

## Learning achievements of farmers during the transition to market-oriented organic agriculture in rural Uganda

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### Abstract

Organic agriculture requires farmers with the ability to develop profitable agro-enterprises on their own. By drawing on four years of experiences with the Enabling Rural Innovation approach in Uganda, we outline how smallholder farmers transition to organic agriculture and, at the same time, increase their entrepreneurial skills and competences through learning. In order to document this learning we operationalised the Kirkpatrick learning evaluation model, which subsequently informed the collection of qualitative data in two study sites. Our analysis suggests that the Enabling Rural Innovation approach helps farmers to develop essential capabilities for identifying organic markets and new organic commodities, for testing these organic commodities under varying organic farm management scenarios, and for negotiating contracts with organic traders. We also observed several obstacles that confront farmers' transition to organic agriculture when using the Enabling Rural Innovation approach. These include the long duration of agronomic experimentation and seed multiplication, expensive organic certification procedures and the absence of adequate mechanism for farmers to access crop finance services. Despite prevailing obstacles we conclude that the Enabling Rural Innovation approach provides a starting point for farmers to develop entrepreneurial competences and profitable agro-enterprises on their own.

**Keywords:** organic agriculture, enabling innovation, learning, Uganda

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### 1 Introduction

Organic agriculture has a considerable poverty reduction potential, which is a key rationale for its promotion in developing countries (Parrott & Marsden, 2002; Kotschi *et al.*, 2003; Willer & Yussefi, 2007). Farmers who have successfully transitioned to certified organic agriculture often benefit from increased farm productivity and access to niche markets for organic products. Farmers, the private sector and donor agencies find the price premium offered by organic buyers particularly attractive (Gibbon, 2006; Musiime *et al.*, 2005). Despite its niche nature, a growing number of development specialists consider organic agriculture a viable strategy for developing farmer-market linkages and hence reducing income poverty of farmers and farming communities (Walaga, pers. com). Over the past decade, these per-

ceptions contributed to the development of the Ugandan organic agriculture sector and made it one of the most distinct show case in sub-Saharan Africa. Within 10 years the organic sector expanded from a few hundred to over 200,000 certified organic farms producing primarily cotton, coffee, fresh and dried fruits (Taylor, 2006; Tumushabe *et al.*, 2006; Willer & Kilcher, 2009).

The enormous success of organic agriculture in Uganda is to a large extent credited to contract farming arrangements (Gibbon, 2006; Bolwig *et al.*, 2007). Under such arrangements, the role of farmers is to produce a specific amount and quality of an organic commodity for which traders have identified buyers in Europe, the USA and the Middle East. Traders make crop variety choices and provide technical training and extension services to farmers (Bingen *et al.*, 2003). In most cases, traders manage the internal control system for group certification, cover certification and annual inspection costs, organise transport, processing and value addition, and take responsibility for packaging and shipping raw or processed organic products to clients overseas. Traders play a critical role in organic

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agriculture (Raynolds, 2004) and their ability to do so is strengthened by donors and private investors who consider traders as the entry point into the development of organic agro-enterprises.

Choosing traders as entry point into the development of organic agro-enterprises has several advantages. Smallholder farmers, who often lack sufficient financial and organisational capabilities for identifying buyers, are able to fully concentrate on the production and delivery of organic commodities. In most cases, technical advice and extension services are tailored to meet organic production standards. Contract farming eases access to organic inputs, such as crop protection agents for high value crops. Probably the most important advantage of contract farming is that traders who also own organic certificates cover pay for setting up field organisations and bear the financial risk associated with trading high value crops (Simmons, 2002). In that way contract farming makes important contributions to the commercialisation of agriculture in general and commercial organic agriculture in particular.

Despite the explicit advantages of contract farming, its contributions towards farmer empowerment and capacity building is limited (González & Nigh, 2005). Building and strengthening entrepreneurial competences that increases the competitiveness of organic farmers is usually not the first priority of traders. Against this background, we observe that irrespective of the income poverty reduction potential of certified organic agriculture, intangible poverty dimensions, such as lack of voice, marginalisation, and inequalities are rarely addressed. Moreover, farmers often lack a deeper understanding of organic production principles and marketing systems. Their main focus lies on implementing prescribed organic production guidelines, quite often based on “transfer-of-technology” principles.

In this paper we assess the Enabling Rural Innovation (ERI) approach and discuss how it helps farmers in the development of profitable organic agro-enterprises in two cases study areas. The empirical basis for this analysis comes from a four years development oriented research project (2004-2007) ‘Linking farmers to markets’ (F2M), which was conducted with four farmer groups in Mukono and Hoima District, central and western Uganda. The main research question addressed in this paper is: How useful is the Enabling Rural Innovation approach to support the transitioning of smallholder farmers to market-oriented organic agriculture?

## 2 The Enabling Rural Innovation approach

The development oriented project employed the ERI (Enabling Rural Innovation) approach as the principle process framework which guided farmers through the transition to organic agriculture. Originally, the ERI

approach was developed outside the organic sector to enhance social organisation and entrepreneurial thinking among farmer communities (see Kaaria *et al.*, 2008; Sanginga *et al.*, 2007). The rationale behind this approach is to put farmer groups at the centre of project activities and empower them to take self-determined, proactive production and marketing decisions. As such, the approach works for multiple markets and multiple commodities which are not pre-determined before the start of a project. Rather, the identification and selection of new production and marketing opportunities is part of the process and done by farmers themselves. ERI enables farmers to ‘produce what they can sell’ instead of ‘selling what they produce’, without compromising household food security, and to reinvest in their natural resources rather than depleting them for short-term market gain (Best & Kaganzi, 2003; Ferris *et al.*, 2006).

As illustrated in table 1, the ERI approach provides a five step process framework that structures farmers’ transition to market-oriented agriculture. These five steps encompass participatory diagnosis (PD), participatory market research (PMR), farmer participatory research (FPR), enterprise development (ED) and participatory monitoring and evaluation (PME). The ERI approach and each of the five elements draw on several decades of experiences with participatory development and research methodologies. None of these elements is new, which is why the ERI approach shares principles with other participatory approaches, such as Farmer Field Schools (e.g. Braun *et al.*, 2000). Linking the five elements into a fully-fledged process for developing farmers’ innovation capacities while putting a distinct focus on agro-enterprise development, however, is a novelty.

Despite the five ERI elements build on each other, they partly operate concurrently (e.g. PME is a continuous process throughout the project). All elements maintain tight feedback loops among each other. Farmer training in ERI processes aims to trigger action that is continuously reflected and evaluated by farmers. Circular learning as described by Pretty (1995) is therefore a key characteristic of the ERI approach.

The F2M project for the first time employed the ERI approach in the context of organic agriculture. The goal was to test the ERI approach for facilitating smallholder farmers’ transition from subsistence to market-oriented organic agriculture, and establishing long-term and profitable market linkages. Two local NGOs became the principal development partners during the project. Four NGO employees were trained as community development facilitators (in the following referred to as facilitators) and developed theoretical and practical ERI facilitation skills. The role of facilitators was to provide technical training to farmers, as well as to engage them in reflection and learning processes through supervision, coaching and backstopping support.

**Table 1:** The five steps of the Enabling Rural Innovation (ERI) approach at farmer level

<i>ERI Phase</i>	<i>Purpose</i>	<i>Activities</i>
Participatory diagnosis (PD)	identify new opportunities and livelihood strategies, based on available human, social and natural resources and broader community visions; establish a feasible action plan	<ul style="list-style-type: none"> <li>• community visioning and diagnosis workshops (using tools such as visioning maps, market chain analysis, wealth ranking)</li> <li>• group dynamics workshops (analysing group structures and behaviour using institutional calendars, resource mapping, daily activity calendars)</li> <li>• community action planning workshops (agreeing on an action plan within the group; selecting PMR, FPR and PME committees)</li> </ul>
Participatory market research (PMR)	develop market research skills, explore organic markets (direct buyers, traders) and prioritise most profitable enterprise options at group level	<ul style="list-style-type: none"> <li>• market research trainings (learning how to design data collection tools, develop market research questions, identify markets to visit)</li> <li>• market visits by PMR committee (data collection on market demand, requirements and logistics, data analysis)</li> <li>• community feedback meetings (presentation of market data by PMR committee, selection of enterprise options by the whole group)</li> </ul>
Farmer participatory research (FPR)	develop on-farm experimentation skills, test the agronomic and economic performance of selected enterprise options through farmer-managed on-farm test trials	<ul style="list-style-type: none"> <li>• crop experiment trainings (learning how to select and prioritize technology options, plan experiments, and develop research protocols)</li> <li>• on-farm experimentation by FPR committee (testing, monitoring and evaluating different agronomic practices)</li> <li>• community feedback meetings (presentation of experimentation data by FPR committee, selection of technology options by the whole group)</li> </ul>
Enterprise development (ED)	establish a business plan based on information gained from PMR and FPR, and scale-out the production of tested organic enterprises and adapted agronomic practices	<ul style="list-style-type: none"> <li>• enterprise development trainings (learning how to run production, marketing and profitability analyses)</li> <li>• enterprise selection (running cost-benefit analyses, negotiating contracts with traders)</li> <li>• business coaching services and backstopping by facilitators</li> </ul>
Participatory monitoring and evaluation (PME)	monitor transition process to organic agriculture and provide feedback to the community, based on visions, goals and indicators developed during PD	<ul style="list-style-type: none"> <li>• participatory monitoring trainings (learning how to monitor and evaluate progress using matrices along pre-defined indicators)</li> <li>• monitoring and evaluation by PME committee (re-prioritising long-term goals, identifying factors for success and failure)</li> <li>• community feedback meetings (presentation of PME data by PME committee, deciding on corrective measures)</li> </ul>

### 3 Methodology

#### 3.1 Project sites and groups

The pilot sites for the project under study are located in Mukono and Hoima district. Mukono district is located in central Uganda, to the east of Kampala. In the south, the district is bordered by Lake Victoria. Its proximity to the capital Kampala additionally favours access to major markets. The main language spoken is Luganda. Hoima district is situated in western Uganda, bordered by Lake Albert to the west. The study site was selected due to its bigger distance to markets as opposed to Mukono district. The main language spoken is Runyoro.

Agriculture is the main economic activity and source of income in both districts. 80 percent of the total labour force depends on agriculture. The degree of agricultural commercialisation in both districts is low. Income is mostly generated through on-farm sales of surplus produce, which usually yield low farm gate prices. The natural resource base is confronted with soil fertility losses, soil erosion, over-cultivation and poor farming methods. The majority of farmers are smallholders operating under a low acreage. In Mukono a few organic agriculture contract farming schemes operate, which is not the case in Hoima. Domestic markets for organic produce are inexistent in both districts.

In 2004, four existing farmer groups (two groups in each district) who at that time had been working with NAADS, the National Agricultural Advisory Services, were invited by the NGO partners to participate in the project. By that time, none of the farmers was familiar with organic agriculture principles and standards. They mostly produced cassava, beans and millet for subsistence; growing crops specifically targeted at markets (including maize, rice, tobacco, and tomatoes) only played a marginal role.

Three groups were mixed-gender groups, while one group in Mukono consisted of female members only. Apart from the group sizes, the group characteristics across the two project sites did not show major differences (table 2).

**Table 2:** Group characteristics

	Mukono	Hoima
Total number of farmers	74	38
Number of female farmers	50	29
Number of male farmers	24	9
Average farm size per group member (ha)	2	2
Average age of farmer group members (years)	28	26
Average size of households (persons/household)	5	5
Average level of education	Primary	Primary

#### 3.2 Conceptual framework

The main purpose of this process assessment is to document and to discuss the implementation of each of the ERI steps and explore how training and facilitation of learning has resulted in self-reflective behaviour change among farmers. Kirkpatrick's four level framework (Kirkpatrick, 1959a,b, 1960a,b) was adapted to track learning processes and its livelihood consequences. The Kirkpatrick framework is widely used as a means to evaluate the impacts and outcomes of training events at four levels (e.g. Wyss *et al.*, 1998; Schwandt, 2004; Kirkpatrick, 1994, 1996), namely (i) preconditions and initial reaction of the trainees (i.e. perceived applicability and satisfaction of participants with the learning process), (ii) learning progress (i.e. ability of participants to reproduce learning contents in theoretical and practical terms), (iii) behaviour change (i.e. ability of participants to adopt and adapt what they learned in practice) and (iv) consequences of behaviour change (i.e. effects that participants observe as a consequence of changed behaviour). Kirkpatrick perceives training and learning as sequential processes, and each framework level represents a specific stage of this change process.

#### 3.3 Research process

In order to get a clearer picture of the overall learning achievements, data collection for the process analysis has been done at the end of the project in January 2008. Group discussions that were conducted separately with each farmer group, facilitated by the local project coordinator, where the main data collection method. A checklist of issues developed in line with the four analytical levels provided by the Kirkpatrick framework guided the group discussions (table 3). The same method was applied for exploring facilitators' opinions about the ERI process. Discussions were recorded and selectively transcribed and translated into English. In addition, the authors draw on personal observations made during regular field visits, farmer workshop notes and training minutes for each of the ERI modules, mid-term and end-of-project workshop minutes, as well as annual project site progress reports put together by the facilitators.

## 4 Results

#### 4.1 Level 1: Preconditions, relevance and initial reaction

The project was launched at time when the number of certified organic farms in Uganda had reached a first peak of 33.900 certified organic farms (Willer & Yussefi, 2004; Tumushabe *et al.*, 2006). International market forecasts suggested a rapid growth of the organic sector in Uganda (Nycander, 2000; Willer & Yussefi, 2004). Civil society organisations and to some extent the private sector and governmental organisations

**Table 3:** Four assessment levels and criteria to evaluate the ERI process (adapted from Kirkpatrick's four level evaluation model; Kirkpatrick, 1994)

Level	Guiding criteria used for the evaluation
Level 1: Preconditions, relevance and reaction to the intervention	<i>Preconditions:</i> resource requirements and implications for facilitators and farmers before and during the ERI intervention, efficacy of training and coaching instruments for motivating farmers to join the ERI process <i>Relevance:</i> importance of the ERI intervention against the initial conditions under which farmers operate <i>Initial reaction:</i> level of participation and commitment at the beginning of the project
Level 2: Learning progress enabled through ERI	<i>Level of skills enhancement:</i> new abilities for social organisation and learning, abilities for using ERI methods and tools, abilities for informed decision-making at individual and group level <i>Level of knowledge enhancement:</i> new information and applied knowledge about market-oriented organic agriculture
Level 3: Attitude and behaviour change conducted through learning	<i>Attitude change:</i> new self-perception and standpoints towards organic agro-enterprises, new roles and responsibilities <i>Behaviour change:</i> ability to transfer training lesson contents into real life applications, intended and unintended behaviour change within farmer communities
Level 4: Livelihood consequences for farmer groups resulting from behaviour change	<i>Ecological, social and economic consequences</i> of the transition process, consequences for other farmers in neighbouring communities (multiplier effects)

played an important role in lobbying and advocacy for market-oriented organic agriculture. Strong lobbying and advocacy helped to maintain the comparative advantage of Uganda as a country with the highest share of organic production and concurrently with one of the lowest usage rates of agro-chemical inputs in Africa. Governmental programmes, in particular the Plan for the Modernisation of Agriculture (PMA) and the National Agricultural Advisory Service (NAADS) created awareness about agro-enterprises development (Stroud *et al.*, 2006) and indirectly supported the development of the organic sector in Uganda. These institutional preconditions helped to develop a positive attitude towards the F2M project.

The ERI approach was new to all project partners and stakeholders. An important activity that marked the beginning of the project in both districts was therefore the formation of informal partnerships with public and private organisations. At national level, these partnerships included the National Organic Agriculture Movement of Uganda (NOGAMU). At district level, government representatives (i.e. district planners, agricultural officers), district research organisations and representatives of the

privatised extension programme NAADS became important project stakeholders. These partners played important communication, broker and information dissemination functions throughout the project duration. With each of the four purposefully invited farmer groups, a consensus about their participation in the F2M project was reached. All four farmer groups had been formed under NAADS and have had prior contact with the partner NGO.

Hardly any of the farmers in the four groups received regular extension service and training. With the exception of one farmer group in Hoima district that applied synthetic pesticides on tomatoes on an irregular basis, none of the others used external farm inputs (e.g. mineral fertilisers, synthetic pesticides, commercial seeds and planting material). Most farmers employed an input substitution strategy and used farm yard manure and compost to replace mineral fertilisers for maintaining soil fertility. The fact that these agronomic practices complied with organic standards certainly eased the transition to organic agriculture.

The initial degree of market-orientation among the four farmer groups was low. If farmers sold surplus

crops, then this was done on an individual and random basis without targeting specific markets. In both districts, the NAADS programme helped to raise awareness about group formation and market orientation among the participating farmers. At the same time, social cohesion within NAADS groups was generally low. Facilitators and researchers considered strong group cohesion as an essential condition for project success and thus were concerned that the initially low group cohesion would have negative consequences for future activities.

Based on achieved agreement between the four farmer groups, the NGO and the research team, facilitators and researchers provided technical training to farmers at the beginning of each ERI phase. In contrast to trainings farmers received elsewhere, the ERI training combined technical dimensions with skills and management aspects of the transition to organic agriculture. Much emphasis was given to the strengthening of farmers' creativity and interpretation. The training sessions were organised in an interactive manner, drawing on a pool of participatory tools, such as seasonal calendars and maps to explore available resources. Facilitators switched between teaching and facilitation modes, depending on the situational requirements. An important training component was the strengthening of group cohesion, group management and group self-reflection abilities. Role plays among helped to illustrate the transition to organic agriculture as a process that requires collective and collaborate attempts to achieve anticipated process outcomes. In an early stage of the project, facilitators supported the functional differentiation of roles and responsibilities within groups. This was done by encouraging the election of three to five group-specific representatives for committees to handle PMR, FPR and PME respectively.

At the beginning of the F2M project, farmers in all four groups quickly developed high and sometimes exaggerated expectations towards external support. Most of these expectations were supply oriented, based on assumptions that NGOs will "facilitate" access to material inputs (e.g. seeds and planting material). It was further assumed that the NGOs "will bring organic markets" to farmers, not that farmers would have to explore markets on their own. The role of the facilitators was hence to support a change of farmers' thinking about organic agro-enterprise development towards one that demands active and self-reliant actors (as opposed to passive responder to random market demands). In this early project stage farmers were uncertain whether they could handle the different steps of the ERI process. The exposure to so far unfamiliar facilitation and training methods posed a challenge to farmers, but also helped to maintain the necessary vigour and curiosity during and after each training session. Despite this challenge, there was a continuously high attendance rate of trainings and workshops across all groups.

#### 4.2 Level 2: Learning progress

In each of the five ERI phases farmers progressively expanded their research capacities to make farm observations about agro-ecological processes (e.g. soil-plant relations, disease dynamics on different crop varieties) and collect relevant market information for organic agro-enterprise, both as individuals and collectives. During the diagnostic stage (PD), visioning exercises increased farmers' ability for setting individual and group targets and subsequently translating these targets into action plans that all members committed themselves to. Furthermore, farmers learned to evaluate visions and goals against available farm resources such as the availability of land, soil qualities, and family labour. Facilitators reported group dynamic trainings as one of the most crucial elements in this phase. Such training helped farmers to understand the deeper meaning of social capital (i.e. why cooperation is important when transitioning to organic agriculture) and became an important precondition for the subsequent market research (PMR) and farmer research (FPR) activities. Facilitators and researchers also observed that group dynamic training also helped to overcome the danger of dissolving farmer groups as it was the case outside the project area. Inspired by role plays and gender disaggregated daily activity calendar exercises, participants emotionally debated the usefulness of traditional gender roles and farm labour division. Men started to talk openly about the high workload of women, which has not been the case before. Such exercises initiated a change in perceptions of gender specific roles and strengthened the status of women across the groups.

Each farmer committee received additional training in the three respective ERI modules, and their capability to communicate findings to other group members was strengthened. Such forms of 'agency' were introduced with the intention to reduce the labour burden for other group members during the transition process to organic agriculture and to build consolidated field organisations with clear responsibilities. In addition to the three ERI specific committees, groups also established a financial and a "disciplinary" committee who were in charge of managing financial assets and control members' compliance with community bylaws respectively.

Through PMR farmers learned to identify and prioritise organic markets and organise market visits at district and national level. Members of the four PMR committees learned to collect, record and analyse commodity prices and provide feedback about quality and quantity demands to the group upon their return. Through the PMR activities farmers deepened their understanding about market requirements, including organic certification and inspection. Moreover, insights into the functioning and dynamics of domestic and international organic markets have become a critical knowledge base for all four farmer groups. Back in their groups, combining and comparing the information collected during

PMR against available resources explored during the PD helped to prioritise agro-enterprise options. The prioritisation of agro-enterprise options was done during groups meetings. At this stage, farmers learned to conduct simple cost-benefit analyses, risk assessments and trade-off analyses between food and cash crop production and hence avoid one-sided investments into cash crops at the cost of household food security.

Following the prioritised agro-enterprises, all four farmer groups were trained in conducting FPR. The underlying rationale for this step was to first determine the performance of new crops on different soil types employing under different organic management scenarios before making large scale investments. FPR was also conducted for newly prioritised food crops meant for household consumption (Table 4). Like during the PMR, the FPR training and subsequent field implementation helped farmers to develop, and with time, to master their ability for planning, setting up and analysing agronomic on-farm trials. Experimental skills acquired by farmers also helped them to become more creative and critical adapters of agricultural technologies, for example farmers changed planting dates and the spacing of crops.

The appropriation of skills for the interpretation of information and decision-making during the PMR and FPR phase was of particular importance. Farmers learned how to diversify production and marketing options and to take strategic agro-enterprise decisions based on self-defined research questions and criteria. When farmers decided on specific agro-enterprises during the fourth step of enterprise development (ED), such skills were directly applied for calculating land, labour and planting material requirements. At this stage, however, major obstacles to learning and the overall transition to organic agriculture emerged. Farmers experienced that the crop and price information they obtained during the PMR have changed once they reached the ED phase 12 to 18 months later. Poor records of collected market data made the design of ED strategies difficult. Moreover, the lack of organisational capacity to learn how to manage the internal control system by farmers (i.e. the ability to set up a rigid record keeping system) delayed the entire transition processes significantly.

The setback caused by insufficient management of the internal control system was to some extent offset by farmers' ability of mastering PME principles, a critical skill for tracking livelihood changes at household and community level. Livelihood indicators developed during the PD exercises provided the basis for progress tracking. This allowed farmers to internalise the monitoring of transition progress, something that in conventional project designs is externalised. All F2M groups adopted a "culture of monitoring", which was expressed in the form of detailed record keeping of agronomic and economic activities and achievements. Although most farmers were highly motivated to apply PME tech-

niques, some faced difficulties to handle them. Observations made by facilitators suggest that also in the long run (i.e. beyond the training) applied tools for record keeping were "too scientific for elderly people to master".

Despite the introduction of committees who acted on behalf of the group during the PMR, FPR and the PME, time and labour investments into the process have been high for farmers. Differences in capabilities to attend ERI farmer training were observed in association with farmers' initial resource endowment. Managing scarce time was particularly difficult for resource-poor group members. Facilitators observed that low educational levels negatively influenced participation and in some cases became a barrier to learning already during the initial ERI training. "Progress was slow with the illiterate groups", as one facilitator put it. Facilitators also highlighted that economically poorer farmers dropped out during group formation. In a few cases this favoured elite farmer group members in their ability to influence group governance structures (e.g. through dominating the group constitution formulation process). There were also a few cases where group members withheld important market information from the group. Encouraging social investments into group benefits instead of maximising individual benefits was a major learning arena. Project progress was not always tangible and visible to farmers, which resulted in fading commitments among a few farmers at a later project stage. Overall, facilitators observed different levels of comprehension among farmers. According to facilitators, different paces of learning decreased the overall group learning progress and reduced the ability of the entire group to pursue its predefined goals.

### 4.3 Level 3: Attitude and behaviour change

Following the sequential training and coaching provided by the facilitators, we noticed that the more the project proceeded, the more clearly farmers' decisions and actions were directed towards market-oriented organic agriculture. This was expressed in the fact that farmers added the term 'organic farming' into their group name that was officially registered with district authorities. Commitment and ownership for 'their' project increased which facilitators observed through tightened ties among farmers and a pro-active advocacy role for organic agriculture and organic markets within their communities.

Following the initial ERI training we noted that culturally prescribed gender roles transformed. Empowerment of women became a central concern starting with the PD training. In each of the farmer committees, women were voted for key group management positions. Due to recognition received from facilitators and project partners, farmers were proud of this move towards gender equality and benefit sharing. Gender specific behaviour change was observed among men, who

**Table 4:** Experimentation matrix for selected FPR enterprises (1=group in Busiisi, Hoima; 2=group in Kitoba, Hoima; 3=group in Ntenjeru, Mukono; 4= group in Kyampsis, Mukono)

Enterprises	Experimental test							
	Variety trial	Compost application	Mulch application	Compost + Mulch application	Farm yard manure application	Liquid manure application	Legume cover crops	Control
Ginger	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	3, 4	1, 2			1, 2, 3, 4
Garlic	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	4	1, 2, 3, 4			1, 2, 3, 4
Passion fruits	3, 4							
Pineapples	1		1				1	1
Beans	1, 2, 3, 4	3, 4				3, 4		3, 4
Cassava	1, 2							

started to re-think their traditional roles and hence behaviour within their families and in the groups. Men in the two farmer groups realized that labour within the family needs to be bundled in order to achieve set livelihood goals defined during the PD. With this in mind, some men started to participate in traditional female activities, such as weeding. This led to an overall improvement of gender relations observed within the households of the four farmer groups. Not all men showed the same levels of commitment towards gender equality. Some male group members showed reluctance to change the traditional role allocation in support of the empowerment of women. For instance, in one out of four groups women have not fully participated in group discussions and avoided to express their opinion openly in groups.

Forms of self-mobilisation among farmers were observed as a consequence of PMR training. All four farmer groups have made a deliberate decision to produce cash crops for organic markets during the first project year (table 5). In the second project year, farmers in Hoima conducted self-organised PMR activities and established linkages with buyers for organic pineapples at district level. Done in a similar way, though not always with targeted organic buyers in mind, new agro-enterprises emerged, such as pawpaw, jack fruits, groundnuts, mushrooms, chicken, and piggery. Similar hints for self-mobilisation were observed for FPR. Despite the high time and labour investments that each experimentation committee had to bear, one farmer group in Hoima decided to expand experiments to garlic and Irish potatoes, two commodities that have been indepen-

dently prioritised as cash crops for local markets without external support by the facilitators.

In all four farmer groups a high commitment to share resources, responsibilities and benefits was observed and in most cases initial group conflicts were solved through internal negotiation and conflict resolution mechanism. With time, market information and data gathered from experimentation became available to most of the group members and was commonly used as basis for joint group decisions. Mutual consent existed that benefits would be shared equally among group members. These activities required only minor facilitation support by the facilitators.

Some of the challenges observed in connection with organic certification simply perpetuated from the training. Despite numerous efforts, none of the four farmer groups managed to develop the necessary skills and the financial resource base to meet the quality requirements of setting up and running an internal control system for organic certification. For this reason, organic certification was obtained through one of the traders, who now owns the organic certificate. Moreover, accessing sufficient planting material was difficult for farmers due to financial constraints, which is why they opted for on-farm seed multiplication. In the case of ginger, this multiplication took two full growing seasons that could have been shortened through appropriate and accessible crop finance mechanisms.

#### 4.4 Level 4: Livelihood consequences

In the first project phases the focus of the ERI approach was on building human and social capital. For

**Table 5:** Organic enterprise options and market potentials accessed by farmer groups<sup>†</sup> (1=group in Busiisi, Hoima; 2=group in Kitoba, Hoima; 3=group in Ntenjeru, Mukono; 4= group in Kyampsis, Mukono)

Enterprises	USA	EU	Restaurant	Supermarket	Hotel	Organic shop	Trading centre	Food security option
Ginger	1, 2	1, 2, 3, 4						
Pineapples	1, 2	1, 2						
Passion fruits		3, 4						
Vanilla		3						
Bananas				4		4	4	4
Beans		3, 4		3, 4		3, 4	4	1, 2, 3, 4
Cassava								1, 2, 3, 4
Sweet potatoes								1, 2, 3, 4
Vegetables			1, 2	1, 2	1, 2			
Legumes	2	2	1, 2	1, 2	1, 2			
Poultry			1	1	1			

<sup>†</sup>Comprises pilot groups and second generation groups

this reason, no immediate financial, natural or physical capital benefits could be grasped by farmers. Especially during times of market research and field experimentation, production and sales were low, resulting in low income and limited re-investments into basic needs improvement. Although this circumstance might have had at times negative effects on farmers' motivation, the ERI groups did not drift away from the project. Their level of commitment and motivation was high enough to keep them in the process. This was the case irrespective of increasing vulnerability concerns due to unpredictable weather changes, for which the project has provided no immediate coping or fallback strategies. In the third project, contractual arrangements with local buyers and organic export companies, which were negotiated during ED, brought first tangible monetary benefits for groups and households. All four farmer groups managed to sell organic commodities (mainly ginger, beans, and soya beans) either as organic or on conventional markets. Farmers planned to re-invest income into education of children, improved clothing and housing. Facilitators also reported re-investments into the diversification of farm enterprises such as expansion of livestock production.

Facilitators reported increased soil health and crop yields for food crops such as cassava and beans, which they ascribed to improved farm management practices

and planting material. A major consequence of the entire ERI process was that farmers substantially increased their level of self-organisation, both as individuals and as groups. One group in Mukono district started to purchase crop specific extension expertise for organic passion fruit from the national research system at district level, another travelled to Kampala and sought crop specific support from one of the national research stations. Such unintended project outcomes are essential assets when taking the ERI process to a larger scale, as it is planned for out and up-scaling attempts in subsequent project phases.

FPR sites functioned as learning grounds also for the larger community in such a way that neighbouring farmers visited the on-farm trials and obtained planting materials and seeds. In this sense, FPR functioned as a demonstration plots for the neighbourhood. In Hoima, the ginger experiments conducted along one of the feeder roads attracted significant attention by district agricultural officers and thus knock-on effects in terms of creating public awareness about organic agriculture in general. On the other hand, farmers outside the F2M groups were also reported to have discouraging influence as reported by one project group in Hoima. Especially during the labour intensive FPR phase neighbours did not take the groups' FPR seriously and spread rumours that F2M activities are a waste of time.

## 5 Conclusion

The transition to more self-reliance in organic agriculture, as discussed in this paper, entails more than the adoption of a few agronomic measures that ensure compliancy with organic principles and production standards. According to the Kirkpatrick framework, the ERI-informed transition to organic agriculture can be analysed at four levels. These levels include the relevance and initial reaction of farmers to the ERI approach, learning progress among farmers as a response to training, attitude and behaviour change, as well as livelihood system changes that took place as a result of behaviour changes. Given our research question for evaluating the usefulness of the Enabling Rural Innovation approach to support the transitioning of smallholder farmers to market-oriented organic agriculture, the following conclusions are drawn:

The ERI approach helps to develop organic agro-enterprises by choosing farmers as the entry points. In order to initiate the transition process among farmers, it helps that a conducive institutional context as well as a clear demand for ERI interventions are in place. Policies, which advocated for a commercialisation of agriculture, created a demand for the ERI approach among farmers. We assume that the ERI approach is less effective in areas with limited institutional support toward market-oriented agriculture. Second, the ability and willingness to learn is an essential prerequisite for farmers to make use of the ERI approach when developing organic agro-enterprises. In comparison to contract farming, ERI trainings are much more learning intensive. Greater attention must be given to comprehensive learning processes at individual and group level to address more than only organic production standards. Farmer need to learn to independently make informed decisions. In this sense organic farmers must be much more than recipients or beneficiaries of new technologies and markets. They must actively design and shape their role as creative producers rather than passive adopters. We further argue that that the growing organic movement must consider learning for self-reliance as an explicit organic agriculture principle. Third, the ERI approach supports the translation of learning into more comprehensive attitude and behaviour change. Comprehensive behaviour change is needed to strengthen the farmers' position within increasingly competitive organic commodity chains. Such change processes, if they are meant to be transformative, must facilitate technical change, social change and mental change equally. Building skills for self-reliance is a lengthy process, and changing deeply rooted attitudes and behaviour requires time. Fourth, ecological, social and economic consequences of ERI-led behaviour were less immediate than initially expected. It takes several months to realise tangible livelihood benefits. This is due to the time intensive nature of developing individual and collective ca-

pacities for market-oriented organic agriculture. Based on lessons learned in Hoima and Mukono district, however, the ERI approach is a good starting point for farmers to develop entrepreneurial competences and agro-enterprises on their own. In that way learning achievements by farmers certainly complement the benefits of contract farming arrangements in organic agriculture.

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