have the choice with regard to their participation, would better respond to their diverse needs (Box 2.2).

BOX 2.2**COACHING SEED ENTREPRENEURS REQUIRES A TAILORED APPROACH**

As calculations are involved in seed entrepreneurship, a minimum level of education and prior experience in seed production was deemed necessary selection criteria. However training content was still too complex for some members of SPGs.

In Burundi, for efficiency, seed producers from across the country were called together in a central venue for 5 days for the training. Despite selection criteria, the group of seed producers was very diverse. For some of the participants the level of the training was too advanced, while for others the training was too basic and too long. As one more experienced seed producer expressed *“At this time, I am in the middle of seed marketing, and I also need to supervise the field work. At the same time I am managing cattle and livestock rearing, which requires my attention”*. The women seed producer in question left the training early because of her ongoing commitments.

This experience provided an important lesson in relation to supporting seed entrepreneurs. Training needs to be tailored to the needs and level of the individual. Furthermore, training should be offered locally, as is the case with half-day technical training at farmer field schools throughout the season. The best format would be an individual coaching programme, with a menu of short training modules, from which seed producers can choose, rather than having to follow an entire curriculum from start to finish.

Simbashizubwoba Cyriaque

Initially, the idea was to offer local seed entrepreneurship training and follow the farmer field school principle of half-day modules. However, for efficiency, it was decided to deliver the training in three blocks over several days in a central location. From a project management point of view this decision is understandable, but the result was that some entrepreneurs were no longer interested after the first training block, as it kept them away from their businesses too long.

Field-based training using shorter modules did not guarantee continued participation. Absenteeism was also observed in the seed technology training. Suggested reasons are: (1) participants do not get a per diem money allowance when training takes place in the field, (2) there were miscommunications between organisers when training sessions were rescheduled, (3) training sessions were a time-investment that not all seed producers were willing to make, (4) other non-agriculture related reasons (sickness, family, other business commitments).

2.3.5 Training of emerging seed producers attracts entrepreneurs into the seed business

The opportunity to receive quality seed production training and support has attracted local small- and medium-scale seed investors to start investing in the seed sector. Previously, agribusiness entrepreneurs tended to avoid riskier seed production and rather opt for the production, processing and/or trade of crops for consumption. Through CATALIST 2, IFDC's local partners were able to convince small- and medium-scale entrepreneurs to move into the seed business (see box 6.1).

BOX 2.3**LOCAL BUSINESSMAN ENTERS THE SEED PRODUCTION BUSINESS, SOUTH KIVU**

Mr Faustin Lubala is a well-known trader in South Kivu involved in several agribusinesses such as commercial maize production, cassava processing, and petty trade. When IFDC first approached Mr Lubala about engaging in cassava cutting production, he said: *“Seed business, and especially cassava cutting production, is not profitable. I will only get trouble if I get into seed; it will destroy my so far good relationship with Service National de Semences (SENASA). No thanks!”*

After several other visits and sensitisation sessions, Mr Lubala started to change his attitude towards seed. He rented land in Kakondo, subscribed for the training on seed entrepreneurship, requested technical support from *Amis du KIVU*, CATALIST 2 partner in South Kivu, and started a 1 ha cassava cutting multiplication site in 2014. He covered all production costs, including labour and fertilisers. His harvest was successful and the demand for quality tubers was high. Mr Lubala had not expected that seed production could have been so profitable. He couldn't wait to continue and tell his friends and family about the profitability of cassava cutting production. The next season his brother-in-law, neighbour and good friend (who previously sold minerals) were all convinced and also started multiplication of cassava cuttings.



Currently, Mr Lubala is exploring diversifying to maize and bean seed production. His main clients are small-scale producers; 76 of whom farm on his land under sharecropping arrangements. This particular group of smallholders not only benefit from good, disease-free planting material, but through observing and participating in multiplication activities as daily labourers, they are also aware of the advantages of using healthy planting material.

Rukeba John

Cassava cuttings multiplication site in Kakondo, South Kivu

Photo: Rukeba John

2.3.6 Involvement of seed service providers in training facilitates partnerships

Trainees appreciated the focus on creating linkages between organised seed producers and other stakeholders in the seed value chain: seed clients, seed certification services, and research institutes who produce early generation material of bean seed, rice seed and seed potato. Besides inviting representatives of these service providers to training sessions, the project also organised exchange visits to establish functional links between seed producers and the source of early generation seed. This is illustrated by the example of linking seed potato producers from North Kivu to mini-tuber producers in Rwanda (Box 2.4) and the collaboration between rice seed producers and SENASEM in South Kivu (Box 2.5).

BOX 2.4 ACCESS TO EARLY GENERATION SEED AS A RESULT OF BUILDING LINKS DURING TRAINING

Mr Karawani, a seed potato producer and seed producer cooperative member in North Kivu (Luberu-Kipese zone), benefited from the seed potato production training module in his local area. During training, he improved his production techniques and seed entrepreneurship skills. However, he found it difficult to access quality planting material to produce seed potato. As part of the training curriculum, Mr Karawani received a handful of mini-tubers of two varieties (Kirundo and Kinigi).

He and his colleague producers were positively surprised about the high quality and productivity of these two varieties. Consecutively, he participated in an organised trip to Musanze in Rwanda to see the origin of these particular varieties. It was during this trip that he got into contact with a Rwandese private seed entrepreneur who produced mini-tubers of Kirundo and Kinigi varieties.



Photo: Kamale Kambale Jean Marie

Some weeks after this first contact, Mr Karawani initiated (and paid for) a follow-up meeting in Musanze to buy 5,500 mini-tubers from the Rwandese entrepreneur. His business profited well from this contact, and he became an example for other farmers. This year, members of seven other potato seed producer cooperatives joined efforts and jointly pre-ordered 14,000 mini-tubers from the same Rwandese entrepreneur, which will be transported from Musanze to Kipeze by truck.

Kamale Kambale Jean Marie

Mr Karawani in his seed potato storage, North Kivu

BOX 2.5 SENASEM SUPPORTS A RICE SEED PRODUCER ASSOCIATION

SENASEM is known in the Rusizi Plain (South Kivu) for its services related to seed production and certification. Most farmers know that SENASEM is the source where you can access new varieties and good quality early generation material. However it is not easy for individual farmers, and even organised farmers to access those varieties.

As part of seed entrepreneurship and rice seed production training, SENASEM participated in a session and met with rice SPG, PAIPAD. SENASEM was impressed and selected PAIPAD as its preferred organisation for multiplication of new rice varieties. SENASEM provided basic seed, inspection services, and some technical support. SENASEM also linked PAIPAD to different clients, such as NGOs and large-scale private rice producers. PAIPADs profit increased: just one of the benefits from its linkage with SENASEM and rice seed clients. Members of PAIPAD referred to this first season of selling with “Fanya Mbiyo” (faire vite), referring to how quick they could sell the rice seed. PAIPAD was able to invest in a seed drying area to improve postharvest handling in future seasons, something they learned during training.

Kulimushi Faustin

Seed certification services involvement in training was very effective in creating necessary relationships between regulators and producers. It provided a basis for further formalisation and professionalisation of quality seed production. It helped seed producers who previously thought that these services were beyond their reach, to realise that working with seed certification was possible. Linkages were created through: inviting seed certification agencies to explain procedures at training sessions; seed producer visits to the office of the seed certification service; and, seed certification agency follow-up inspections.

During the first project year, seed inspections were part of the support package to emerging seed entrepreneurs. This helped raise awareness of the importance of quality control and understanding why and how to produce certified quality seed. However, after initial support ended, many seed producers discontinued seed certification procedures. Especially in Burundi and North and South Kivu, where seed certification is more expensive (see box 2.6).

BOX 2.6 HESITANCE TO PAY FOR SEED CERTIFICATION SERVICES

Nine seed potato producer groups in Kayanza province, Burundi, were supported to increase capacity in technical seed production and seed entrepreneurship. During support, groups were linked to the *Office National de Contrôle de Certification de Semences* (ONCCS). In the second 2014 production season (2014B), ONCCS agents inspected potato multiplication fields. Three inspection visits and a laboratory seed quality analysis was conducted to assess quality of the produced seed. All costs for the inspection were covered by CATALIST 2; and the nine seed producer cooperatives received their certificates and easily found clients for their seed potatoes.



Photo: Nduwimana Claudette

During the next season (2015A), seed producers were asked to pay for certification services. All nine groups continued with seed production; however, only three out of the nine groups continued to pay. As a result, the amount of certified seed reduced by 66%. Farmers that buy non-certified seed do not have any quality guarantee with respect to the quality.

Nduwimana Claudette

A seed potato multiplication site in Kayanza, Burundi

2.3.7 Partnerships take time to mature in emerging seed sectors

Despite CATALIST 2 efforts to create and strengthen collaboration between seed producers, clients, research institutes, and other seed sector service providers, these relationships are still in their infancy. Before CATALIST 2, collaboration was largely non-existent. It takes sustained efforts before different actors build trust over time. For instance, most SPGs are not officially registered; and hence are not recognised by formal state institutions such as Rwanda Agriculture Board (RAB) SENASEM and ONCCS. This hampers working together, communication and exchange of knowledge and ideas.

2.3.8 Material support can hamper entrepreneurship

Seed production is an enterprise, in which the seed producer invests to make a profit. Providing initial material support creates artificially-functioning enterprises without true investment from producers.

Support for seasonal seed production running costs is discouraged. Running costs are incurred every season, and need to be included in the final seed price. In CATALIST 2 in both Rwanda and North Kivu, seed producers were provided with fertiliser and basic seed at the cost of the project. What can be facilitated is access to seasonal credit to assist in cash flow management.

This does not imply that no material investments should be made to support seed multipliers and producers. Considering the seed sector's important role in agriculture, public or donor funding can go towards professional seed cleaning, storage and packaging capacity. Once seed enterprises have shown proof of commitment, and re-invest revenues into their enterprise, material support can be considered. Especially in seed handling and storage equipment, which depreciate over time and can be prohibitive to seed producers. However, also in these cases, co-investment from both sides is imperative. Seed enterprises' own investment could be actual cash or in-kind contributions (i.e. labour, local materials). This assures that only serious seed producers use a material support facility.

Blended finance - a combination of project grants, bank loans and farmer direct investment - can be useful for larger investments. In Rwanda, eight individual seed producers and two seed potato producer cooperatives, who had benefitted from CATALIST 2 training, consecutively developed a business plan and attracted outside funding to further develop and start mini-tuber production in greenhouses (see Box 2.7).

BOX 2.7**GREENHOUSES FOR POTATO MINI-TUBER PRODUCTION RUN BY PRIVATE SEED PRODUCERS**

Between 2013 and 2015, IFDC, *Bureau d'Appui aux Initiatives Rurales* (BAIR) and Imbaraga organised training for seed potato producers on quality seed production and seed entrepreneurship in northern Rwanda. One of the results of these trainings was that eight individual seed entrepreneurs and two seed producer cooperatives expressed interest in constructing of greenhouses for the production of seed potato mini-tubers. With technical support from IFDC and BAIR, the entrepreneurs developed business plans and presented these to different Micro Finance Institutions (MFIs). Greenhouse costs are between 23,000 and 24,000 Euros, of which approximately 10-40% was pre-financed by MFIs (like KCB), 40-45% was provided as financial support from IFDC, BAIR and Imbaraga, and the other 10-40% was co-financed by entrepreneurs' own contributions.

Before and during construction, entrepreneurs visited different existing greenhouses belonging to a private entrepreneur in Bigogwe, a public greenhouse at Rwanda Agricultural Board (RAB) in Musanze, and another public greenhouse at the Institute of Applied Sciences in Ruhengeri. These visits helped entrepreneurs to learn about greenhouse functioning and to tweak their own greenhouses to their preferences.

After the construction of greenhouses, the eight private producers and two cooperatives started with mini-tuber production. In the first production season, the tuber multiplication rate was on average approximately 3-5 mini-tubers per vitroplant, which is twice as low as the multiplication rate of greenhouses at RAB (6-10 mini-tubers/vitroplant). Average production costs were approximately 80-100 Franc Rwandais (FRW) per tuber, while the production costs of RAB was 60-80 FRW per tuber.

In conclusion, producing mini-tubers in Rwanda was kick-started by a combination of: an alternative training approach which enabled experimentation and innovation; the commitment of both public and private stakeholders to promote seed entrepreneurship; and, the

interest of private seed entrepreneurs. Efforts have not yet resulted in a profitable business model. The eight entrepreneurs and two cooperatives conclude they still have a long way to go before their business bears fruit. However they are not discouraged. *"To build on this support, we have to increase our efforts to make a profitable business out of mini-tuber production"*, says Karegeya Apollinaire, one of the eight private entrepreneurs.

Semakuza Aloys



Photo: Semakuza Aloys

Greenhouse of a private producer (Ntawigira Joseph) from Rubavu, Rwanda

2.4 Conclusions and recommendations

Achievements

- 5,000 emerging seed producers were trained, of which more than 4000 were still producing quality seed in December 2015. Almost all of these seed producers were not producing seed before the CATALIST 2 project started.
- Training efforts resulted in increased investment in the seed sector from small and medium scale investors.
- The component of the training programme that explicitly linked seed producers to sources of early generation material, seed certification services, and clients was one of the unique key achievements. It created an excellent basis for further and improved collaboration between stakeholders.
- Manuals were an effective tool for trainers because of their clear structure (following the logical order of the planting season) and the tips on how to facilitate each session.
- The learning-by-doing methodology encouraged emerging seed producers to experiment and learn from each other and overcome initial preconceived difficulties.
- The combination of technical production and entrepreneurship skills was a good basis for seed producers to start their seed businesses.

Tips

- For some smallholders the seed entrepreneurship training was too complex. It is more effective to target farmers with basic writing and maths education who have potential to become seed entrepreneurs.
- Particularly for experienced entrepreneurs, a modular approach with short (1/2 day) and locally organised sessions is most effective to increase participation. Curricula should be tailor-made as much as possible to the target groups' diverse needs.
- Extension leaflets help farmers revisit topics after training has ended.
- Kick-starting seed sector development requires time and long-term commitment. A tradition of non-collaboration and working in isolation is not easily changed. An integrated approach is needed to develop the seed sector: capacity strengthening, seed market development, and linking actors together to create sustainable linkages from the seed source to the seed client.
- Material support to seed enterprises is only advised when a seed enterprise has shown commitment by re-investing its profits into its own business. Even then, material support should always be accompanied by co-finance arrangements and an individual investment in the seed enterprise.

Professionalising seed production and seed entrepreneurship: targeting groups or individuals?

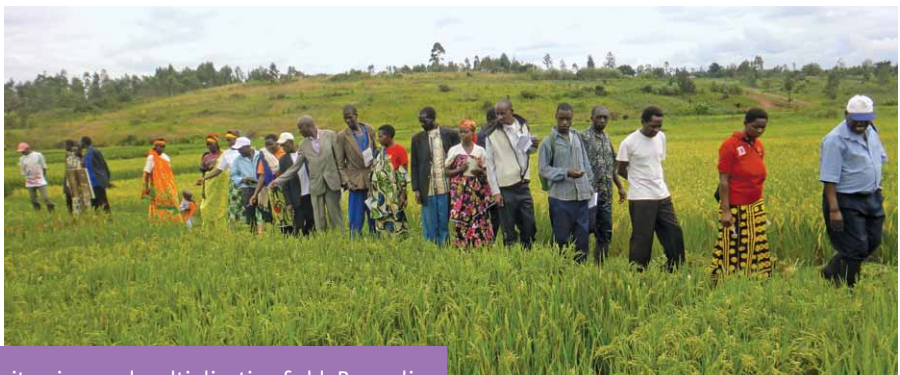
3.1 Introduction

Interventions aiming to increase availability of quality seed for smallholder farmers in developing countries often apply group-based seed production (Tripp and Rohrbach 2001). The most important reason to support group-based seed producers (as opposed to individuals) is because it is more efficient. In addition there is the underlying assumption of economies of scale: small-scale seed producers can better reach the market by bulking their produce, and obtain better access to services collectively rather than individually. Collective action is invariably more difficult to manage and sustain than individual action: group-based economic activities have a tendency to be discontinued once external support through development programmes ends. Hence, the question addressed in this chapter: Under which conditions is support to group-based seed producers more viable than support to individual seed producers?

3.2 Activities and approach

3.2.1 Types of seed producers existing and established by CATALIST 2

Table 3.1 presents the type of seed producers that existed before the project started and the newly-established categories of seed producers and their relative contribution to the total number of seed producers in each province/country at the beginning of the project.



Farmers visit a rice seed multiplication field, Burundi

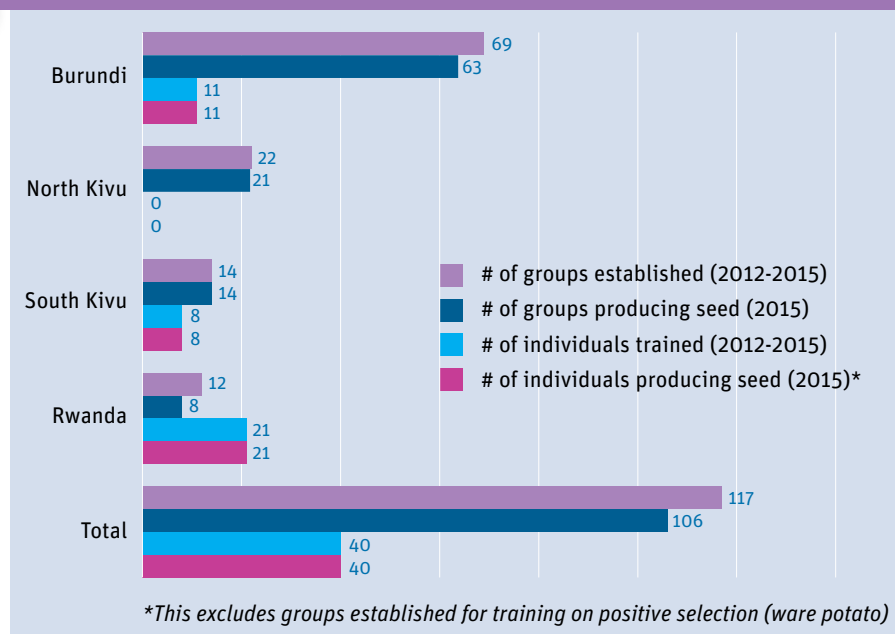
Photos: Simbashizubwoba Cyriaque

TABLE 3.1

Province/country	Group-based seed producers	Individual seed producers	Seed enterprises
Burundi			
Existing	Registered Producer Associations in which a group of farmers is specialised in seed production but not registered as seed producers	Registered individual seed producers	-
Newly established	Independent SPGs	Registered individual seed producers	-
Relative contribution to total (%)	85%	15%	0%
North Kivu			
Existing	Registered Producer Associations in which a group of farmers is specialised in seed production but not registered as seed producers	Registered individual seed producers	-
Newly established	Independent SPGs and specialised seed producers (not registered) that are part of a registered Producer Association	Registered individual seed producers	-
Relative contribution to total (%)	99%	1%	0%
South Kivu			
Existing	Registered Producer Associations in which a group of farmers is specialised in seed production but not registered as seed producers	Registered individual seed producers	-
Newly established	Independent SPGs and specialised seed producers (not registered) that are part of a registered Producer Association	Registered individual seed producers	-
Relative contribution to total (%)	45%	55%	0%
Rwanda			
Existing	Seed producer cooperative that supplies seed to their members and members of the agribusiness cluster	Registered individual seed producers	Seed enterprises with employees
Newly established	Seed producer cooperative that supplies seed to their members and members of the agribusiness cluster	Individual seed producers and individual entrepreneurs that started to produce seed	-
Relative contribution to total (%)	70%	25%	5%

The number of individuals and SPGs that were supported is presented in Figure 3.1.

FIGURE 3.1 NUMBER OF GROUPS AND INDIVIDUALS SUPPORTED



3.2.2 Evolution of seed producer groups

Support to seed producers started in 2013 and 2014. In many cases, support to SPGs continues through follow-up, coaching, and tailor-made advice. It is too early to draw definite conclusions on the durability of group-based seed production. However, some preliminary findings on viability is the percentage of SPGs that continue to produce seed at the end of the project.

For the SPGs that received support from CATALIST-2:

- In Burundi support to SPGs started in 2013:
 - 100% of rice SPGs continue to operate
 - 60% of seed potato SPGs continue to produce seed potatoes; and
 - 2 bean seed SPGs have decided to stop operating.
- In North Kivu and South Kivu support to SPGs for rice seed, seed potato and bean seed started in 2014:
 - 100% of SPGs continue to operate.
- In Rwanda support to SPGs started in 2013:
 - Rice seed groups: 40% of the Rice SPGs are still operational; 60% discontinued producing seed, but continued to produce rice for the consumption market.
 - Seed potato: 100% of the seed potato SPG still produce seed potato in groups
 - Bean SPGs: in the beginning there were 2 bean SPGs. In the meantime 1 has discontinued, and 3 new groups have been established.

3.3 Experiences and lessons learned

3.3.1 Groups are most effective for marketing, training, and acquisition of credit and inputs

SPGs that continue to produce bean, rice and potato seed do not necessarily perform all activities related to seed production as a group. In the figures below, seed production and marketing activities that are performed collectively and individually are presented per country.

FIGURE 3.2 % OF SEED ACTIVITIES DONE COLLECTIVELY AND INDIVIDUALLY IN BURUNDI

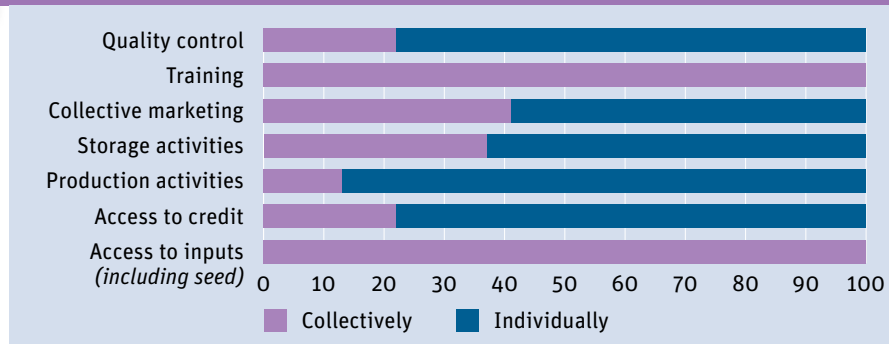


FIGURE 3.3 % OF SEED ACTIVITIES DONE COLLECTIVELY AND INDIVIDUALLY IN NORTH KIVU

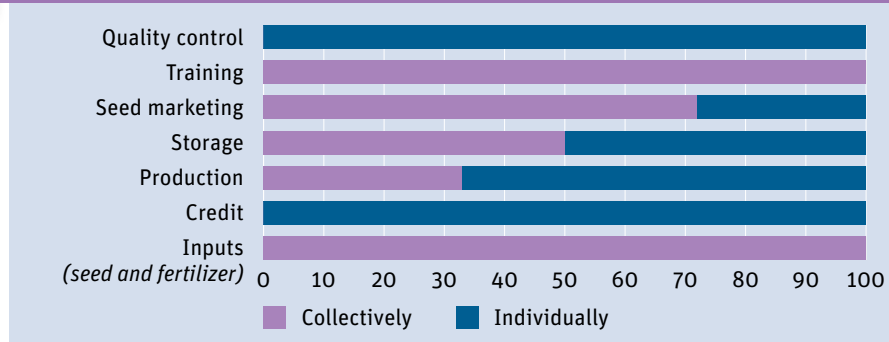


FIGURE 3.4 % OF SEED ACTIVITIES DONE COLLECTIVELY AND INDIVIDUALLY IN SOUTH KIVU

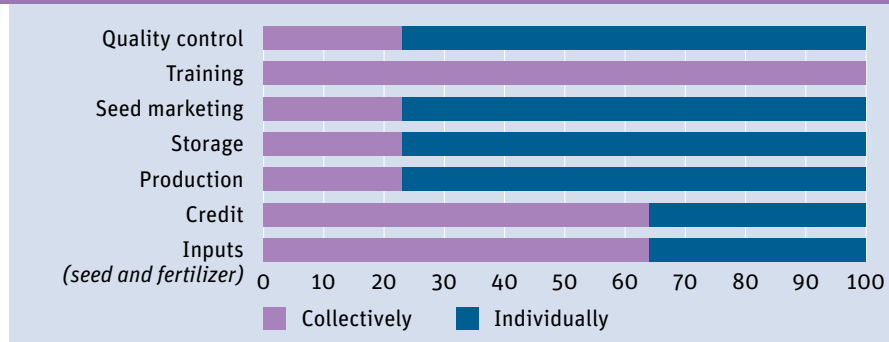
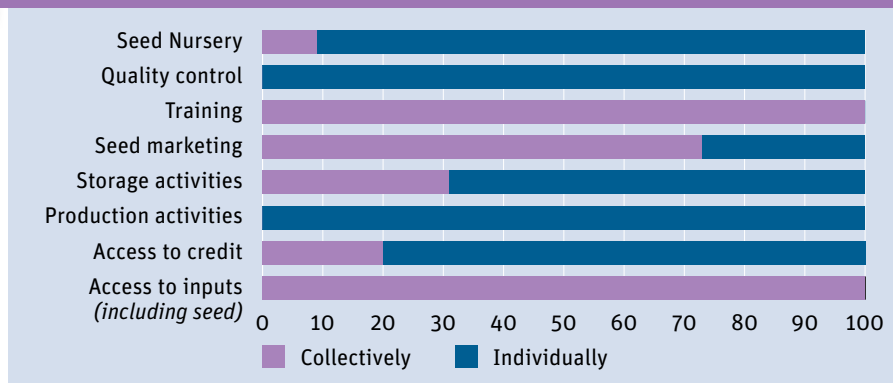


FIGURE 3.5 % OF SEED ACTIVITIES DONE COLLECTIVELY AND INDIVIDUALLY IN RWANDA



Figures 3.2-3.5 show that acquisition of inputs (including early generation material) and training are the two activities most performed collectively, followed by seed marketing.

Both collective and individual seed marketing is possible, depending on the nature of the crop and people involved. For selling to the ‘institutional’ market of NGOs and government contracts, bulk is needed and group-based marketing has an advantage. For selling to direct clients at farm gate, group-based systems do not provide much advantage.

3.3.2 Seed production related activities are more effectively performed individually

Most SPGs implement activities individually. It is more attractive to be responsible for your own plot than to be jointly responsible for a communal plot. This also means that seed producers have individual profit incentives for production.

Whether seed production is best done in group or individually is crop- and region-dependent. For seed potato, about 80-90% of SPGs in Burundi and Kivu (North and South) only form a group for accessing early generation seed (mini-tubers, pre-basic and basic seed) and in some cases to access finance through MFIs. Only in 10-20% of cases in Burundi do seed potato producer groups work together on a communal field.

In Rwanda there are many seed potato producer groups with a communal field. Given the high population density in potato production areas, individual farmers face challenges in accessing enough land to become RAB-certified seed producers. Hence seed producers form a group to become certified, and perform most production activities individually. Additionally, almost all group members have a separate plot where they produce potatoes or seed potatoes individually. These plots are not part of the registered seed production fields and farmers can decide for themselves what to produce (but most opt for seed potato), and where and how to market produce. In many cases, marketing is performed together.

Few farmers have access to enough irrigated land to meet the minimum requirement to become certified rice seed producers. In Burundi and Rwanda, land suitable for irrigated rice production is fragmented. Farmers generally own or have long-term access to small plots of land through public land tenure regulations. For certified rice seed production, it is necessary to combine different producers' plots into one larger plot. For efficiency reasons, seed certification services in Burundi for instance only visit plots of more than 0.5 ha. Hence, SPGs are formed by government programmes or development projects (such as CATALIST 2). In practice, SPGs jointly access: basic seed from the *Institut Scientifique Agronomique du Burundi* (ISABU); other inputs such as fertiliser and pesticides; and, in some cases, input credit. Actual seed production activities (i.e. sowing, fertilising, daily maintenance and harvesting) is done by each farmer individually. Seed is generally stored in collective seed storage facilities and seed marketing is often done as group. In some cases, SPGs have established a Quality Control Committee - responsible for controlling the quality during the production season. This is also the case in Rwanda.

In non-irrigated land in lower areas land ownership is less constraint. Especially in North and South Kivu farmers with large plots of land. Under these circumstances, larger individual seed enterprises exist. In South Kivu, some large land owners rent-out part of their terrain to smallholder farmers. In the case of a cassava cutting enterprise for example, smallholder tenants provide manual labour to the land owner, in return for using portions of land for their own production. At the same time these same smallholders form part of the clientele for clean cassava cuttings. This interestingly creates demand for high quality cassava tubers. However, the down side is that these daily labourers often do not access training on good agricultural practices. Smallholders are vulnerable to exploitation given they are depend on the larger land owner for: cuttings; cash income through day labour; and, access to land.

3.3.3 Establishing a group is easy; weak management often causes groups to dissolve

In all four project regions, SPG members left groups to continue producing and marketing seed individually. A number of SPGs discontinued seed production and continued with other activities, while other groups stopped functioning entirely. The reasons for discontinuation provide important insight into the dynamics of group-based seed entrepreneurship.

Recently established SPGs are inexperienced in organisational management, financial management, and group dynamics. SPGs supported by the CATALIST 2 project have thus experienced challenges, which at times have led to disappointment among members and discontinuation of seed production activities. Such challenges do not always lead to total discontinuation of the SPG, but to individuals leaving, groups splitting and a slow seed production professionalisation process. Box 3.1 describes the challenge of a SPG which is yet to realise expected seed production levels.

IFDC staff from Burundi observed that: “We have seen that when SPGs’ organisational capacity is well developed, the advantages of producing seed in a group become more visible to members as well. This relates to leadership, organisational management, financial management, and democratic decision-making. One of the key lessons is that besides the technical (and entrepreneurial) aspects of capacity strengthening, group dynamics are often overlooked and should be given much more attention. This is especially the case with farmers who have just started to produce seed and have limited experience of working in a group.”

BOX 3.1 GROUP DYNAMIC CHALLENGES IN A MAIZE SPG IN SOUTH KIVU

In Kalehe, Minova (South Kivu), CATALIST 2 supported Bweremana SPG (which is part of cooperative COPADI) in their efforts to multiply maize seed. The purpose of the support was to increase awareness about and production of improved maize seed varieties to avoid farmers re-using maize seed over and over again. The SPG constituted of 28 members, but their fields were dispersed. Hence, the first problem they encountered was that SENASEM did not approve their request to multiply maize seed, since one of the conditions is to have a minimum of 1 ha of land dedicated to seed production. Luckily, the SPG president, a woman with large plots of land available to her, allocated 2 ha of her land to seed production to be used by the SPG. The first season, the SPG received 60 kg of pre-basic maize seed and the required fertiliser through the project. The president was not involved in the daily activities during the production season, since she lived in Goma (far from Kalehe) and was occupied with other commercial activities at the time.

When it was time to harvest, the president decided that 60% of the harvest was hers, while the other 40% should be divided between the other 27 members. This decision created a conflict between the president and the other SPG members. They were not able to overcome their dispute, and decided to discontinue. However, the 27 other members decided to establish a new SPG. This time, they started with the establishment of a rule of conduct for their organisation and management of their resources. However, as the SPG members do not have the means to buy their own land, they rented a plot of 1 ha from another large scale farmer to continue their efforts to become professional maize seed producers.

Rukeba John



Maize harvest in Kalehe (2014), South Kivu

Photo: Rukeba John

3.3.4 A group approach can ‘slow down’ profit-oriented entrepreneurs

The most significant reason for seed producers to continue individually was transaction costs of working in a group. Over time, individuals that have benefited from seed technology and seed entrepreneurship trainings conclude that it is more profitable and effective to have their own individual enterprise. Alone they do not need to take into account that certain other members do not have the capacity, time, or interest to succeed in seed production. Moreover, productivity of communal fields tends to be lower than that of individual plots, as a result of a lower motivation to strictly follow good production practices for the common interest, rather than for individual profit. The case presented in Box 3.2 demonstrates how and why an entrepreneurial seed potato producer preferred to continue as an individual enterprise.

BOX 3.2 FROM GROUP-BASED TO INDIVIDUAL SEED POTATO PRODUCTION IN RWANDA

Nzitonda Nathan lives in Bigaragara (Bugeshi, Rubavu, Rwanda). Since 1995 he has been a primary school teacher. As a child of a polygamous family, he only inherited 0.1 hectare of arable land. On this land he has always produced Irish potato. Since 2013, Nathan has been a member of the seed potato producer group in his village, and as such he has participated in different potato production trainings organised by *Bureau d'Appui aux Initiatives Rurales* (BAIR) and IFDC.

In 2014, Nathan's workload on his potato plot became more intensive and profitable, so he decided to quit his membership of the SPG and to continue on his individual plot. The main reason for his decision was the fact that the revenues from his work with the producer group were much smaller than the revenues from his individually-managed plot. After his decision he increased his investments in his seed business to become an officially recognised RAB certified seed producer. Currently, he has a total of 4 ha under production, of which 3 ha belongs to him and 1 ha is rented. Besides seed potato and ware potato, he has also started producing maize and bean seed.

Semakuza Aloys



The banner of Nathan Nzitonda's seed potato enterprise in Bigaragara, Rwanda

Photo: Semakuza Aloys

3.3.5 Group size matters

Group size was the third factor identified to contribute to constraints in group based seed enterprises. Some groups were simply too large to be effective in commercial seed production and marketing. With more than 30-35 members, group based seed enterprises were too complex to manage.

3.3.6 Conditions under which group-based seed production is effective

For smallholder seed producers, access to inputs, including early generation seed, and agricultural credit can be facilitated through collective action in the form of an association, cooperative or SPG (box 3.3).

BOX 3.3

IMPROVED ACCESS TO EARLY GENERATION SEED THROUGH GROUP-BASED PURCHASE

In 2014, the CATALIST project and its partners supported six SPGs (Munyakondomi, Kasima, Kamikriki, Kasongwere, Nyabili and Magheria) in Lubero, North Kivu, to multiply mini-tubers to pre-basic, basic and certified seed potatoes. The GPS received 3,245 mini-tubers for multiplication. Additionally, SPG members were trained in technical production. After the first harvest, the group harvested 1036 kg of pre-basic seed potatoes.

The members of the six SPGs were surprised to produce such a high number of seed potatoes from the small amount they started with. Groups were very motivated to continue with this profitable activity of multiplying seed from clean mini-tubers. There was only one big problem: in DRC it is impossible to access improved varieties of mini-tubers, one has to travel to Musanze in Rwanda, which is expensive.

“I have a small amount of money to buy mini-tubers, but on my own I cannot pay for the costs involved to travel all the way to Musanze...” is what the majority of the members of the six GPS must have thought. After some internal discussions, they decided to put their money together and ask one representative to undertake the travel for the whole group. Everybody contributed according to their personal situation and demand, and together they could purchase a total amount of 19,182 mini-tubers to multiply in the season 2014B.

The following season, certain producers went on their own to Musanze, while the majority (most smallholders) once more collectively purchased mini-tubers.

Muyisa Marie Claire



Photo: Muyisa Marie Claire

The seed potato field of one of the six SPGs in Lubero, North Kivu

The advantage of training seed producers in a group is twofold. Firstly, it is much more efficient to organise group training rather than for individuals. Secondly, adults learn better from peers such as neighbours and fellow farmers.

3.4 Conclusions and recommendations

Group-based seed enterprises face unique challenges compared to individually-managed seed enterprises. Although CATALIST 2 largely provided support to SPGs, it was recognised that more opportunity should be provided in future interventions to support ambitious seed producing individuals. At the same time, CATALIST 2 experience shows there are also merits to group-based enterprises. In summary CATALIST 2 demonstrates that:

- A group approach is most effective for marketing, training, and acquisition of credit and inputs.
 - Training seed producers in a group is more efficient to organise. Moreover, a group approach encourages peer learning.
 - For smallholder seed producers access to inputs, including early generation seed, and agricultural credit can be effectively and efficiently facilitated through collective action in the form of an association, cooperative or SPG.
- In the case of highly fragmented land ownership, it is necessary to consolidate land to assure a viable professional seed enterprise; which requires collective action.
- Establishing a group is easy but weak management often causes groups to dissolve. It is necessary to pay sufficient attention to organisational and financial management of SPGs. Problems related to organisational and/or financial management are the most common reason for SPGs to fall apart.
- In seed production it is more attractive to be responsible for your own plot than to be jointly responsible for a communal plot. This also means that seed producers have individual profit incentives for production.
- A group approach can slow down profit-oriented entrepreneurs.
- It is advised to consider providing seed related training to more flexible groups of individual seed producers and candidate seed producers, who are merely together for the sake of receiving training.

References

Tripp, R. and D. Rohrbach (2001). "Policies for African seed enterprise development." *Food Policy* 26(2): 147-161.

4.1 Introduction

In almost all seed sector development interventions, action is organised around the production of high quality seed. However seed users should also be considered and may require attention in poorly developed seed sectors. The demand for quality seed is often underdeveloped.

The seed component of the CATALIST 2 project has promoted the use of high quality seed in addition to supporting seed producers to develop technical and entrepreneurial skills. The assumption is that besides addressing the supply of quality seed, specific efforts to promote the demand for quality seed contribute to professionalising the seed sector. This chapter investigates this assumption by trying to answer: *How can temporary project interventions effectively promote the demand for and use of quality seed?*

4.2 Approach and activities

4.2.1 Causes of low use of quality seed by smallholder producers

Poor availability of high quality seed is a major constraint for the use of high quality seed. Unavailability consists of the following categories: (1) the seed is not available at the location where farmers live (distance); (2) seed of the desired variety is not available; (3) seed is not available at the time that farmers need it.

Unawareness of the advantages of quality seed. Although farmers have a general notion of what is quality seed and what is not, this knowledge is often partial. Awareness of yield and financial benefits to the financial investment is not well known.

The **high price** of quality seed is another constraint for regular and widespread use by smallholders. Seed becomes expensive when there is insufficient quantity available and transaction costs of certification are high. Even when the price is reasonable, the **limited purchasing power** of smallholder farmers may inhibit the use of quality seed.

Unawareness of seed availability. Even when quality seed is available, this may be unknown to clients with the desire to purchase seed, resulting in seed stocks not sold, while demand exists (see Box 4.1).

BOX 4.1**BUILDING RELATIONS BETWEEN SEED PRODUCERS AND SEED USERS IN NORTH KIVU**

Rice seed productivity in the Kiatenga valley has declined as a result of the parasitic weed, *Striga*. To contain the parasite and avoid it spreading to other rice growing areas, rice seed production in the valley was discontinued. Seed production was re-focused to Kiatsaba and Oicha, areas not affected by the weed.

Seed producers from Kiatsaba and Oicha have been producing seed of a newly introduced variety, Nerica 4, which gives better yields in the larger Beni area. However, marketing their seed has been difficult. Kiatenga valley rice farmers are potentially important clients, but are not aware of the availability of seed, nor of the merits of the new Nerica 4 variety.

This changed when one of the seed multipliers, Mr Yoasi, took the initiative to travel to Kiatenga valley and promote his Nerica 4 seed to potential clients. After the first visit, rice farmers ordered the first small quantity of Nerica 4 rice seed.

This experience shows that direct contact between seed producers and potential clients is essential. Seed producers' personal marketing efforts can convince potential clients to consider a new product. Seed sector development interventions can support emerging seed producers in their efforts to popularise their product by approaching farmers and selling small samples of their product for local testing by potential clients.

Kamale Kambale Jean Marie



Photo: Kamale Kambale Jean Marie

A participant of the training measures the rice plant height, Kiatenga, North Kivu

In the particular case of subsidised seed in Rwanda, the **complex purchase procedure** can be a reason to refrain from purchasing quality seed.

4.2.2 Increasing awareness about the use of quality seed

The CATALIST 2 project has implemented a series of activities to contribute to awareness creation on the importance of using quality seed.

The most common method for awareness creation was the use of demonstration plots. The first type of demonstration plots focused on integrated soil fertility management (ISFM). Full packages of recommended inputs and agronomic practices were compared with farmers' conventional practice. Through in-field comparison between local seed of unknown origin and improved seed, the importance of high quality seed was integrated into these ISFM demonstrations.

In a second type of demonstration plots, the effect of high quality seed was compared to local seed, but this time using the same agricultural practices. The aim was to emphasise the yield advantage of using high quality seed. Training on positive seed potato selection is an example of this type of demonstration. Farmers compared the yield of their own saved seed with seed derived from purposely-selected healthy looking mother plants, with quality seed from a seed multiplier. Another example is promoting the use of high quality bean seed, in which the yield benefit of high quality bean seed was tested by farmer groups. Similar trials for rice were also implemented.

In some instances demonstrations were planted and maintained by seed multipliers, as a deliberate action to promote their produce. In the case of ISFM the demonstration plot was managed by a selected 'lead farmer' based on his or her recognition as a skilled and respected farmer in the community. Other demonstration plots were planted and implemented by groups of ordinary farmers, like in the case of positive selection for seed potato. In all instances the CATALIST 2 project provided technical support to assure a good comparison and collection of minimum yield data.

Information posters on billboards next to the street were developed to provide information on the advantages of using quality seed, and to advertise the produce of seed sale points.

In Burundi and North Kivu a radio programme was developed to elaborate on the importance of using high quality seed, in this case for rice. An advert was created from the radio programme, which was played regularly on local radio to direct clients towards the seed sellers.

4.2.3 Facilitating marketing of quality seed

Besides awareness creation, the seed component of CATALIST 2 also worked to create linkages between seed users and seed producers to facilitate quality seed marketing. For instance, seed multipliers brought their produce to centrally-located ‘seed fairs’ to promote to potential clients. Further meetings helped to establish direct contact between seed producer and client, either by inviting seed multipliers to farmer group meetings, or through seed multiplier open days at their premises.

A specific mechanism to support the use of high quality seed is providing seed on credit. In one farmer association a specific developed seed-fertiliser credit product allowed rice farmers to access inputs required for production intensification. This stimulated seed demand.

The project experimented with easily-recognisable sale points for quality seed next to frequently-visited markets or along the roadside. This helped bring seeds closer to potential clients. In addition leaflets accompanied seed sold with information on the variety and advice on good agricultural practices.

Seed distribution to producers using a subsidised seed prices, which was done on a small scale in Rwanda, helped to facilitate access to quality seed.

Developing distinctive packaging, well-adapted to client demand also helped to promote quality seed. For rice in North Kivu, 15 kg packages were introduced, which is the same quantity as farmers are used to buy in the local market. Small packages appealed to farmers curious to first try a new variety or seed source.

In Burundi and Rwanda, seed users were assisted in forecasting their seed demand, and making an order to nearby seed producers pre-season. This allowed seed producers to better plan the size of their production.

4.3 Experiences and lessons learned

4.3.1 Perceived effectiveness of different actions to promote the demand for quality seed

When making investment decisions about how to effectively promote the use of high quality seed, CATALIST 2 experiences can provide some guidance. Table 4.1 summarises each intervention and its advantages and disadvantages.

TABLE 4.1 PERCEIVED ADVANTAGES AND DISADVANTAGES OF QUALITY SEED PROMOTION AND MARKETING OPTIONS

	Intervention	Advantages	Constraints	Relative importance*
1	Demonstration plots	<ul style="list-style-type: none"> • Basis for changing farmer seed management behaviour 	<ul style="list-style-type: none"> • Intensive to facilitate • Active participation of farmers superior approach, but difficult to scale up or out 	xxx
2	'Open farm days'	<ul style="list-style-type: none"> • Directly links buyers to producer • Builds trust • Helps build client database • Cheap to organise • Local, close to potential clients 	<ul style="list-style-type: none"> • Open day visitors need to make an effort to come to the farm • Only product of a single seed farmer on offer 	xxx
3	Seed fairs	<ul style="list-style-type: none"> • Opportunity to combine information sharing with seed selling • Links seed sellers to buyers 	<ul style="list-style-type: none"> • Risks becoming a form of entertainment rather than buyer-seller market • Can be costly 	x
4	Radio publicity	<ul style="list-style-type: none"> • Wide reach • Cost-effective per person reached • Superficial and in-depth information possible 	<ul style="list-style-type: none"> • Behavioural change needs more than only radio • Expensive per spot, beyond reach of smaller seed producer 	xx
5	Information boards and leaflets	<ul style="list-style-type: none"> • Attracts attention • Precise information • Cheap once developed • Goes well with selling points 	<ul style="list-style-type: none"> • Not enough for behaviour change • Difficult for illiterate people • Requires professional development and printing 	xx
6	Seed sale points	<ul style="list-style-type: none"> • Brings seed close to customers • Opportunity to provide additional information • Can sell seed of multiple producers 	<ul style="list-style-type: none"> • Needs to be continuously supervised 	xx
7	Free seed distribution	<ul style="list-style-type: none"> • Short term benefit: farmers access quality seed Appropriate in emergency situations. 	<ul style="list-style-type: none"> • Dependency, to be avoided 	0
8	Small and/or distinctive packaging	<ul style="list-style-type: none"> • Promotes experimentation by farmers • Improves marketing • Traceability possible 	<ul style="list-style-type: none"> • Packaging required Cost of packaging 	xx
9	Demand prediction and pre-ordering	<ul style="list-style-type: none"> • Market security 	<ul style="list-style-type: none"> • Intensive work • Still requires convincing farmers first 	xx
10	Seed credit	<ul style="list-style-type: none"> • Makes seed more accessible 	<ul style="list-style-type: none"> • Credit management requires specialist skills 	xx

* xxx = essential action; xx = effective complementary action; x = optional action; 0 = ill-advised activity

When considering different options for promoting use and marketing of quality seed, some were considered more effective than others. Success requires a combination of efforts as different activities are mutually reinforcing. Demonstrating cost benefits of regular high quality seed use through learning plots managed by ordinary farmers in combination with seed producer ‘open farm days’ are the basis for other efforts. More ‘marketing-oriented’ activities are re-enforcing and complementary, such as radio announcements, leaflets, creating sales points and placing information on billboards along the roadside. Credit and supply/demand planning are intensive additional activities which can improve seed sector functioning.

1 Demonstration plots

Demonstrations managed by a group of farmers were considered the most effective for promoting the use of high quality seed. These ‘learning plots’ utilise the principle of learning by doing. Farmer groups can organise demonstration days to expose a larger group of beneficiaries to quality seed. Demonstrations by lead farmers were considered less effective because lead farmers are by definition different from the average producer. Lead farmer demonstrations allow others to watch but not to practice. This may result in visitors’ perceiving practices as less suitable for the average producer. When seed entrepreneurs implement demonstration plots, the advantage is that while they primarily demonstrate the added value of quality seed, they simultaneously start the marketing of their seed (‘the natural marketing effect’). In South Kivu for example, demonstration trials assisted in the promotion of a new variety (see Box 4.2). The fact that such trials were subjective was not a major concern of seed clients.



Harvesting of rice from a demonstration plot, Burundi

Photo: Mbarushimana Jean Claude

BOX 4.2**DEMONSTRATIONS TO PROMOTE QUALITY SEED OF A NEW VARIETY**

In the Rusizi plain in South Kivu, farmers prefer a short-cycle rice variety, and the market demands aromatic varieties. In Rwanda the variety Fashingabo was preferred by rice producers. CATALIST 2 tested Fashingabo rice in participatory variety trials and simultaneously promoted the variety in demonstration trials, comparing it with locally popular varieties. Demonstrations created an almost instant demand for Fashingabo, and a number of seed producers were quick to respond to this demand.

The involvement of agricultural researchers in demonstrations was limited. This resulted in a number of constraints. The variety has not been placed on the variety list, and thus remains informal, which creates constraints for seed certification. As the variety remains informal, no pre-basic seed is produced by INERA, the national research organisation.

Demonstration trials are a good way to promote a new variety. Simultaneously however, the mandated organisation for variety testing and release needs to be involved. This is to assure formalisation of the newly introduced materials as quick as possible and for inclusion of the variety in early generation seed production as well as certification schemes.

Byakombe Jonathan and Rukeba John

Demonstration trials show other production practices and options to producers. In some instances the project chose to demonstrate a package of improved options, of which high quality seed was one. A disadvantage of this is that producers will not be able to judge the added value of high quality seed. This could be solved by a comparison of seed sources in a small plot, next to a larger plot comparing a package of good agricultural practices. This also provides useful data for a participatory cost-benefit analysis of quality seed use, as a part of the learning experience.

Demonstrations are expensive. Despite the fact that farmers contribute their land, labour and sometimes inputs, demonstration plots require intensive supervision by agricultural extension workers, farmer organisations or local NGOs. Hence, the use of demonstration plots is most appropriate for larger programmes with the means to organise demonstrations on a significant scale. Demonstrations are effective in increasing demand for high quality seed and so justify extra costs. Considering the intensive field support required for the initiation, follow-up and interpretation of demonstration trials, partnerships are essential. The CATALIST 2 project has partnered with public, NGO and farmer organisations with agricultural advisers at grassroots to maximise its reach in the field. This also maximises the probability of post-project continuation of similar demonstrations.

2 Open farm days

Building client-supplier relationships is a key element of any strategy to improve quality seed marketing. Open farm days organised by seed producers were considered highly cost-effective in building relations and promoting high quality seed

marketing and use. Open farm days particularly focus on producers in the proximity of the seed producer, which mean visitors are more likely to be clients than random visitors to seed fairs. Furthermore an open farm day contributes to trust-building between seed clients and seed producers. Potential seed clients are able to appreciate if a seed producer is professional and producing the highest possible quality seed. As a local event, expectations are modest and organisational costs can be kept low. A major result of open farm days in North Kivu was that seed producers used it as a way to build up a database of telephone numbers of potential seed clients.

In addition to open farm days, including local enterprises' seed in farmer-managed demonstrations, and the physical presence of the seed producer during associated training sessions is a cost-effective mechanism to link seed producers and their clients.

3 Seed fairs

Seed fairs were less effective for promoting high quality seed. Although seed fairs are meant to bring together seed producers and seed clients, experiences in the different project areas show that actual volumes sold at the fairs were low. A seed producer in Burundi for example brought an important stock of bean seed to the seed fair, but left without having sold a single kilo.

One of the reasons why seed fairs were not effective might have to do with the way different partner organisations interpreted the objective of a seed fair. In most cases, a seed fair was organised as an 'agricultural show', where different new technologies are displayed for visitors. In this interpretation, the objective for visitors is to be entertained and surprised, not to buy anything.

For effective promotion of the use of quality seed, a more modest interpretation is advised, focusing on local events where improved seed of different varieties and crops is promoted.

4 Radio publicity

Local radio was used by local seed producers in North Kivu (see Box 4.3). The experiences were very positive. An effective strategy was combining longer radio programmes, which explain the added value of high quality seed, with shorter clips marketing the seed of local multipliers.

Almost every household in North Kivu has access to a radio, and the channels in local language are very popular. The same announcements that are prepared for radio can also be used in events and training sessions, to further increase their impact on the awareness of both the added value and availability of high quality rice seed in North Kivu.

Video clips for television are also an option but costs should not be underestimated.

BOX 4.3**PROMOTION OF RICE SEED THROUGH LOCAL RADIO IN NKIVU, BENI TERRITORY, NORTH KIVU**

During 2015, seed producers supported by CATALIST 2 produced a large volume of NERICA 4 quality seed. Seed producers realised that the variety was not well known amongst farmers and thought of a strategy to introduce the variety to potential clients. With the support of the project, seed producers developed a short radio advert and a longer radio programme in the local language Kinande, mixed with Swahili and some French. The publicity spot and the longer programme were broadcast twice a week for four months. The radio broadcast discussed the performance of the variety and provided information about seed selling points and who to contact including telephone numbers.

Immediately after the radio spots the seed producers, as well as the agronomist involved, would receive telephone calls from interested clients, while farmers living near the seed producers contacted the seed producers in person for more information or to place orders. As a result the seed producers have been able to sell their entire stock, and have received advance orders for the 2016.

Furaha Kasi Rosette

5 Information boards and leaflets

A simple method used to promote use and marketing of high quality seed was the installation of information boards next to the road and close to seed sale points. Posters provide information about seed varieties available and yield potential. These information boards were useful, especially because of their low cost and continuous visibility.

Similar information was communicated through leaflets to producers. Well-illustrated leaflets with concise messages in local languages were effective for promoting the use of high quality seed. The cost per leaflet is modest but since leaflets are only effective if they are used on a large scale, total costs can increase significantly. Another challenge with leaflets is that they are not effective for illiterate farmers unless they use pictures only.

6 Seed sale points

Seed sale points improved seed marketing. Seed sale points do need to be manned by someone during the season of high seed demand, which is a considerable investment for seed producers.

7 Free distribution of seed

In Rwanda, seed was distributed for free by the Crop Intensification Programme. This made it difficult for seed entrepreneurs supported by CATALIST 2 to sell their seed. Free distribution of quality seed is a poor investment of resources because it distorts the market and re-enforces producers' dependency on project interventions. If the objective is to convince producers that quality seed is a worthwhile investment, free distribution does nothing to that end.

8 Small and distinctive packaging

Instead of bulk packages, the use of small packages increased demand for quality seed because seed users can buy seed in smaller amounts. However, it is important to do a cost-benefit analysis of small packages compared with additional benefits.

9 Planning of supply and demand

In Burundi a positive experience was the planning of demand for and supply of seed (see Box 4.4). If seed producers have pre-season seed orders, they are better able to anticipate, and assure availability of this seed at the right time. It will provide seed producers with a reduced risk of non-sold stocks and allows them to make better investment decisions.

BOX 4.4 PLANNING OF SEED DEMAND CREATES MARKET SECURITY FOR SEED PRODUCERS

The rice seed producer association Bwiza Bwa Ninga faced difficulties in selling its produce. At the same time it is surrounded by potential clients, who are organised in rice producer cooperatives such as Terimbere, Twizigirane, Girumwete dukore, Assopro Mpanda, Assopro Buramata, Assopro Ninga and others.

Since 2014, these cooperatives have been supported to improve the planning their agricultural operations, including their seed needs. Cooperatives have started to make group orders of seed from the Bwiza Bwa Ninga seed producer association. These group orders have allowed the association to increase its volume of production, and have assisted in reducing their marketing risks, as the orders are placed pre-season.

Mbarushimana Jean Claude



Rice seed production field, Burundi

Photo: Mbarushimana Jean Claude

10 Input credit

Providing input credit is a tool of major importance for the increased use of high quality seed. However credit provision requires expertise that most development projects lack. Credit is best provided by local institutes with the relevant expertise, to assure sustainability as a result of a good repayment rate. Still, one farmer association successfully introduced seed credit for its members, in response to unsold seed stocks of their members who had specialised in rice seed production (see Box 4.5).

BOX 4.5 FERTILISER AND SEED CREDIT SCHEME CONTRIBUTES TO MARKET CREATION FOR QUALITY SEED

Rice cultivation in the Bugarama valley in Rusizi district, Rwanda covers 1500 ha, involving more than 6000 producers, organised in four producer cooperatives. One cooperative, KOJMU, with 1400 members, is promoting rice seed production through an association to satisfy its members' needs, as well as other cooperatives in the valley.

KOJMU developed a fertiliser credit scheme, in which all its members had access to fertiliser, to be paid for after harvest; a facility used by virtually all its members. In the first harvest season on 2015 (2015A), quality seed was added to the credit facility, with an immediate participation of 43% of KOJMU's members. Expressed demand for 2015B had increased as more farmers understood the option to include quality rice seed in the input credit package.

Inclusion of quality seed in the cooperative's input credit scheme has created a sizeable and reliable market for the seed producer association. It provides a solid foundation for seed producers, which allows them to further build their seed enterprise.

Ndorimana Modeste



Deep Placement of Urea fertiliser
in a rice field, Rwanda

Photo: Ndorimana Modeste

BOX 4.6**SEED POTATO PRODUCTION AND SEED POTATO MARKETING IN RWANDA**

During the first three years of the project in Rwanda, 11 entrepreneurs in the area of Musanze built greenhouses for mini-tuber production and 29 seed potato producers groups received training and support to improve their production of different generations of seed potatoes, from pre-basic to commercial seed. Little attention was paid to seed potato marketing.

Towards the end of the project, intermediary seed potato merchants were buying seed potatoes at harvest, storing and germinating them, and selling them to farmers. These merchants were also selling pre-germinated seed potatoes at planting time in local markets. The volumes of seed potatoes traded by these intermediary traders are substantial. For example, the women farmer cooperative KUNDISUKA sells 40 tonnes per week at the Shaba market, and Mr Rudashanya sells 508 tonnes of seed per week during the peak season. Unfortunately the quality of the seed marketed through this system is unknown.

This category of seed merchants was overlooked as an entry point for interventions in the seed sector, as all attention went to quality seed production. This is a missed opportunity as these seed potato traders are already integrated in the market and serve a large proportion of farmers. These traders could have been instrumental in marketing the quality seed produced by seed multipliers supported by the CATALIST 2 project.

This example shows that seed marketing systems need to be assessed early in the project. Existing seed marketing systems can be instrumental in assuring additionally produced volumes of quality seed reaches end-users.

Lindiro Reverien

4.3.2 Striking a balance between quality seed supply and promoting demand

Increased production of quality seed does not automatically lead to more clients and farmers' increased use. This is in part because potential clients do not know the seed is available and that they need to frequently renew their seed stock to increase their productivity. Another important element is the imperfect awareness of the costs and benefits of the use of high quality seed.

At the start of the seed component of CATALIST 2, attention for promoting the demand and marketing of quality seed only became earnest the moment seed producers were confronted with unsold stocks, as explained in Box 4.6. Especially for rice, and to a lesser extend beans, seed producers and project staff realised that specific action was needed to get their quality seed sold. In retrospect, project staff regretted there the promotion of quality seed did not get the desired attention. Increased seed demand provides a much needed incentive for commercial seed producers to continue to invest in innovating their seed enterprises

In practice, seed marketing efforts and activities that promote the use of high quality seed can go together, and both objectives are served by the same activities. Seed sector interventions should combine seed extension activities with seed marketing activities. This demonstrates the added value of using high quality seed and promotes sales of emerging seed entrepreneurs' produce.

4.3.3 Seed traders are influential stakeholders in the promotion of the use of quality seed

A missed opportunity is that seed traders were not considered as important project partners. In all three countries the seed market is not very well developed, and seed producers in many cases market their own seed. Some seed traders do exist, but they were not involved. In Rwanda it was later realised that this meant an important component of the existing seed potato market remained untouched by the project intervention.



Photo: Kamale Kambale Jean Marie

Seed multiplication site, North Kivu

4.4 Conclusions and recommendations

- In CATALIST 2, quality seed production received most attention, while seed marketing and awareness creation started much later. In retrospect, production and use depend on each other: it would have been better to work on both activities from the start.
- While some interventions to promote the use of quality seed are more effective than others, the key is to combine different interventions. Few interventions will be effective in isolation. Demonstration or learning plots and open farm days organised by seed producers can be considered as a good basis for awareness creation on the advantages of the use of quality seed. This could be complemented by marketing-oriented interventions such as radio announcements, leaflets, sales points and information boards. Credit and planning of supply and demand are intensive but reinforcing interventions at the institutional level that contribute to the wider functioning of the seed sector.
- Building client-supplier relationships is a key element of any strategy to improve the marketing and use of quality seed. Building this relationship can be realised through different types of efforts, such as the inclusion of local seed enterprises' seed in farmer-managed demonstrations, and the physical presence of the seed producer during associated training sessions.
- When a seed market is already developed, seed traders need to be considered as influential partners to improve the existing seed market. Excluding them as partners is a missed opportunity for sustainable change because they are locally-present and often connect farmers, seed producers, and other projects and stakeholders.

5

Lessons learned regarding gender and seed sector development

5.1 Introduction

Women play a pivotal role in agricultural production and rural household food and nutrition security. Table 5.1 presents some background information on the division of labour in different activities related to seed production, postharvest handling and seed marketing for the crops that CATALIST 2 worked with.

TABLE 5.1 GENDERED TASK DIVISION PER ACTIVITY FOR RICE AND BEAN SEED PRODUCTION AND POTATO AND CASSAVA MULTIPLICATION

Crop (seed)	Rice		Potato		Beans		Cassava	
	Men	Women	Men	Women	Men	Women	Men	Women
Land preparation	X			X	NK	BU, RW, SK	X	X
Sowing	SK, BU	RW, NK		X		X	X	
Daily maintenance (weeding, watering, crop protection)	X (irrigated)	X (non-irri- gated)		X		X		X
Pest and disease management	RW	NK, SK, BU	NK	SK, BU, RW	NK	RW	RW	-
Harvesting	X	X	X	X	NK, SK, BU	X	X	
Postharvest manage- ment (threshing)		X	-	-		RW		RW
Transport to storage site	X		SK, BU	NK, RW	SK, BU, RW	NK	X	X
Selling	X		NK, RW, BU	SK	NK, RW, BU	SK	X	
Financial manage- ment of profit	X	NK	X	NK	X	NK	X	NK

X means in all countries the identified gender performs that particular task, - means that particular task is not performed. NK = North Kivu, SK = South Kivu, BU = Burundi, RW = Rwanda

Although both women and men are involved in seed production, most daily routine activities are women's responsibility. Hence, as producers and users of seed, women are essential for successful seed sector interventions and for a positive impact on agriculture in general. In this chapter we seek to answer: *How can seed sector interventions be gender sensitive so that the potential of women's contribution to the seed sector is realised?*

5.2 Activities and approach

When the seed component of the CATALIST 2 programme started there was no explicit focus on gender or women seed producers. Neither as users, nor as seed producers were women explicitly targeted. Rather, the project selected farmers based on prior experience in seed production, land ownership, and potential to become viable entrepreneurs (see chapter 2). As a result, approximately two out of the three beneficiary SPGs were dominated by and/or managed by male members. Out of the total individual seed producers that received support, only one single beneficiary was female.



Women are weeding a demonstration plot on good agricultural practices, Burundi

Photo: Simbashizubwoba Cyriaque

5.3 Experiences and lessons learned

5.3.1 Why are women invisible in seed production and seed entrepreneurship?

“Women are often referred to as the ‘daily labourers’ in smallholder seed production”. This quote aptly summarises the situation in the four project regions: women do most of the work on the land, but they do not own the product. Why do we see so few female seed entrepreneurs?

Weak economic position and limited access to production factors

Based on CATALIST 2 project experience, women face several challenges to becoming professional seed producers. Firstly, generally in the context of emerging economics and smallholder farmers, women have a relatively weak economic position compared to men. This is true both for female headed households (FHH) and women in male headed households (MHH). Compared to men, women have limited access to productive assets such as land, credit, inputs and paid jobs. In MHH, women often have limited say with respect to land and labour allocation. Specifically in Burundi, women face serious challenges in accessing credit and land. Credit is often provided to the household head, who will decide how to use it. If women are interested to start seed production, their husbands need to approve this request. Especially the limited access to land is a major disadvantage in seed production, as for professional seed production, minimum requirements are put in place to assure inspection can be done efficiently.

Intra-household dynamics hamper women becoming entrepreneurs

Women in Male Headed Households face several challenges to start professional seed production. Husbands that do not see the advantage of their wife becoming a seed producer will not support them in this endeavour. Sometimes men will not support their wife starting a business, or starting an activity for which she has to travel outside the village (see box 5.1).

BOX 5.1 CHALLENGES OF BEING A FEMALE SEED PRODUCER, SOUTH KIVU

The SPG Kamisimbi in Walungu district, South Kivu consisted of married women who were interested to start multiplication of improved bean varieties.

Encouraged by IFDC, the women began putting the right conditions in place for the first production season in 2014. They secured enough seed, adequate land and all committed their time to ensure the first season would be a success. However, women needed cash money to purchase other inputs such as fertiliser and materials. Women thus decided that it was necessary to visit the Saving and Credit Cooperative nearby to negotiate a loan. It is not commonly accepted for married women in Walungu to visit the bank without permission of their husband. So women sought their husbands approval to go to the bank. After this, the majority of the women decided to quit the SPG. Their husbands did not allow them to go to the bank and disapproved of their engagement in seed production. Women continued with their daily activities at home and on the farm.

Kulimushi Faustin

Heavy work burden

Due to women's childcare and domestic responsibilities, women are often overloaded with time-consuming tasks requiring their attention. Unless women are released from other tasks, or if they specifically prioritise seed production activities, there is little opportunity for women to extensively engage in time-consuming seed production activities. Childcare responsibilities and lack of time also hamper women's participation in training activities that are far away and take more than two days. In South Kivu, even though women were invited to trainings, they did not show much interest in seed production because it would take too much of their time.

5.3.2 Targeting women requires extra effort

The project did not take into account the fact that women have a weaker economic position than men. Focusing on advanced entrepreneurs excluded most women because they could not make the required initial investment to become seed entrepreneurs. Specifically in Burundi, project staff realised that access to land and credit in particular constrained women. Hence, women were implicitly excluded from seed production support.

“If women had the chance to increase their responsibilities and decision-making power in the organisations of which they are member, they would also be able to effectively contribute to quality seed production. Many women currently feel discouraged to do so. Women should get this chance as well!” (Officer of a partner NGO in Burundi)

Women were often excluded from invitations to participate in project activities. When developing project budgets at IFDC, there were no specific budget lines reserved for extra costs incurred to improve women's participation. For instance, women that wanted to participate could not bring their children because there was no budget for the extra costs this would incur. This shows a bias towards organising training that fits to men's schedules and interests, and then seeing accounting for women as 'extra'.

Farmer training invitations are normally addressed to the board of a cooperative/association. As these boards often consist of men, it is more likely men are sent as representatives. At the household level, invitations are normally addressed to the household head, again this is often the man. These are reasons why women's participation in trainings is often limited.

During the planning stage, there was no specific action to increase the likelihood that women could participate. Trainings were often planned in central locations far away from where farmers live, and in some cases took multiple days. This made it difficult if not impossible for many women to participate.



A female farmer overlooks her field, North Kivu

Photo: Kamale Kambale Jean Marie

5.3.3 Promising attempts to support women as seed users and seed producers

In December 2013, IFDC staff received gender training. This helped to raise awareness among staff about the importance of involving women in activities related to seed production and marketing. The training was most effective when it addressed increasing efforts to enable women's participation in training sessions and for women to start a SPG. This resulted in increased women's participation in trainings, and an increase in SPGs managed by women. For instance, in Rwanda and Burundi, SPGs composed of men and women were prioritised above SPGs that consisted of men only. In North Kivu, women's participation in trainings was not much of a problem, so no further action was needed. For North and South Kivu, specific efforts were made to link women SPGs to potential markets and clients. It was realised that for many married women, finding clients and (new) markets for their produced seed was difficult due to their obligations and cultural restrictions on travelling to other towns. Hence, IFDC partners worked with women SPGs to link them to potential clients in the surrounding areas. This was effective and much appreciated by the women groups as well as the seed clients. In Burundi and Rwanda, efforts were also made to increase the number of women in SPG decision-making positions. Lastly, project staff realised that women are potential clients of quality seed as well, so efforts to create awareness among female farmers on the importance of quality seed were increased.

“In December 2013 we received gender training. After training, we were much more aware of what we could and should do. We started to change our approach. However, the project was already on-going, and for some interventions it was too late to really make a difference. It would have been helpful if the training was followed-up by back-stopping and practical advice on how to deal with difficult issues that we faced along the way. Due to the fact that the gender expert was no longer available for the project, we could not ask for advice.” (IFDC staff)

5.4 Conclusions and recommendations

- Since women face constraints to becoming fully-fledged seed entrepreneurs, it is important for a seed sector project to make a conscious and explicit choice whether the project intends to target women seed entrepreneurs or not. Targeting women in seed production requires specific and additional efforts and thus resources.
- If a project or programme aims to improve the technical capacity of smallholder farmers to produce quality seed, it is important to analyse the constraints for men and women to become involved in seed production and seed marketing. In the Great Lakes Region, women have limited access to productive assets such as land, credit, inputs and paid jobs. Hence, supporting women's groups to access credit, inputs and markets is a promising approach to increase women's participation in seed production.
- Women are often referred to as the 'daily labourers' in smallholder seed production. Women do much of the work but do not own the product. Hence seed extension and seed production training is more effective if women are enabled to participate.
- Ensuring female participation in project activities requires extra effort. For example:
 - Including a specific budget to be gender sensitive (e.g. for women that want to take their small children to training).
 - Addressing both husband and wife explicitly in the invitation to trainings. By addressing the husband only the wife is not invited; by addressing the wife only the husband is also excluded.
 - Organising trainings close to where farmers live and make sure the timing and duration of trainings are convenient to women and men.

Integration of seed sector development in an value chain approach

6.1 Introduction

The seed sector does not operate in isolation from the agricultural sector. It is intrinsically linked as it provides an essential input for agricultural production. The demand for seed is determined by the consumption value chain. Following this logic, in the CATALIST 2 project, seed sector development was integrated into an overarching value chain development logic.

In this chapter this decision is reflected upon, and CATALIST 2 project experiences are analysed to support future decision making on project design. The question debated in this chapter is: *What are the advantages and inconveniences of integrating a seed sector component in an overarching value chain approach?*

6.2 Activities and approach

CATALIST 2 was designed based on the conclusion that working on ISFM is not sufficient for increasing food security: seed sector development is required as well. The case of the rice consumption value chain in Rwanda illustrates this point (Box 6.1). Furthermore, increasing productivity alone does not reduce poverty. Facilitating consumption value chain development provides further opportunities for improved income and food security.

The CATALIST 2 project's main emphasis was consumption value chain development, with seed sector development as one of the components. Hence, implementing the seed component was shaped by the overarching consumption value chain approach of the whole project, in which actors in a given geographic area are brought together to discuss how to improve the performance of the commodity chain. As part of these discussions, seed related constraints and opportunities are also identified. The seed component of the project responded to the identified constraints and opportunities.

BOX 6.1**AVAILABILITY OF QUALITY RICE SEED NECESSARY FOR RICE CONSUMPTION VALUE CHAIN DEVELOPMENT IN RWANDA**

CATALIST and CATALIST 2 supported rice production intensification in Rwanda. It became apparent that low seed quality was increasingly a constraint to productivity. As a response CATALIST 2 initiated support to rice seed producers.

The project promoted the production of rice varieties Basmati 370 and Fashingabo. These two varieties have high market demand because of their aromatic flavour. But they were disappearing from production areas as a result of continuous seed recycling and the associated genetic degeneration.

The commercial multiplication of the two seed varieties allowed rice producers to access quality seed. On average 9 tonnes of seed are produced and commercialised each season. Improved access to quality seed, in combination with SRI training has contributed to rice producers productivity increase from 5.3 to 6.9 tonnes per ha because of CATALIST 2.

Ndorimana Modeste and Semakuza Aloys



Rice storage, Rwanda

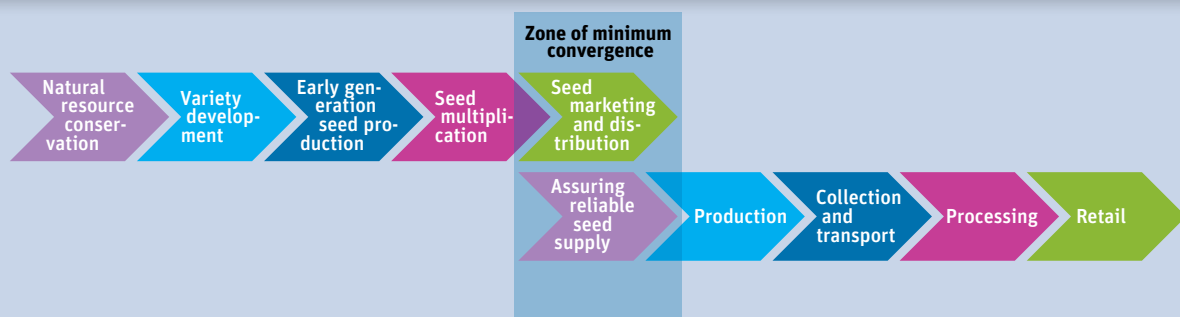
Photo: Ndorimana Modeste

6.3 Lessons learned

6.3.1 Advantages of integrating seed sector interventions in consumption value chains

The most important area of convergence between the seed sector component and the value chain component was promoting the use of high quality seed. From the perspective of the seed value chain, this would be called seed marketing and dissemination. From the perspective of the consumption value chain, this would be called ‘assuring reliable seed supply’ (see Figure 6.1).

FIGURE 6.1 THE MINIMUM ZONE OF CONVERGENCE BETWEEN SEED SECTOR INTERVENTIONS AND CONSUMPTION VALUE CHAIN INTERVENTIONS



Hence, working with a mega-cluster approach and thus consumption value chains implied a ready demand for quality seed because seed users linked to the consumption value chain. There was a clear incentive for seed producers to professionalise their operations.

In Burundi, as part of the consumption value chain approach, activities aimed to demonstrate the added value of quality rice seed. This was part of a package of good farming practices called System of Rice Intensification (SRI) and was demonstrated to large numbers of farmers. Rice seed producers hugely benefited from these interventions as they saw the demand for quality rice seed increase enormously (see Box 6.2).

Another advantage was that the mega-clusters often prioritised solving seed issues. Following a consumption value chain approach, in the mega-clusters, different actors from production to consumption jointly identified opportunities and constraints. It was quickly realised that for a consumption value chain project to be successful, the seed component needed to be catered for: when there is no seed of reasonable quality available, ultimately the productivity per hectare for that crop will remain low as well. As such, investments in the seed sector were justified. A focused seed sector project can organise seed client and

stakeholder meetings to get feedback on perceived priority interventions. Hence, only a minimum convergence with the consumption value chain is needed for a seed sector intervention to understand consumer demands such as preferred price-quality, traits and seed delivery timing.

BOX 6.2 RICE SEED PROFESSIONALISATION STIMULATED BY THE RICE VALUE CHAIN DEVELOPMENT

In 2012, the Bwiza Bwa Nginga association of rice seed producers in Mugerero, Imbo plain, Burundi, produced a large quantity of rice seed. Its commercialisation however proved difficult. According to the president of the association, farmers were not aware of the importance of using quality seed. The lack of market resulted in a disinvestment in seed production in 2013 by the association, and a reduction of the area of seed produced.

In 2014, CATALIST 2 rice value chain development activities included training rice farmers in the Imbo plain on SRI, demonstrating the importance of using quality seed. At the same time, through the CATALIST 2 project, rice farmers in the Imbo plain got connected to the white rice market, which requires large grain rice without damages for efficient processing. Quality seed is needed for yield rice in this market.

As a result rice producers were convinced to buy quality seed, and suddenly the demand for seed increased. This allowed rice seed producers to increase their area of production, visible in the production figures.

DEVELOPMENT OF THE AREA OF RICE SEED PRODUCTION BY THE BWIZA BWA NINGA ASSOCIATION

Year	2012	2013	2014	2015
Area (ha)	50	12	42	48

Mbarushimana Jean Claude

Similarly, for seed sector development interventions to be successful they need to consider the development of the seed market. Improving production capacity alone is not enough. This means that seed sector interventions need to promote the purchase and use of high quality seed.

6.3.2 Constraints

There are a number of constraints to combining seed sector development with consumption value chain development in the same project.

A first constraint with complete integration is the mismatch in terms of chronology. Before the effects of seed sector interventions can result in the availability of increased volumes of quality seed, a minimum of two seasons must have

occurred. Potatoes take even longer, as illustrated by the example in North Kivu (see Box 6.3). Here, the use of quality seed potatoes was promoted as part of the potato value chain, while the seed potato sector was just emerging. As a consequence, consumption value chain interventions need to base their planning on the quality and quantity of seed already available. It is important to harmonise efforts to avoid the risk of failure of consumption value chain interventions. Too much interdependence between the two is not desirable, considering the unpredictable nature of development interventions in developing countries.

BOX 6.3 DISCREPANCY BETWEEN PROMOTING USE OF HIGH QUALITY SEED AND ITS AVAILABILITY

Agronomists of CATALIST 2 partner organisations in North Kivu supported the mega cluster crops potato and wheat. Potato producers were supported in intensification of their production, and the diversification of their market. An integral part of potato production intensification is the use of reliable quality seed potatoes. This has resulted in an increased demand for quality seed potatoes. But where could quality seed potatoes be obtained?

In 2013, 12 seed potato producer groups received support to professionalise their operations and increase volumes of quality seed produced and traded. However, seed potato producers faced difficulties and were only able to multiply mini-tubers to the stage of basic seed. Only by the beginning of 2016, 3 seasons after having started cautiously with the first planting of mini-tubers, will the seed producers have the first limited batch of quality seed.

Potato producers who understand the value of good quality seed potato are actively searching for it. The agronomist of a partner organisation concluded: “We have created a demand for seed potatoes, but do not know how to satisfy this demand. We should have started with the seed potato multiplication, and created the demand little by little once seed was becoming available.”

Muyisa Marie Claire

In Burundi, discrepancy between seed intervention results and value chain development needs led to the use of non-indicated generations of seed. In Rwanda, there was a lack of in-vitro plantlets for use by the entrepreneurs who had benefitted from co-funded mini-tuber production facilities.

Another important observation was that structural change in the seed sector is needed to improve the availability of quality seed at scale. Seed sector constraints are inevitably complex and related to sensitive seed policies. Realising sustained change in the seed sector requires stamina, endurance and leverage with decision makers. The focus on consumption value chains via the mega-cluster approach in CATALIST 2, and the consequent budget choices relating to this, made it difficult to create enough leverage to effectively remove structural

bottlenecks. For example, difficulties related to the production of early generation seed, harmonisation of seed policies across the three countries, and the ineffective seed certification procedures in Burundi and DRC. Hence, with modest budgets for seed components in consumption value chain projects, the expectations with regard to the potential impact should also be modest and aimed at assuring seed availability for the particular consumption value chain, rather than having a systemic change ambition.

BOX 6.4 AN EFFECTIVE POTATO VALUE CHAIN REQUIRES LONG-TERM INVESTMENT IN INSTITUTIONAL CAPACITY BUILDING OF INERA, NORTH KIVU

In North Kivu, the CATALIST 2 project started its support to the ware potato mega cluster in 2013. The timely availability of quality seed potatoes was indispensable to an effective consumption value chain for ware potato. Hence, seed potato producers were supported to professionalise their seed businesses and training was planned and executed successfully. However, the main bottleneck was not seed potato producers' capacity, but INERA's human and financial resources. INERA is the national agricultural research institute of DRC and as such responsible for the production of early generation seed (basic and pre-basic) and in-vitro plants for potato.

On top of this, changes in the Congolese regulatory framework were required to improve seed certification system functioning. Unfortunately, with the limited time and resources available for the seed component it was not possible to address the required policy changes within the project timeframe. It would have been better if this was known beforehand, for more realistic project expectations of what we could and could not achieve.

Nyamwasa Jean Damascene

The most promising opportunities for seed enterprise development do not necessarily coincide with geographical areas selected for consumption value chain opportunities. By default seed sector activities were supposed to be implemented in the same geographical area. In practice this means that better opportunities for large scale impact through seed sector development outside of pre-determined areas are missed. In South Kivu, the project intervention area only contained around 2,000 potato farming households. The main potato production area fell outside of the project intervention area, which resulted in a mismatch between seed sector development opportunities and consumption value chain development interests. Better impact results could have been obtained if the CATALIST 2 seed component had chosen where to intervene through improving quality seed potato availability, rather than being confined to a practical geographical area.

6.4 Conclusions and recommendations

- Consumption value chain projects require a seed component to assure access to high quality seed. On the other hand, seed sector interventions require a seed market development component. Hence, overlap and harmonisation between the consumption value chain function of ‘assuring quality inputs’ and the seed value chain function of ‘seed marketing’ is imperative. However, this does not mean that the two interventions need to be integrated at all times.
- Linking to consumption value chain projects can contribute to the success of seed sector development efforts because of the promotion of using high quality seed.
- Structural solutions for institutional bottlenecks that block access to affordable quality seed require longer term integrated seed sector interventions and substantial dedicated resources. This cannot be achieved by a project that has a consumption value chain as its key focus.
- It takes at least two seasons to increase the production and hence availability of quality seed; longer for seed potato. Hence it is not advisable to design interventions in which consumption value chain development activities depend on quality seed.
- Spatial limitations resulting from the mega-cluster approach meant that certain opportunities for seed production and marketing were missed. For seed potatoes, better impact could have been obtained if the CATALIST 2 had operated outside the spatial boundary of the mega-cluster.



Traditional drying of maize cobs, Burundi

Photo: Simbashizubwoba Cyriaque

Assuring a sustainable impact on the availability of affordable high quality seed

7.1 Introduction

Seed sector interventions ultimately aim to create lasting impact in the agricultural sector through increased use of high quality seed. This can only be achieved once structural bottlenecks in the seed sector are removed so that high quality seed is available and affordable for farmers where and when they need it. ‘Sustainable impact’ refers to creating a long-lasting positive effect on the agricultural sector, even though we do not refer to environmental sustainability.

This chapter analyses lessons learned from the seed component of CATALIST 2 and addresses the question: *How can seed sector interventions realise a sustainable impact on the agricultural sector?*

7.2 Activities and approach

Sustainable impact from seed sector projects can be separated into two components:

- 1 Direct project beneficiaries continue to apply improved practices (including the use of quality seed) post-project, thus continuing to generate ‘impact’.
 - a Seed producers who benefitted from the project continue to produce and market larger volumes of better quality seed.
 - b Seed users who benefitted from the project continue to manage the quality of their seed better.
 - c Improved service provision in the seed sector continues post-project.
- 2 As a result of the project, the number of beneficiaries continues to increase post-project. Some would call this ‘scaling out’.
 - a More seed producers are trained and supported using the methodology developed by the intervention.
 - b More seed users are trained to improve their seed quality management post-project.
 - c Seed sector innovation continues post-project.

Using the above distinctions, CATALIST 2 project experiences were analysed. The project implementers reflected on what they had done to assure sustainability, and what in hindsight could have been done to:

- 1 Assure seed producers continue post-project (1a and 1b).
- 2 Assure continued service provision to seed producers (1c).
- 3 Stimulate post-project farmer training (2a and 2b).
- 4 Promote continued seed sector innovation (2c).

7.3 Experiences and lessons learned

7.3.1 Assure seed producers continue post-project

The ability to select aspiring seed producers with potential to become professional producers as beneficiaries was essential to maximize the chances of sustainable impact. Professional seed production requires a combination of technical, planning, and entrepreneurial skills which can be learned, but also require a level of talent and dedication. This makes that not just any producer can become a seed entrepreneur. Professional seed production is only feasible for producers with a relatively good asset base. Both land and capital requirements are higher than production for the consumption market. The project's thorough selection process maximised the likelihood of post-project continuation of quality seed production by aspiring seed producers.

Professionalisation is key to sustainable impact. A professional seed multiplier depends on his or her seed business for an income and strives to continually improve their business, winning clients through offering high quality seed demanded by the market. A professional seed producer has better chances of continuing to profit from a seed production enterprise, a required incentive for a seed producer to continue to put in the extra effort required compared to producing for the bulk consumption market. Training support for seed producers should focus on this professionalisation, which requires the right technical skills, but more importantly, entrepreneurship skills. The CATALIST 2 project has done well in supporting emerging seed producers with capacity building on seed business topics such as production planning, market analysis, enterprise management, simple bookkeeping and seed marketing.

Emerging seed entrepreneurs can also be supported to acquire postharvest infrastructure and equipment which can assist in professionalising their seed treatment and packaging (see Box 7.1).

In all three project countries minimum requirements for field sizes feature in the seed law, to assure effective inspection services. Small seed plots are still a major limiting factor for would-be seed entrepreneurs. Support for farmers to develop cooperative arrangements for seed productions and marketing can help overcome the constraint.

BOX 7.1**TRAINING ONLY IS NOT ENOUGH TO BECOME VIABLE RICE SEED ENTREPRENEURS**

In the valley of Bugarama (Rwanda) the KOJMU rice producer cooperative was supported to develop rice production as a commercial activity. In addition to training in seed technology and seed entrepreneurship, the emerging seed producers received small equipment, such as tarpaulins for seed drying, pallets for seed storage and a hydrometer to assess moisture levels in seed stock. In addition a storage facility with a capacity of 600 tonnes was constructed. Contractual arrangements were made between the rice cooperative and its seed producers to assure a market for the seed. The cooperative went even further and provided the seed producers with fertiliser on credit. This package of measures assured that the rice seed producers got a great opportunity to establish themselves as professional seed multipliers.

Ndorimana Modeste



Professional storage facility, Rwanda

Photo: Ndorimana Modeste

Access to affordable inputs is essential for seed producers to continue their enterprise post-project. To help seed producers sustain business and manage cash flow during seasons, access to ‘seasonal credit’ is important in building production capacity. Developing financial products to cater for the specific needs of seed producers can contribute to durable seed production. In Rwanda, the rice production cooperative KOJMU developed its own credit scheme to support the seed producer association (see Box 7.1).

Reliable and timely access to good quality early generation seed is vitally important but often poor. In many cases public research institutes have a significant role to play in the production of early generation seed. However, incentives for client orientation and efficiency are usually absent in public institutions responsible for providing early generation seed. Seed sector interventions can support the re-organisation of early generation seed production and create incentives for better public service performance in some cases. Promotion of early generation seed by commercial entities is another opportunity to ensure seed produc-

ers have reliable access to good quality early generation seed. Building better linkages and communication between early generation seed producers and their clients goes a long way.

Pre-season planning of production of early generation seed should be considered by future interventions. This allows early generation seed producers to better respond to actual demand; their clients can routinely express their needs one season in advance. This helps to assure the correct quantities of early generation seed of the desired varieties are available to clients.

Future interventions are advised to tailor training activities to specific requirements of individual or small groups of seed producers. Also developing and distributing training support materials in local languages could help improve the quality of capacity building efforts.

7.3.2 Assure continued service provision to seed producers

The CATALIST 2 project has improved linkages between rice seed producers and agricultural research in Burundi. This improved producers' access to early generation seed and encouraged better collaboration when selecting new varieties.

The first step to secure better access to external quality control and certification services is to improve awareness of these services and establish direct working relations between inspection services and seed producers. In many cases, seed



Seed producers learn how to recognise plant pests and diseases, North Kivu

Photo: Muyisa Marie Claire

producers were not even aware of the mandate of the certification services, the procedure to apply for services or associated costs. Explaining external quality control mechanisms was made part of the field training curriculum for seed producers. This raised awareness and helped to establish a relationship between inspectors and seed producers (see Box 7.2 and Box 7.3).

BOX 7.2 BUILDING RELATIONS BETWEEN SEED PRODUCERS AND REGULATORY AUTHORITIES IN BURUNDI

Developing internal quality management protocols

IFDC organised a workshop together with the National Seed Control and Certification Office (ONCCS). During the workshop representatives of seed producer associations worked together with ONCCS agents on the development of technical leaflets on internal seed quality control. As a result seed producers better understand their own responsibilities as professionals, and the complementary role of the ONCCS as a certification body. A professional seed producer controls his own field, and degrades it when the quality does not meet the standard. The added value of the ONCCS agent is the independent verification that the seed producer is performing well. Improved understanding about the role of the ONCCS will contribute to the future continuation of service delivery by the ONCCS to seed producers.

Simbashizubwoba Cyriaque

Piloting certification of rice seed

The Bwizu Bwa Ninga rice seed producer association on the Imbo plain in Burundi used to produce seed without external quality control by the ONCCS. Hence, until 2013 their seed was not certified. Through the CATALIST 2 project the association benefitted from training in quality norms and the process of seed certification. In addition the first seed crop was inspected and certified by the ONCCS. During marketing, the group had increased interest from clients as a result of certification. In the next season, 2015A, the SPG invested in the external quality control and certification process, and 48 tonnes of seed was certified.

Mbarushimana Jean Claude

BOX 7.3 SUPPORT TO SPGs TO BECOME REGISTERED SEED PRODUCERS

In North Kivu emerging seed multipliers received support to improve their operations. The project funded quality control visits by the regulatory body SENASEM. Now that the project is ending however, SPGs have not finalised the process of official recognition as seed producers. Requesting services from SENASEM will become more difficult after the end of the project, not only because the seed producers have to pay for the services, but also because they have not yet finalised the full registration process as seed producers. To build durable seed enterprises, regulatory aspects should not be underestimated.

Kamale Kambale Jean Marie

Free service provision through project support is counter-productive because it creates the impression by seed producers that these services are for free. It is essential to attach a price to inspection and certification services, even if this price would not cover the entire cost. For seed producers to make the step from free services to paid services is considered difficult. Once the impression is created that these services are for free, seed producers do not realise its true value.

To assure quality inspection and certification services in the long run, cost-sharing models can be considered, as are currently in place in both Rwanda and Burundi. Most inspection service costs are borne by the government, while users only pay a minimal inspection and laboratory testing fee. In North and South Kivu however, the full cost of inspection is charged to the seed producer, including transport allowances of the inspector, which are substantial due to vast distances between villages. During the CATALIST 2 project seed producers who were supported in their efforts to professionalise benefitted from free inspection services. Now that the project is ending however, seed producers will have to cover these costs themselves. According to trainers-facilitators it is doubtful whether seed producers will continue to request inspection services under these circumstances.

The timely availability of inspection services are the major constraining factor for continued use. For example, in the whole of Rwanda there are 4 seed inspectors permanently employed by the government: one for each of the four rural provinces. This is not enough for timely service provision to all seed producers. The Kivu provinces and Burundi suffer from a similar limited number of seed inspectors.

In future, seed sector interventions in collaboration with seed inspection services, could pilot models of decentralised inspection services by part-time inspectors. This could be public extension service staff, who receive additional training or freelance service providers under the supervision of seed inspection services.

In Burundi, the project PAIOSA (Programme d'Appui Institutionnel et Opérationnel au Secteur Agricole) took the initiative to train selected certified seed inspectors as mechanism to improve the functioning of the seed certification system. Unfortunately, these trainings have been cancelled recently.

7.3.3 Encourage continuation of farmer training post-project

CATALIST 2 shows that professionalisation of seed producers benefits from a trajectory of training and coaching of more two production seasons or more. After supporting seed producers with basic training in seed technology and seed entrepreneurship, continued coaching and support during further seed enterprise development is beneficial. To assure the continuity of support, seed sector interventions work best through grassroots organisations with a permanent

mandate to support producers, such as producer organisations, local NGOs and government extension services.

The CATALIST 2 project involved local grassroots NGOs (such as BAIR, Amis du Kivu, etc) in different training programmes, and invested heavily in the training of trainers within these organisations. As a result these organisations can continue to provide support to seed producers that have benefited from the programme and are in the process of professionalising their seed production and marketing operations. Continued support and training of new and existing seed producers depends on the availability of development resources, either from donors or governments. Any intermediary organisation, be it a farmer organisation, government extension service, a local NGO or a private service provider, will require resources for its operations. It is not likely that in the foreseeable future seed producers will be willing and able to pay for the seed extensions services themselves.



Training on positive selection by local partner of IFDC, SYDIP, North Kivu

Photo: Muyisa Marie Claire

Besides organisations with a grassroots character, local experts from national research institutes were also involved in the development of training methods and materials. The involvement of a large number of different types of organisations was a deliberate strategy to popularise training methods piloted in the project.

The objective is to maximise change and ensure that the same training methods and materials are applied by different organisations, projects and programmes, beyond the lifespan of the CATALIST 2 project.

Developing and publishing the training methods and materials is considered to be an essential strategy to assure that experiences gained in the project will be of future use. In all the organisations involved there is a level of staff turn-over, and expertise tends to disappear rather quickly. If the continued use of the training methodology depends solely on the memory of those directly involved, staff turn-over could mean that know-how disappears over time.

7.3.4 Promote continued seed sector innovation

Few direct examples from the CATALIST 2 project demonstrate where deliberate action was taken to improve the capacity of the seed sector to innovate.

Promoting a culture of piloting and experimenting in inter-disciplinary teams of technical and socio-economic researchers, seed producers, and trade and processing industries, could help improve seed sector functioning and innovation. Too often researchers work alone, but also seed producers and seed sector interventions can fail to involve national and international research in piloting efforts.

The CATALIST 2 seed component was small and focused largely on the professionalisation of emerging seed producers. Seed sector interventions should simultaneously consider the functioning of the larger seed sector and pay attention to collaboration between seed sector stakeholders. In all three project countries, the seed sector suffers from specific constraints in current practices and policies. Addressing these constraints requires stakeholder debate and joint decision making.

In Burundi, a National Seed Committee has been created, independent of the CATALIST 2 project. Seed sector stakeholders are represented in this national committee, which has as a mandate to discuss seed sector issues and formulate recommendations for government policy. As such it is the main advisory body on seed sector issues in Burundi. It provides a platform for debate between stakeholders with sometimes opposing interests. The initiation of and support to such a national seed sector stakeholder consultation mechanism can be a worthwhile investment of project resources which will contribute to the future functioning of the seed sector.

7.4 Conclusions and recommendations

Seed sector interventions can realise sustainable impact by:

2 Assuring seed producers continue post-project.

- Select promising seed entrepreneurs with the right attitude, capacities and assets to become successful.
- Support seed producer professionalisation through tailored training and coaching on seed technology and entrepreneurship.
- Support seed producers in reliable access to inputs, in particular early generation seed.
- Support seed producers to acquire professional equipment and access to land.

3 Assuring continued service provision to seed producers.

- Link emerging seed producers to seed inspection and certification services.
- Create a practice of paying for inspection services.
- Build collaboration between research and seed producers in variety selection.
- Promote the development of decentralised quality inspection services.

4 Stimulating post-project farmer training.

- Involve diverse local organisations in the development of training methods and materials.
- Invest in training of trainers from a diversity of public, private, farmer and non-governmental organisations with a grassroots mandate.
- Professionally publish training methods for future reference and use.

5 Promote continued seed sector innovation.

- Promote seed sector stakeholder debate and collaboration.
- Develop a culture of joint piloting of seed sector innovation.



Private potato mini-tuber producer
Mr Isaac Nzabarinda explaining, Rwanda

Photo: Kulimushi Faustin

The seed component of the CATALIST 2 project has contributed to improving the availability and use of high quality seed in its intervention areas. Invaluable experiences were gained in seed sector development in Burundi, North and South Kivu of the Democratic Republic of Congo, and Rwanda, which can inform future seed sector interventions in the region and beyond.

Capacity building in seed technology and seed entrepreneurship

The combination of seed technology and seed entrepreneurship training proved to be valuable to both new and existing seed producers. The balance between seed technology and seed entrepreneurship should be determined based on specific crop needs. For rice and beans the production technology of seed is not much different from that of the consumption crop. Hence, less emphasis is needed on seed production techniques. For a crop such as seed potato, the seed technology is more complex and deserves more specific attention in capacity building.

The structured set-up of technical and seed entrepreneurship training curricula, chronologically followed the seed production and marketing process. The learning-by-doing methodology and practical facilitation tips enabled trainers-facilitators to deliver high quality training to seed producers. In future, extension leaflets should be made for seed producers as an additional teaching aid and reference material.

Essential for the success of capacity building is the selection of participants. Not all farmers can become seed entrepreneurs. Resource requirements such as land, labour and capital are higher than for ordinary production. A basic knowledge of writing, reading and maths are needed for the entrepreneurial aspects of seed production. Only farmers who have these basic skills and minimum assets should be selected. Further tailoring of training support to the particular needs of individual seed producers is possible through local delivery and providing seed entrepreneurs a choice from a menu of topics.

The involvement of local institutions and local experts from different disciplines (technical as well as adult education experts), and field trainers in the development of the training curriculum encouraged collaboration between organisations. Involving seed regulatory bodies and early generation seed producers in the training programme provided a good basis for further collaboration between seed producers and these services.

Providing material support in the seasonal running costs of seed production is strongly discouraged. What could be facilitated is access to seasonal credit, to assist in cash flow management by the seed entrepreneurs. Only co-funding investments in seed handling and storage equipment could be considered once seed businesses have proven motivation and viability.

Working with groups or individual seed producers

Even though group-based support worked relatively well, for future interventions it is recommended to target both groups and individual seed producers. Very few of the groups performed the actual production activities collectively, as individual production encourages farmers to perform better. Collective efforts focussed on acquisition of inputs and basic infrastructure, training, and joint marketing. Enough emphasis must be placed on building organisational and financial management capacity, as a lack of these is an important cause for the discontinuation of collective action.

Balanced investment of seed production and demand creation

The experience of CATALIST 2 showed the importance of parallel investment in seed production and the promotion of the use of high quality seed. The basis is the demonstration of the added value and costs- and benefits of the use of high quality seed by agricultural extension efforts. This needs to be combined with seed marketing efforts. The building of client – supplier relationships is a key element of any strategy to improve the use and marketing of quality seed.

Gender and seed sector development

For seed sector projects it is important to make a conscious and explicit choice to target women seed producers or not. If so, it needs to be realised that targeting women in seed production requires specific and additional efforts and thus resources. The experiences of CATALIST 2 showed that due to gender-based constraints the relative number of female seed entrepreneurs is lower than male seed entrepreneurs. Intra-household dynamics influence the extent to which women can effectively participate in and benefit from seed sector support. It is important to conduct a gender analysis to be able to understand the role of men and women in seed production and gender-based constraints in relation to smallholder seed production and marketing.

Seed sector interventions in a value chain project

In the countries where CATALIST 2 intervened, the seed sector suffers from fundamental constraints. For structural solutions, longer term substantial intervention is needed, which requires more resources than what is available in a commodity value chain programme such as CATALIST 2.

There are synergies possible between consumption value chain projects and seed sector interventions. Consumption value chain projects require a seed component to assure access to high quality seed, but do not necessarily need to

intervene along the entire seed chain. Seed sector interventions require a seed promotion and marketing component, but do not necessarily require a complete consumption value chain. Rather we advise linking efforts where possible and harmonise interventions to avoid overlap.

Sustainable impact

To assure a sustainable impact of seed sector interventions it is essential to assure that seed production continue post-project. This can be stimulated by selecting for promising (aspirant) seed entrepreneurs and support them in professionalisation. In addition they require reliable access to inputs, in particular early generation seed. Continued fee-based service provision by seed inspection and certification services needs to be promoted. Collaboration between research and seed producers can be built in the area of variety selection.

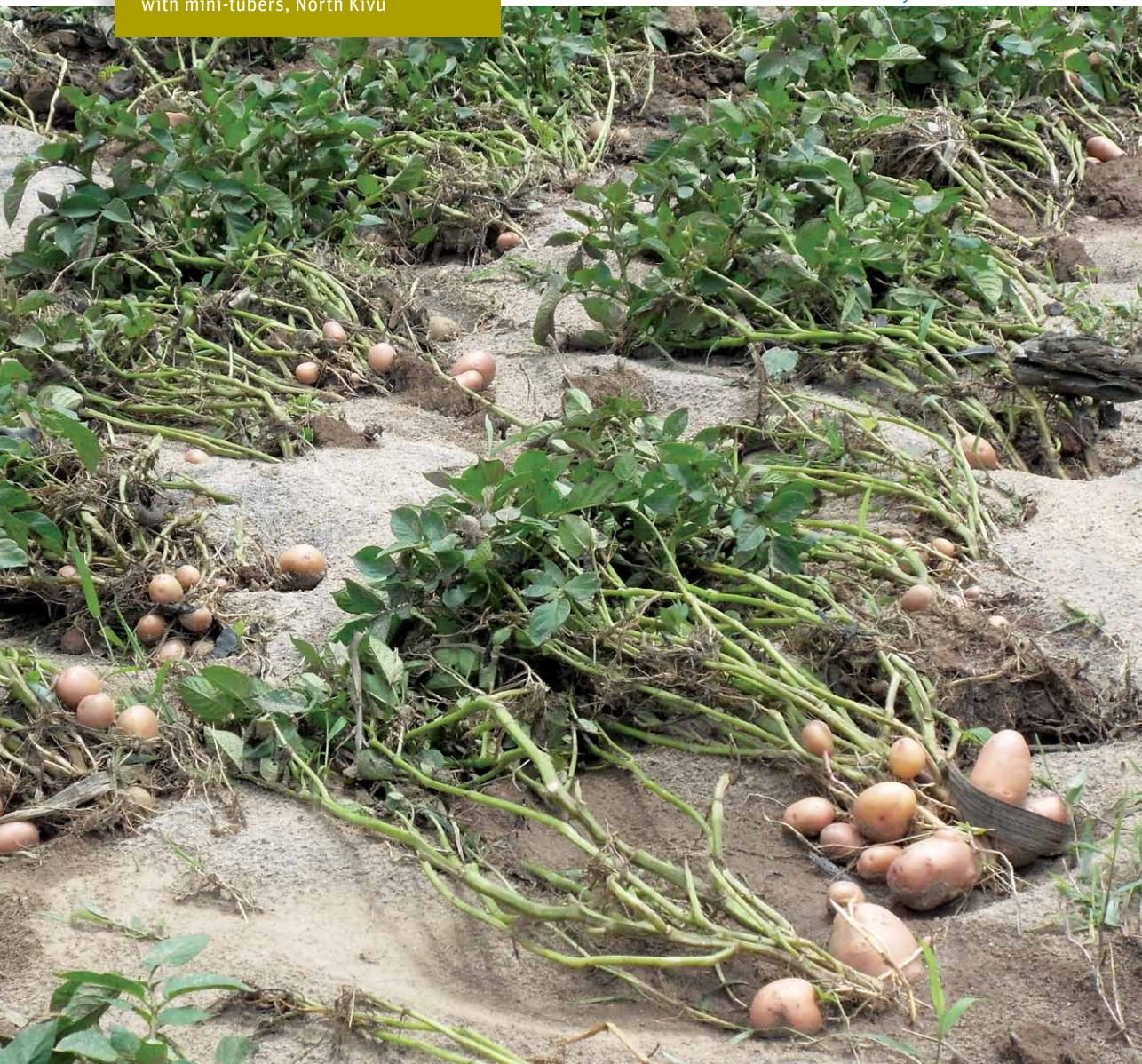
A post-intervention increase of the number of beneficiaries of training in seed production and entrepreneurship can be stimulated by involving a range of local public, private, farmer and non-governmental organisations in the development and implementation of training methods and through professional publishing of training materials.

Continued post-project seed sector innovation can be promoted by establishing or strengthening structural seed sector stakeholder collaboration and developing a culture of joint piloting of seed sector change options by seed producers, research, policy and agribusinesses.

Seed sector development requires a long-term commitment. Systemic change cannot be realised in the lifespan of single 3-4 year project. A combination of capacity building of seed producers, capacity building of seed users, improvement of seed support services and effective collaboration between seed sector actors is required over a longer period of time.

Harvesting a seed potato field planted with mini-tubers, North Kivu

Photo: Muyisa Marie Claire



ANNEX 1:

Detailed seed production figures

TABLE 9.1 FACTS AND FIGURES SEED SUPPORT IN BURUNDI

	Rice	Beans	Maize	Potato	Positive selection	Total
# of groups established (2012-2015)	13	11		45	120	189
# of groups producing seed (2015)	13	5		45	0	63
# of producers trained on seed production (2012-2015)	411	200		983	5,380	6,974
# of producers trained on seed entrepreneurship (2012-2015)	411	108		250	0	769
# of grouped seed producers producing seed (2015)	425	278		986	0	1,689
# of individuals producing seed (2015)	1	0		10	0	11
volume sold in first production season (kg)	29,528	9,340	3,600	185,212	0	227,680
volume sold last production season (kg)	97,150	48,721	24,740	613,367	0	783,978

TABLE 9.2 FACTS AND FIGURES SEED SUPPORT IN NORTH KIVU

	Rice	Beans	Maize	Potato	Cassava	Positive selection	Total
# of groups established (2012-2015)	3	3		12	4	83	105
# of groups producing seed (2015)	3	2		12	4	0	21
# of producers trained on seed production (2012-2015)	75	82		300	101	1,140	1,698
# of producers trained on seed entrepreneurship (2012-2015)	75	50		75	21	0	221
# of grouped seed producers producing seed (2015)*	36	20		229	40	0	325
# of individuals producing seed (2015)*	0	0		0	0	0	0
volume sold in first production season (kg)	0	0		170,418	0	0	170,418
volume sold last production season (kg)	2,760	0		204,338	0	0	207,098

* support to seed producers only started in 2014

TABLE 9.3 FACTS AND FIGURES SEED SUPPORT IN SOUTH KIVU

	Rice	Beans	Maize	Potato	Cassava	Total
# of groups established (2012-2015)	5	6		2	1	14
# of groups producing seed (2015)	5	6		2	1	14
# of producers trained on seed production (2012-2015)	141	468		162	45	816
# of producers trained on seed entrepreneurship (2012-2015)	61	432		162	0	655
# of grouped seed producers producing seed (2015)*	141	468		162	0	771
# of individuals producing seed (2015)*	1	4		0	3	8
volume sold in first production season (kg)	0	0		0	0	0
volume sold last production season (kg)	36,700	5,215		0	0	41,915

* support to seed producers only started in 2014

TABLE 9.4 FACTS AND FIGURES SEED SUPPORT IN RWANDA

	Rice	Beans	Potato	Positive selection	Total
# of groups established (2012-2015)	5	6	1	37	49
# of groups producing seed (2015)	2	6	0	37	45
# of producers trained on seed production (2012-2015)	104	1,528	539	1,180	3,351
# of producers trained on seed entrepreneurship (2012-2015)	104	1,528	539	1,180	3,351
# of grouped seed producers producing seed (2015)	54	1,038	21	0	1,113
# of individuals producing seed (2015)	0	0	21	0	21
volume sold in first production season (kg)	4,200	43,786	121,000	0	168,986
volume sold last production season (kg)	15,325	253,732	264,200	0	533,257



Promoting Sustainable Seed Sector Development

High quality seed is the basis for the sustainable increase of agricultural productivity. Seed quality determines crop yield potential and thus the potential return of investment on land, labour and capital. Assuring access to quality seed is essential in efforts to reduce food insecurity and increase farm-derived income. The challenge facing agricultural development efforts is how to sustainably improve access to quality seed. CATALIST 2 has sought to improve smallholder farmers' livelihoods and promote regional trade in Burundi, North and South Kivu in DRC, and Rwanda. Improving availability and use of quality seed was an integral component of the CATALIST 2 project. In this publication, experiences gained in CATALIST 2 are analysed to support the design and implementation of future seed sector interventions. Recommendations in this publication will benefit funders, designers and implementers of seed sector interventions in emerging economies.