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LEARNING ALLIANCE: OPPORTUNITIES TO ALIGN STAKEHOLDERS FOR TECHNOLOGY ADOPTION AND SUPPORTIVE MARKET CONDITIONS

Reianne Quilloy, Rica Joy Flor, and Martin Gummert
International Rice Research Institute,
Los Baños, Laguna, Philippines

E-mail: r.quilloy@irri.org

ABSTRACT

Producing high quality rice and obtaining price premium for smallholder producers have been a challenge for Asian rice farmers due to poor postharvest management, inappropriate technology, and unsupportive market conditions. This is an exploratory study of whether a multi-stakeholder platform called the Learning Alliance (LA), could facilitate the creation of conditions that enable the adoption of improved technologies and practices, and ultimately align varied stakeholders for innovation. We tackle five cases in Southeast Asia, focusing on Myanmar and the Philippines where the International Rice Research Institute tested the LA approach to improve village–level rice quality and enhance linkages for selling in larger markets.

Based on these cases, we provide important lessons learnt, challenges, and insights on how multi-stakeholder platforms can be optimized to support learning and change in rice postharvest to markets, with the smallholder rice farmers ultimately benefiting from the process.

Keywords: Rice, multi-stakeholder platform, postharvest technologies, market

INTRODUCTION

There is a challenge for rice postproduction in Asia, with farmers dealing with increasingly scarce resources, under variable weather conditions. Consequently, the magnitude of postharvest losses range from 15% to 25% (Gummert, *et al.,* 2010; Quilloy, Flor, and Azucena, 2015). Marketability most especially, is affected when farmers produce low quality rice. Quality loss caused by poor postharvest management, inappropriate technology, and lack of understanding of factors that affect rice quality result in low prices for farmers. In Myanmar, particularly in the lower delta, farmers do not produce high quality rice and have difficulties in marketing it. As a result, much of the milled rice in the markets contains yellow grains (LIFT, 2012) and this low quality rice is not suitable for export. Producing more rice with high quality is therefore an important factor in achieving the country's goal to be one of the world's rice exporters again.

Technology options to improve rice production and postproduction have been tested and partially adopted in different countries in Southeast Asia (Rejesus, Martin, and Gypmantasiri, 2013) Demonstrations and testing of these

technologies have shown that quality can be improved and losses along the postharvest chain can be reduced to 10% or less (Gummert, *et al*, 2010; Singleton and Azucena, 2017.) This could provide an opportunity for rice farmers to produce high quality rice and sell it to premium markets, thus, increasing their income. Given the reluctance of local market actors to pay higher prices for better quality, facilitating better linkages with premium markets have also been identified as a pre-condition to support uptake of technologies. To make optimal use of technology and increase farmers' income, there is a need to examine the rice value chain, determine the key actors and understand how they interact with each other with the objective to link farmers better with those premium markets (Flor, 2017). In this context, a Learning Alliance (LA) was used as a participatory multi-stakeholder process to identify, understand, and address the challenges. Using the principles of social learning and innovation, LA is characterized by continuous interactions and learning cycles to identify and address aspects required for socio-technical change at different levels.

This paper presents case studies to examine how participatory learning methods, applied in a multi-stakeholder platform, may have played a role in project processes and the outcomes that emerged related to linking smallholder farmers to market. The study describes rice postharvest projects that used participatory approaches —Participatory Impact Pathway Analysis (PIPA) method and established learning alliances (LA). The common factor within these cases was that these were facilitated through research projects within the International Rice Research Institute (IRRI). These approaches helped representative stakeholders in rice postharvest to plan, implement, and share resources with the combined goal to produce high-quality grains with minimize physical postharvest losses.

Multi-stakeholder learning through the LA

Learning is an explicit concept in the LA. In this context, learning becomes a product of interaction among stakeholders, which is regarded as experiential learning (Roling, 1992). International agricultural research projects bank on the concept of experiential learning, through adaptive research and Learning Alliance to facilitate research for development mechanisms (Flor, 2015). These approaches are shown to improve the link of science to policy and development (Schut *et al*. 2017). With this, the LA is considered to be a context-specific learning mechanism, which is governed by rules that define the actors to be involved and their roles that will help bring the innovative goal forward.

The LA framework is situated on the heels of psychology of learning (Bandura, 1977) and the sociological notions of shared learning (Agyris and Schon, 1958). Moreover, it is articulated in the traditions that understand learning as a process of critical reflection that can lead to transformation (Mezirow, 1991 and Dirx (1998) or emancipation (Freire 1970 and Mezirow).

Participatory method: PIPA approach

A common method in network building used in the four cases was to started with a multi-stakeholder analysis of the current postharvest innovation system. Three of the four cases had a Participatory Impact Pathway Analysis (PIPA). The PIPA is a guided exercise in which participants from different sectors identify the underlying causes of a shared problem. In Myanmar, the identified problem was that the farmers were not producing a rice crop with good quality and therefore could not sell it with good profit. Participants then examined opportunities, formulated their visions of success, and mapped the network of people in the value chain relevant to their community. Coming from various sectors, they interact and discuss sometimes differing views. They then bring together what they found out and make explicit possible change pathways (impact pathways) to overcome the problem. Lastly, they identify strategies for the project to support the different groups facilitating change in each pathway, which is carried on into a multi-stakeholder platform called the Learning Alliance.

METHODOLOGY

We used a case study approach to explore how LA had been applied and to what outcomes. The selection of cases was purposive to ensure similarity in that all cases are projects relating to rice postharvest, facilitated by the same research organization, and were implemented through an LA approach. We found cases, from Myanmar, Philippines, Cambodia, Vietnam and Indonesia.

We then implemented a review of secondary materials including trip or activity reports, project reports, and monitoring interviews by project staff from 2012-2016 for all five cases. Thematic analysis was done for the following general categories: implementation method, stakeholders and interactions, initial outcomes, and market

linkages. Two of five cases enabled linkages to the market, so we further examined these cases, and focused the analysis on the process to enable the linkages, as well as outcomes from those.

RESULTS

The International Rice Research Institute (IRRI), is one of the agencies that uses the LA approach to carry out the dissemination activities of the projects in rice postharvest. The LA approach was applied at IRRI since 2009 and ran across several projects and countries in Southeast Asia, namely: Cambodia, Philippines, Vietnam, Indonesia and Myanmar. Table 1 outlines the five cases of Learning Alliances in these countries.

The initial problems discussed during the PIPA workshops that were usually conducted as the inception for the Learning Alliance, and the range of topics changed as the LA group evolved over time. At the end of a learning cycle, for each activity, a facilitated reflection exercise is conducted to generate feedback, specifically asking the following questions: What worked? What did not work? What can we do differently next time? Who else should be involved? Based on these questions, a new learning cycle will emerge consisting of the updated or newly planned activity/ies that will take the initiatives further (ADB Final Report, 2013; MyRice Final Report, 2017, LA Final workshop report, 2015). It means that the learning cycles are linked to project cycles, thereby also limiting its scope.

Table 1. Description of the Learning Alliances in the five cases including country, years of implementation, key problems addressed, topics, stakeholders and funders.

Country	**Problem identified during PIPA**	**Topics**	**Stakeholders (aside from farmers and farmer groups)**	**Funding agencies (IRRI-implemented)**
Myanmar (2012-2017)	Farmers get low profit from rice	Variety Postharvest Market options Business models for PH technologies	DOA, DAR, Private companies, NGOs, millers, and traders	UNOPS, ACIAR, and SDC
Vietnam (2013-to present)	Current rice production in Vietnam is unsustainable	Improving postharvest management Sustainable rice straw management	Academic and research institutions in 5 regions in Mekong River Delta, Loc Troi, TruMilk, GrainPro	ADB and BMZ
Indonesia (2016-to present)	(No PIPA conducted)	Mechanized land leveling	Assessment Institute of Agricultural Technology, Farmer cooperatives, distributors	SDC
Philippines (2009-2013)	Rice postharvest prac affects rice quality	Safe storage system and drying for quality seeds	PhilRice, LGUs, CRS, Kaanib and Kadtu taya Foundations, GAMAPAKA, DA research centers, manufacturers, GrainPro Inc., AFPTI	ADB
Cambodia (2009-2013)	Rice postharvest prac affects rice quality	Combine harvesting, drying through flatbed or recirculating dryers, safe storage	MAFF, DAM, PDAs, GrainPro Inc.	ADB

*****UNOPS-United Nations Office for Project Services), ACIAR-Australian Center for International Agricultural Research; SDC-Swiss Agency for Development and Cooperation, ADB-Asian Development Bank, BMZ- German Federal Ministry for Economic Cooperation and Development; AFPTI- Advocate for Philippine Fair Trade, Inc.

Cases with LA linked to markets

Of the five cases reviewed, two had Learning Alliances that had activities which engaged markets. These LAs aimed at linking the farmers with product outlets that would enable them to obtain price premiums, or increased profits from adopting improved practices. The iterative learning between stakeholders was assumed to support the alignment of different groups and co-create knowledge towards using improved rice postharvest throughout the supply chain.

Myanmar case

IRRI's project entitled "Improving livelihoods of rice-based rural households in the lower region of the Ayeyarwaddy Delta" was implemented from 2013-2016, using the Learning Alliance approach to support adaptive research and participatory demonstrations in close collaboration with NGOs (Groupe de Recherches et d'Echanges Technologiques or GRET and Welthungerhilfe), and government partners (the Department of Agriculture and the Department of Agricultural Research).

The objective of the project was to identify improved rice varieties and management or post-harvest practices, which entail increased rice productivity and income, as well as to improve extension. To initiate this, a PIPA workshop was conducted where everyone identified that the low quality rice hinders farmer from getting a premium price.

Building on this problem, the group agreed to establish a Learning Alliance to facilitate the learning process among stakeholders. A total of ten Learning Alliance activities were conducted, ranging from meetings, demonstrations, capacity building, and development of communication materials. The activities were facilitated by IRRI, as a neutral broker between mostly local organizations. After each learning activity, the group reflected on the learnings and identified new and relevant topics. For the Myanmar case, Learning Alliance activities engaged a total of 183 male and 37 female participants from 2012-2015.

Philippines case

From 2009 to 2013, the Learning Alliance in the Philippines is an approach in two projects, with parallels in both Cambodia and Vietnam. One is titled "Addressing the Pre- and Postharvest Challenges of the Rice Supply Chain," which focused on mechanisms that will address the postharvest challenges; and another project titled "Strategic Research for Sustainable Food and Nutrition Security in Asia" which aimed at improving the food and nutrition security. The Learning Alliance in the Philippines comprised of regional field officers of the Department of Agriculture, Philippine Rice Research Institute, and NGOs and Farmer organizations. Initially, the group has identified causes to the rice postharvest issues in the Philippines and why this was happening. The stakeholders jointly identified the challenges, and developed collaborative mechanisms to address these.

Building on the initial problem regarding lack of technological options, the stakeholders jointly tested technologies to improve rice postharvest quality, including mechanical harvesters and dryers, as well as good storage practices using hermetic storage. As the group went through learning cycles, value- adding activities were conducted to optimize the use of technologies. Activities conducted were: (1) capacity building of operators and users of these technologies, (2) facilitating cross country learning to facilitate knowledge sharing across three regions and countries, and (3) establishing new networks for collaboration comprising of new stakeholders to explore market opportunities for smallholder farmer groups.

The iterative learning cycle approach of the LA members included adaptive research trials on hermetic bags to assess quality of stored rice. Researchers also introduced the Reversible Airflow Flatbed Dryer in farmer cooperative groups.

Learning Alliance activities in Myanmar

Table 2 describes the activities conducted by the LA in Myanmar. After the PIPA workshop, during which the lack of dryers was identified as a key problem, a flatbed dryer was built by the NGOs for the community. IRRI agreed to provide the technical support for the flatbed dryer, as the entry-level technology. At this point, the learning was focused on the technical aspect of using the machines to obtain better quality rice. Furthermore, once some

stakeholders have tried and seen this was possible, they also wanted to explore incentives for adopting this practice. In doing so, the use of flatbed dryers needed engagement with millers and traders since they ultimately would need to buy the better quality rice at a price premium to enable the farmers group to return the investment.

As the learning progressed, the group also became interested in other technologies that may help them improve their rice quality. Researchers from the project introduced new practices and technologies such as hermetic storage and timely and effective harvesting, which enabled farmers to implement effective postharvest practices and further produce high-quality rice. These practices included threshing immediately after harvest, drying using a flatbed dryer, using communal storage systems, and bulk selling. Table 2 illustrates the range of learning topics tackled and activities undertaken based on the socio-technical challenges encountered along the way by noting the key learning from each activity. The LA meetings and activities provided a feedback mechanism to assess (1) What worked, (2) what didn't work (3) [If it didn't work] what should be done about it (4) who should be involved in the next activities. The subsequent activities were defined from the response to these questions.

Table 2. Learning cycles from the activities in Myanmar

Timeline	Activity	No. of Participants	Key learning/s
2013 July	PIPA workshop	20	Main problems and technologies of interest. Established village-level learning alliance and agreed to establish a flatbed dryer
2013 December	Arranged coordinated use of flatbed dryer	38	Established flatbed dryer, capacity-building on operation, and mechanisms for collective use
2014 March	Miller used the dryer	32	• Millers tried the dryer and reported higher milling recovery; encouraged farmers to use the dryers • Discussed dryer operations and maintenance; negotiations on drying fee • Discussion on trust between traders and farmers on providing incentives for high quality grains • Drafted guidelines how to use inventory storage (mechanism where farmers can store grains jointly and wait until price is higher)
2014 May	Market visit	17	Visited wholesale and export markets in Yangon to interact with traders. They also learned about quality, varieties, and pricing of grains; visited seed farm for good seed sources
2014 November	Thresher demonstration	27	• Demonstrated lightweight threshers for easier transportation • Participants shared lessons on using dryers and inventory storage with good selling price.
2015 February	Market visit	19	Interacted with Shwe Bo farmers, producers of high quality Paw San variety, to share good practices; farmers who plans to sell interacted with traders
2015 February	Message design workshop	20	Farmers with first-hand knowledge about the dryers designed communication materials to reach more farmers to encourage collective drying and selling
2015 April	FBD demo and grain quality assessment	28	Potential users asses quality of sun dried compared to mechanically dried grains
2015 June	Final Learning Alliance meeting	19	Documented the complete learning cycle of testing postharvest options to selling to better markets; reflect on the highs and lows of the alliance throughout the project cycle; and discuss opportunities to continue the alliance
	TOTAL	220	

Source: IRRI, 2015

Learning Alliance activities in the Philippines

The case of Learning Alliance in the Philippines included activities in Mindanao, which engaged a total of 297 male and female participants from 2009 to 2013. Members started with trying out hermetic storage and demonstrations of reversible airflow flatbed dryer (RAFBD). The iterative learning cycles involved the Philippine Rice Research Institute, IRRI, and Catholic Relief Services (CRS), a faith-based NGO and community-based foundation (KAANIB), which aides smallholder farmer groups (GAMAPAKA) in Mindanao, Philippines through an Agro-enterprise project. For this initiative, IRRI and PhilRice helped CRS establish three reversible airflow flatbed dryers to be used by farmers organized in clusters in three villages.

Table 3. Learning cycles from the activities that focused on Reversible Airflow Flatbed Dryer and Hermetic Storage in the Philippines

Timeline	Activity	No. of Participants	Key learning/s
November 2009	PIPA workshop	51	LA members identified that the Philippines need to improve its Postharvest systems using better technologies for drying and storage
2010 April	PhilRice established mechanical dryer for demonstration; training of hermetic storage practices	30	IRRI Superbag can be used for smaller scale hermetic storage (50kg). Members also learned that it is important to have trained operators to achieve efficient drying system
2010 March	Farmers and seed growers undergo adaptive trials for Superbags	29	Seed growers /farmers have noticed how rice quality is affected by storage. However, Superbags are not readily available and are expensive; Local Department of Agriculture purchased the bags to make it available to farmers and sold them in retail at cost.
2011 October	Post-Production to Market training course conducted at IRRI HQ for project partners and other interested organizations	3	Representatives from Catholic Relief Services , Kadtuntaya, and Kaanib Foundations proposed building a Reversible Flatbed Dryer for the communities in Bukidnon as one of the cases used in the exercise.
2011 November	Local government officials developed Business cases to document lessons learnt and profit generated (if any) from using Superbags ; dryer demonstration continued with members from other provinces	40	Superbags were mostly used by Seed growers. Farmers also use them as safe keeping but some farmers have not reduced their seed rate to prevent losses from rodent damage; Taguibo Farmers' Association appealed to have an RAFBD established
2011Octob er	Developed video of farmer testimonial on the use of Superbags	27	GrainPro, Inc deployed more superbags in the local agricultural shops and Catholic Relief Services further firmed up the plan for the Reversible Airflow Flatbed Dryer for GAMAPAKA Community

2012 March	Visit of PhilRice for finishing the establishment of dryer	n/a	Farmers found that the drying time took longer because the group used a locally-sourced binder that caused cracks in the bin. PhilRice and GAMAPAKA agreed to replace the mix needed to make the bin sturdier. Community members suggested some modifications in the operation, but was turned down because the efficiency will be compensated.
2012 June	Dryer was established in one site turned over to GAMAPAKA (farmer group)	8	The farmers said they have benefited from the dryers. They said that of all the mechanical dryers that were given to farmers, the RAFBD is the type of dryer that the farmers need. But the capacity is just 4 tons
2012 December	Final LA meeting	34	Documented the complete learning cycle of testing postharvest options, like the RAFBD to selling to better markets
January 2013	Business plan and dryer for Taguibo Farmers' Association established	47	Farmers in Bukidnon and Butuan shared their learnings on using Superbags, and RAFBD.
2013 February	Kaanib Foundation proposed to build 2 more dryers	28	Potential users asses quality of sun dried compared to mechanically dried grains
	TOTAL	297	

Source: IRRI, 2013

It can be observed that earlier in the learning process, stakeholders tested the effectiveness of these technologies through demonstrations and adaptive research. And then, a wider expansion of networks was explored for other topics of interest. This also entailed activities that made the technologies available to smallholder farmers, i.e. the Department of Agriculture purchasing Superbags in bulk so that Filipino farmers, particularly seed growers, can buy it in retail and local shops buying for the sake of making it available for consumers who can only afford to buy in retail.

Similarly, in the establishment of a flatbed dryer, the uptake of the technology can be attributed to intermediaries between technology providers (PhilRice) and the community. In the case of GAMAPAKA, the building and managing the RAFBD happened through the LA linkages. In 2012, it was decided that the dryer will be co-managed by GAMAPAKA and the managing board of the clusters. Only 50% of the GAMAPAKA members were part of the clusters then.

Market linkages

While LA members in Myanmar were collectivity trying out technologies, they also pointed out that lack of market incentives for producing better quality grains. Thus, a market visit was conducted for members to understand the wholesale and export market and the requirements of the exporters in terms of quality, timing and volumes. During this visit, participants took note of the township-based selling mechanism represented by a trader. Upon interacting with traders and visiting additional markets, the LA members realized that the Bogale rice is priced the lowest among bigger markets, and that producing good quality grains will have higher price in the other markets. Some members who dried using the flatbed dryer and stored grains hermetically for three months at the GRET communal storage sold their grains at a higher price. Upon reflection, the group agreed to test whether the flat bed dryer technology could help them bring better quality grains, which in combination with selling in premium markets translates of better price.

To do this, a social learning activity was conducted with the group to understand the potential of selling high-quality rice to the wholesale market in Yangon. One farmer who used the flatbed dryer to dry his crop, worked with a local rice mill under guidance from the wholesale market traders for milling his paddy according to the quality

standards required by the market. A sample was then sent to the wholesale market in Yangon and a price offer made by one trader, which was significantly higher than the local price. The farmer then shipped his milled rice and gained US$140/ha more profit (after deducting the additional milling and transportation cost) compared to compared with selling in the local market (LIFT, 2014).

To encourage more farmers to use the dryer so that they could benefit from collective selling, an information awareness campaign featuring the benefits of using the dryer was conducted, targeting other potential users. The LA members with assistance from the facilitators also developed materials for traders and millers to encourage providing incentives on quality from mechanically-dried grains.

The market linkages in the Philippines case were coordinated through an NGO and farmer cooperative. The KAANIB and CRS organize trainings and meetings, and also link with government agricultural technicians. With CRS, KAANIB made arrangements to help farmers sell by bulk. The farmers keep or sell 40% as they like, but 60% of the farmers' produce will be included in bulk selling. The project also provided other equipment (hand tractors, etc.) for use among the clusters. The farmers paid to the cluster leaders for rent of these equipment and the fees were managed by the cluster officials. Each cluster has its own bank book. The collection can be used for maintaining the equipment or for re-investing on other equipment.

After the turn-over to the local NGO, GAMAPAKA (Smallholder Farmers of the Parish of Kalabugao) in 2012, it was decided that the dryer will be co-managed by GAMAPAKA and the managing board of the clusters. Only 50% of the GAMAPAKA members are part of the clusters. This co-management means that not only GAMAPAKA members but other farmers from the clusters (in Kalabugao and Hagpa) will be using the dryer. The decision to set-up the dryer in Kalabugao was because Hagpa is further away from the main road; farmers from Hagpa pass through Kalabugao when they bring out their produce. It was more efficient for all farmer users to have it in that village. A year after using the dryer, the farmer group reported that the farmers have already dried 95,000 kg rice and corn using the mechanical dryer. Upon using the dryer for two seasons, GAMAPAKA earned US$612 and have sold to local trader.

Other key lessons from the LA process

The main thrust of the LA was to provide an avenue for technological learning. From the suite of technologies being tried out, varied stakeholders learned about different techniques and equipment. In trying these through LA activities, they further examined what conditions would be needed for more farmers to implement those.

A key learning was about finding the incentives for farmers to shift their practices. The linkages with market actors were useful in this. In one LA meeting, millers shared that they are convinced that they can obtain higher milling recovery using machine dryers, thus, encouraged farmers to produce good quality. Training on assessing grain quality was conducted so farmers could assess their harvest better and negotiate for higher price. LA members also reported using reapers and combine harvesters as an improved harvesting mechanism. Arrangements for coordinated use of these machines for various villages were put in place.

One of the key lessons, however, is that the LA is hinged on a project, thus, its implementation is bounded by the project cycles. For both Myanmar and Philippines case, the responsibility for continuation and sustainability of LA was handed over to the community when the project ended. Due to funding constraints, and project implementation timeline, there was a limited opportunity to evaluate the sustainability of the LA approach and its effectiveness and trace the organic community-based initiatives arising from it, after the project.

Although the LA has been used successfully to engage market actors and align varied stakeholders towards equitable incentive mechanisms that will be conducive of farmers changing their practices, this is not always easy. It takes time to align different stakeholders. The cases show that although there were activities tried, they were not always resulting in the expected or aimed for changes.

CONCLUSION

This paper sought to understand how an innovation platform, called the Learning Alliance, supported learning that led to facilitation of technological and institutional innovations in Southeast Asia, particularly, in Myanmar and the Philippines. Guided by an action research framework that encouraged iterative learning cycles, the LA in Myanmar and the Philippines was used as a learning mechanism that started by jointly learning about improving rice quality through good postharvest practices and technologies, which later on brought changes in postharvest system.

In Myanmar, the LA supported use of good postharvest technology and practices that improved the rice quality and aligned varied stakeholders that enabled created opportunity for farmers and stakeholders. It also enabled the group to undertake collective action that resulted in exploring larger markets where price incentives are given for better quality rice. It also provided a safe dialogic space where views of all members, including women, were considered. In the Philippines, the LA enabled members to create value-adding activities that will help expand its network where opportunities towards organizing for community development were explored.

Through the LA, the involvement of varied stakeholders who are linked to markets, brought the learning process further. It did not only entail jointly making technologies optimally work, it can also bring opportunities to improve the rice value chain. However, it is not inherent in the platform.

Currently, at IRRI the LA approach continues to be utilized to support multi-stakeholder process for agricultural research for development. However, the LA needs more buy-in from other stakeholders to make it more sustainable. In the context of Agricultural Research for Development, its effectiveness and efficiency needs to be critically assessed, and design mechanisms for scaling out developed and applied.

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