
AGRICULTURAL EXTENSION AND THE BUENA MILPA PROJECT IN THE WESTERN HIGHLANDS OF GUATEMALA

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MEAS Report, prepared by Vickie Sigman



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Report on the field based rapid review conducted from
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TABLE OF CONTENTS

ACRONYMS	iii
ACKNOWLEDGMENTS.....	iv
EXECUTIVE SUMMARY AND RECOMMENDATIONS	v
1. BACKGROUND.....	1
1.1 PARTNERSHIP IMPLEMENTATION	1
1.2 DEFINITION OF RURAL EXTENSION	1
1.3 METHODOLOGY.....	1
1.4 ORGANIZATION OF THE REPORT	2
2. CONTEXT.....	2
2.1. INDICATORS OF WELL-BEING.....	2
2.2 AGRICULTURE.....	3
3.1. DEVELOPMENT	4
3.2. FRAMEWORK	4
3.3 STAFF AND COVERAGE.....	5
3.4 APPROACH	6
3.6 KEY ACHIEVEMENTS AND CHALLENGES	8
4. BUENA MILPA PROJECT	10
4.1 DEVELOPMENT	10
4.2 OBJECTIVE AND FOCUS	10
4.3 APPROACH	11
4.4 COLLABORATORS.....	12
4.5 KEY ACHIEVEMENTS AND CHALLENGES	21
5. RECOMMENDATIONS	23
5.1 RECOMMENDATIONS ADDRESSING CHALLENGES	23
5.2 ADDITIONAL RECOMMENDATIONS	26
APPENDIX A: CONSULTANT’S SCOPE OF WORK	28
APPENDIX B: LITERATURE/INFORMATION REVIEWED AND REFERENCES	29
APPENDIX C: PERSONS CONTACTED	32

ACRONYMS

AME	Municipal Extension Agency (Agencia Municipal de Extensión)
ASOCUCH	Association of Organizations of the Cuchumatanes (Asociación de Organizaciones de los Cuchumatanes)
CATIE	Tropical Agriculture Research and Learning Center (Centro Agronómico Tropical de Investigación y Enseñanza)
CADER	Center of Learning for Rural Development (El Centro de Aprendizaje para el Desarrollo Rural)
CDRO	Cooperation for Rural Development of the West (Cooperación para el Desarrollo Rural de Occidente)
CIMMYT	International Maize and Wheat Improvement Center (Centro Internacional de Mejoramiento de Maíz y Trigo)
DRE	Rural Development Extensionist (Desarrollo Rural Extensionista)
EAF	Family Farming Extensionist (Extensionista para la Agricultura Familiar)
DICORER	Directorate of Regional Coordination of Rural Extension (Dirección de Coordinación Regional de Extensión Rural)
ICT	Information and Communication Technologies
ICTA	Institute of Science and Technical Agriculture (Instituto de Ciencia y Tecnología Agrícolas)
MAGA	Ministry of Agriculture, Livestock, and Food (Ministerio de Agricultura, Ganadería, y Alimentación)
MEAS	Modernizing Extension and Advisory Services
NGO	Non-Governmental Organization
SerJus	Legal and Social Services (Servicios Jurídicos y Sociales)
SNER	National Rural Extension System (Sistema Nacional de Extensión)
USAID	United States Agency for International Development

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It has been more than forty years since I first worked in Guatemala. Many of the challenges of research and extension are similar to those 'back in the day'. However, I see progress in understanding between researchers and extensionists of their common goals and objectives. The Buena Milpa project is to be highly commended for rising to the distinct challenge of bringing together people from substantially diverse backgrounds, not only researchers and extensionists but also government and NGO staff, to focus on improving the lives of smallholder farmers and their families in the Western Highlands.

I alone accept responsibility for any shortcomings or factual errors in this report.

EXECUTIVE SUMMARY AND RECOMMENDATIONS

Discussions beginning in mid-2015 between CIMMYT and MEAS resulted in a collaborative activity to examine the extension landscape in which the USAID/Guatemala Feed the Future Buena Milpa project operates and to assess ways to strengthen extension activities of that project. The rapid review was carried out over a two-week period in late 2015 in the Western Highlands of Guatemala through literature review and fieldwork interviews with extension stakeholders and Buena Milpa staff.

Extension activity began in Guatemala in the 1950's. Among other factors, Guatemala's long and violent civil war precipitated the closure of all public sector extension in Guatemala in 1990. The country's agricultural ministry, MAGA, established a new system in 2013. This system provides the framework for a country-wide pluralistic, demand-driven extension system with MAGA's Rural Extension Services central to and anchoring the system. The basic approach of MAGA extension is farmer-to-farmer. Through a cascading training system, MAGA extensionists are trained to develop the capacity of volunteer farmers, called promotores, who work with organized groups of farmers, called CADERS. In a short time, MAGA has recruited and posted over 1,000 extensionists across Guatemala's municipalities, an administrative division similar to a US county. Each municipality has three extensionists. Each focus on one of three themes: system management and supervision, family farming, or healthy households including nutrition.

The new system is not without its challenges. The most frequently heard critique is that public sector extension is highly politicized with reports of extensionists being hired due to their party affiliation and with goods or services provided to those in-line with the 'approved' party. The stability of extension staff from year to year is questionable. Most extensionists are not civil servants, rather they work under annual contracts which may or may not be renewed. For these as well as historical reasons, there is a pervasive distrust and lack of confidence among some of the government, NGO, and private sector actors in the system. The system faces other challenges including inability to reach all farmers with extension services (coverage), weak components in the system (e.g., municipal level offices), insufficient capacity development opportunities for those in the system, and limited resources.

The Buena Milpa project, led by CIMMYT, is meant to be a scaling-out activity, which implies a major emphasis on extension activities. Previously studied technologies, practices, processes, and models are to be scaled-out. To avoid a technology-driven project, the project adapts these technologies, practices, processes, and models based on farmer and other stakeholder needs and input. The project focuses on three technical areas: (1) milpa-maize germplasm improvement, (2) natural resource conservation in farming systems, and (3) maize-based farming systems and diversification. It also focuses on two enabling environment process areas: (1) agricultural innovation systems and (2) social inclusion. The latter stresses the inclusion of those previously excluded, women in general, and indigenous men and women in particular.

For its implementation, Buena Milpa adopts an agricultural innovations system approach. The project has established an innovation network of collaborating government and NGO extension and research organizations who implement Buena Milpa supported adaptive research and extension activities. Thus, Buena Milpa staff do not work directly with farmers, rather members of the innovation network do. Buena Milpa acts as innovation system broker, or facilitator, in the network and develops capacities of network members. In essence, Buena Milpa's extension approach is embodied in its innovation network.

The project has implemented an extension certification training program of about 20 days over a period of several months for 30 extensionists. It has plans to train researchers, extensionists, and farmers.

Buena Milpa works closely with Guatemala's national research institution ICTA, a network member, to fine-tune existing technologies, practices, and processes. Other members of the network are MAGA, nine NGOs, an association of exporters, and the University of San Carlos. FAO, CATIE, Mas Frijol, and Food for Progress are potential future network collaborators as they either have considerable experience with different aspects of extension or share similar objectives with Buena Milpa.

With the exception of ICTA, collaborating institutions and organizations focus largely on extension activities. They may however be involved in validating technologies and practices along with ICTA. Innovation network collaborators propose activities to Buena Milpa that meet their goals and interests and are in-line with Buena Milpa's. For example, the establishment of maize seed banks, re-introduction of traditional vegetables in the farming system, and poultry projects to improve farm diversity and diets have been proposed by innovation network members for implementation.

A number of key challenges need to be met so that Buena Milpa achieves its objectives. Challenges along with recommendations to address them include:

Innovation Systems Approach. Innovations systems concepts are not well-understood by network collaborators and need to be clarified. Convening members are called upon to define and develop shared understanding of concepts along with disseminating results of deliberation. Maintaining member commitment is a challenge. The development of an innovation network strategy to clarify and guide network activity and encourage member commitment is recommended. Building trust among network members is a very high priority challenge. Recommendations include further research on ways to stimulate trust, openly discussing the issue, experimenting with team building exercises, and modelling trust in relationships with collaborators. Recommendations to promote and measure diversity suggest integrating gender issues in all Buena Milpa training, developing an online short course focused on gender issues for use by network members, and trying-out the Women's Empowerment in Agriculture Index as a complement to Buena Milpa's strategy for measuring diversity in its efforts.

Delivery System. The institutions and organizations involved in the innovation network, and particularly the extensionists and the promoters and farmer groups they work with, are categorically critical to Buena Milpa success. The challenge is in finding the right institutions, organizations, and people and ensuring they are well-prepared for their roles. It is recommended that criteria be collaboratively developed to select these entities and people; that extensionists in particular, be amply trained for success in training promoters and in the technical aspects of the jobs they are to perform; and that adequate follow-up and monitoring of progress and problems be consistently provided. Recommendations to address the challenge of sustaining promotor participation focus on implementing a recognition program to acknowledge their contributions, supporting exchange visits and study tours, and exploring possibilities of promoters providing for-free goods and services to their farmer groups (such as vegetable seedlings).

Training. Effective training of extensionists is essential to achieving Buena Milpa objectives. Recommendations to strengthen training include: adopting a learning theory, improving learning diagnostics, including extension theory and nutrition in the curriculum, inviting Healthy Household Extensionists (typically women) to participate in training, and in addition to existing measures, developing participants' personal narratives to document training impact. To respond to network requests for

additional training, a training exchange program is recommended whereby network collaborators participate in each other's existing trainings.

Technologies, Practices, and Processes. There is a lack of clarity in what will be scaled-out. The challenge is to identify the technologies, practices, and processes that Buena Milpa expects to offer and around which extensionists will engage with promotores and farmer groups—without mandating or prescribing this, and with allowances for further development and testing as may be needed and for response to farmer identified needs. Recommendations include articulating the probable technologies, practices, and processes and creating a related tool for use by extensionists and others to guide field activities. It is recommended that tool creation involve (a) developing an inventory prioritizing probable technologies, practices, and processes cross-referenced with a scale of their 'readiness for use' and (b) matching inventoried technologies, practices, and processes with their potential users as described by the typology of farmers CIMMYT scientists are working on for project use. To provide input to the prioritization process, it is further recommended that the technologies, practices, and processes be assessed against factors which have been shown to influence the adoption of innovations (i.e., relative advantage, compatibility, complexity, trialability, and observability).

Politicized Maize. There are issues related to genetic property rights that impact maize seed development. Indigenous populations in the operational area of Buena Milpa may view maize breeding activities as a threat to their native maize and thus to their culture. Mitigate this possibility by using best practices in approaching communities such as involving local leaders and locals experienced in maize breeding activities, obtaining permission of community authorities, and emphasizing transparency in community relationships.

Balance between Research and Extension. For historical and other reasons, achieving the appropriate balance between research and extension activities related to scaling-out efforts represents a challenge. Recommendations suggest developing a typology of research to extension activities to track and report Buena Milpa activities in light of the typology and involving extensionists early in the ICTA validation of technology process in order to facilitate learning and the exchange of ideas among farmers, extensionists, and researchers.

Headquarters and Field Linkages. Often a challenge in any organization, increasing opportunities for communications between headquarters and the field is needed. Recommendations to increase opportunities include scheduling video conference calls, announcing in advance the schedule and purpose of scientists visiting from headquarters, requesting that scientists brief local staff on results of their visits, implementing collaborative planning sessions, and sharing work plans.

An additional recommendation to **Expand Coverage to Achieve Greater Impact** is put forward. Suggested actions are: engaging more with government structures, encouraging selected farmer group members to become promotores themselves and subsequently organize additional farmer groups, enhancing collaboration with USAID's Western Highlands Integrated Program, inviting farmer apex organizations as well as Mas Frijol, Food for Progress, FAO, and CATIE to join the network, and including ICT training in extension certification training along with a competitive grants program to fund member use of ICT in extension activities.

1. BACKGROUND

1.1 PARTNERSHIP IMPLEMENTATION

In mid-2015 the International Maize and Wheat Improvement Center (CIMMYT) contacted the Modernizing Extension and Advisory Services (MEAS) project to discuss a collaborative activity to review related agricultural extension activities of the Buena Milpa ¹ project in Guatemala. CIMMYT, headquartered in Mexico, is one of fifteen research centers in the Consultative Group for International Agricultural Research. As part of its efforts to develop sustainable intensification options for and with smallholder farmers in maize and wheat-based farming systems, CIMMYT leads the Buena Milpa project. MEAS, based at the University of Illinois, engages in action-oriented research and outreach efforts to strengthen agricultural extension systems in developing countries to effectively serve the food security and economic development needs of resource-poor men and women farmers. The Buena Milpa project is a Feed the Future activity funded by the United States Agency for International Development (USAID) and carried-out in the Western Highlands of Guatemala. The project focuses on improving food security and reducing malnutrition through promoting innovations to improve the sustainability of Western Highland maize systems.

Driving the CIMMYT/MEAS collaboration was the objective of bringing extension expertise from MEAS to link with a traditionally research-focused institution, CIMMYT, to examine the extension landscape in which the Buena Milpa project operates and to assess ways to strengthen extension activities of that project. To this end, a MEAS consultant traveled to Guatemala and over a two-week period during November and December 2015 carried out a rapid review of the extension landscape in the Western Highlands of Guatemala and of the Buena Milpa project. The consultant's Scope of Work is attached as Appendix A.

1.2 DEFINITION OF RURAL EXTENSION

Adapted from Davis & Heemskerk (2012), the definition of extension used herein is: extension services facilitate the access of agriculture stakeholders (men and women farmers and their families, their organizations, and other innovation system actors) to knowledge, information, and technologies; facilitate their interactions with each other and with partners in relevant institutions (e.g., research, education, agribusiness, banks); and assist them to develop their own technical, organizational, and management skills and practices related to their agricultural (and in the case of Guatemala, their home farm environment) activities.

1.3 METHODOLOGY

Two methods were used to carry out the review: a desk review of related literature and information (see Appendix B) and interviews and discussions with selected institutions and organizations and their staff members, including Buena Milpa staff (see Appendix C). As well, an e-mail was sent to several organizations asking for information regarding their extension program. Buena Milpa identified and

¹ Buena Milpa: Buena in Spanish means good. Milpa is a Mesoamerica cropping system traditionally producing maize, beans, and squash. Milpa also refers to a field. As used for the project, the name generally refers to good field or good crop or sometimes, good corn/bean field/crop.

selected the institutions and organizations and people to interview or contact. This included people from various levels of the government's extension service and other key extension service providers (providers working directly with, and those not working with, the Buena Milpa project), as well as research institutions working directly with the Buena Milpa project. All interviews were face-to-face and held in Spanish, excluding one telephone interview conducted in English by the consultant. At these face-to-face interviews (excluding discussions with Buena Milpa staff members), a Spanish-speaking member of the Buena Milpa team, a socioeconomic investigator, accompanied the consultant.

1.4 ORGANIZATION OF THE REPORT

The sections above give the report's background. The second section of the report provides a description of the regional and agronomic context in which Buena Milpa operates. This is followed by a section describing the National System of Rural Extension (SNER), the overarching framework for all extension and advisory services in Guatemala. The fourth section focuses on the Buena Milpa project and reports on its approach, existing and potential research and extension service provider collaborators, and its achievements and challenges. The final section of the report offers recommendations for strengthening extension-related activities of the Buena Milpa project.

2. CONTEXT

2.1. INDICATORS OF WELL-BEING

Guatemala, an exceptionally beautiful Central American country, has a population of around 14 million people of which approximately 40% are indigenous (USAID, 2011). Unfortunately, Guatemala's beauty is not reflected in its indicators of well-being. About one-half of the population lives in poverty and about one-half of children under five are chronically malnourished (USAID, 2011). Years of strife and violence have left their mark on Guatemala and particularly so in the Western Highlands, a mountainous area of high altitude, volcanoes, forests, and lakes. This area, which includes Feed the Future's five priority departments of Totonicapán, San Marcos, Huehuetenango, Quetzaltenango, and Quiché, has the highest density of poor and food-insecure people in the country (USAID, 2011).² Poverty and health indicator rates are among the very worst in the world. In the Western Highlands, about three-fourths of the majority indigenous population live in poverty and over two-thirds of children under five are chronically malnourished (Dworkin, 2015). Reasons for such dismal statistics are complex. According to Dworkin (2015) from the USAID/Guatemala Mission,



*VOLCAN SANTA MARÍA FROM THE BUENA MILPA OFFICE,
QUETZALTENANGO, WESTERN HIGHLANDS*

² The sixth department in the Western Highlands, Solola, is not a priority Feed the Future department.

they include: not only poverty, but also insufficient knowledge of nutrition needs and how to meet them, historic social exclusion, and corruption as well as low levels of investment in the region.

2.2 AGRICULTURE

Agriculture is key to Highland livelihoods. According to a recent baseline study, the main occupation of at least one member of the family in 70% of Western Highland households is farming (48%) or working as a farm laborer (22%) (Angeles et al., 2014). Mid-century projections are that climate change, in the form of temperature increases and precipitation reduction, will have considerable adverse effects on Guatemalan agriculture (World Bank, 2009). It is commonly accepted that the rains, on which highland farmers depend, are currently more erratic than in years past.

The dominant Western Highlands farming system is maize-based with most cultivation occurring on deforested eroded hillsides. The large majority of Highland farmers, predominantly from indigenous groups, are subsistence maize-bean farmers (Buena Milpa A, n.d.). Maize has been cultivated by indigenous peoples since ancient times (Wellhausen, Fuentes O., Corzo, & Mangelsdorf, 1957). The by-hand production methods they use—hoes, machetes, planting sticks—have changed little over the centuries. Farmers tend to store their seed from year to year and maize yields are low. Hearsay has it that milpa farmers may be planting less corn, or paying less attention to the corn they plant, due to competing demands on their time and other factors. Planting less corn could be due to smaller land holdings because of land distribution within the family or for other than agricultural uses. At the same time, SPRING (2015) research in the Western Highlands indicates that since corn is the basis of the diet, most families feel it is essential to grow corn to help ensure that the family will have something to eat. In short, the more corn they grow, and are able to store successfully, the less money they will need for corn purchases. Even among those who grow most of their own corn, purchase of corn is their single largest food expense (SPRING, 2015, p. 18.) The Spring study also found that decisions about production are usually discussed by couples, confirming that both men and women play important roles in milpa production. Women's role in agriculture extends to backyard farming. They are largely responsible for backyard farming, producing a variety of agricultural and livestock products (Ruano & Zambrano, 2006).



**HILLSIDE FARMING, HUEHUETENANGO,
WESTERN HIGHLANDS**

3. NATIONAL RURAL EXTENSION SYSTEM (SNER)³

Public sector extension in Guatemala dates back to the 1950's. Over the years, the focus has moved from serving larger to smaller farmers to increased consideration of the role of markets and the need for effective linkages with research (Hernández, 2014). The public agricultural extension service in Guatemala was totally disbanded in 1990 and it was believed that private and civil society sectors would fill the gap left by public sector extension. This did not happen (Ortiz, Rivera, Cifuentes, & Morrás, 2011). The subject of extension was dropped from the curricula of universities and agricultural schools also at this time.

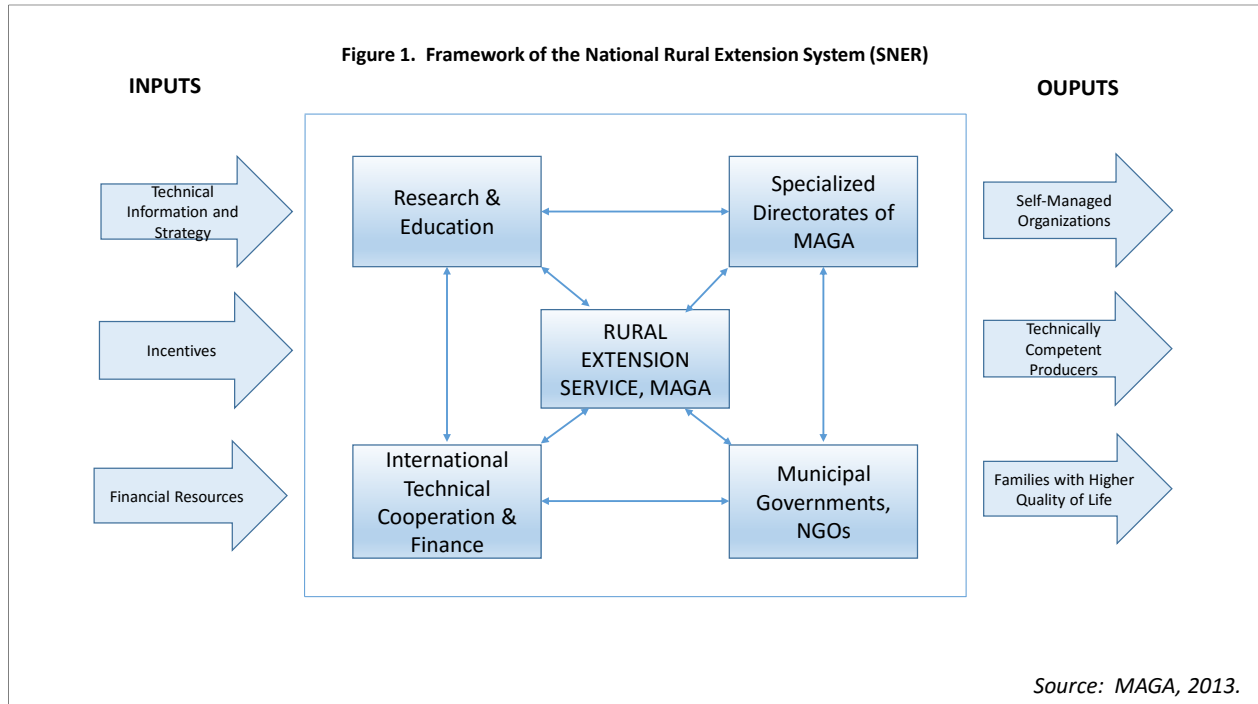
3.1. DEVELOPMENT

Following the 1996 Peace Accords, which ended Guatemala's over 30-year civil war, and in light of the 2009 National Framework for Comprehensive Rural Development, the Ministry of Agriculture, Livestock, and Food (MAGA) moved toward re-establishing a national agricultural extension system (SNEA). This began around 2008 with SNEA being a public-sector endeavor. Ultimately, components of SNEA were incorporated in a newer larger system of extension, SNER, established in 2013. A basic difference between the two systems is SNER provides the framework for a pluralistic extension system (including public, private, and civil society sector service providers) whereas SNEA was public-sector focused. The following describes the SNER system, most specifically the public-sector Rural Extension Service (RES) which is directly under MAGA, and captures commentaries regarding the system and service from various people interviewed during field work.

3.2. FRAMEWORK

Figure 1 shows the SNER framework. It is anchored by the RES which is under MAGA. The inputs to the system include technical information and strategy, incentives, and financial resources. Incentives vary but may include training or production or other inputs. The primary outputs, representing the overall purpose of the system, are self-managed farmer organizations, technically competent producers, and families having a higher quality of life. The framework links together research and educational institutions such as the national research institution, agricultural universities and schools, along with the specialized directorates of MAGA such as horticulture, animal health, agricultural infrastructure, and farmer organizations. The specialized directorates, functioning as subject-matter specialists, technically backstop extension activity. International assistance is incorporated in the system along with municipal government services and non-governmental organizations (NGOs).

³ For a more thorough description of SNER, see J. Hernandez 2014 Master's Thesis which characterizes the system (in Spanish, referenced in Reference List).



3.3 STAFF AND COVERAGE

Guatemala has 22 departments (similar to a USA state) and 334 municipalities (similar to a USA county). At the department level, a MAGA Department of Regional Coordination and Rural Extension (DICORER) channels and coordinates all MAGA services including those of extension. At the municipal level, there is a MAGA Municipal Extension Agency (AME) staffed by three MAGA extensionists: a Rural Development Extensionist (DRE), a Family Farming Extensionist (EAF), and a Healthy Household Extensionist. Thus, MAGA has around 1,000 extensionists who have been brought on-board since 2013. Although Guatemala is in process of decentralizing various government functions, MAGA is not decentralized and extensionists at the municipal level report to DICORER or national-level MAGA rather than to municipal officials. There are exceptions to this however. Municipal officials, particularly mayors, play a large role in extension activity in some municipalities.

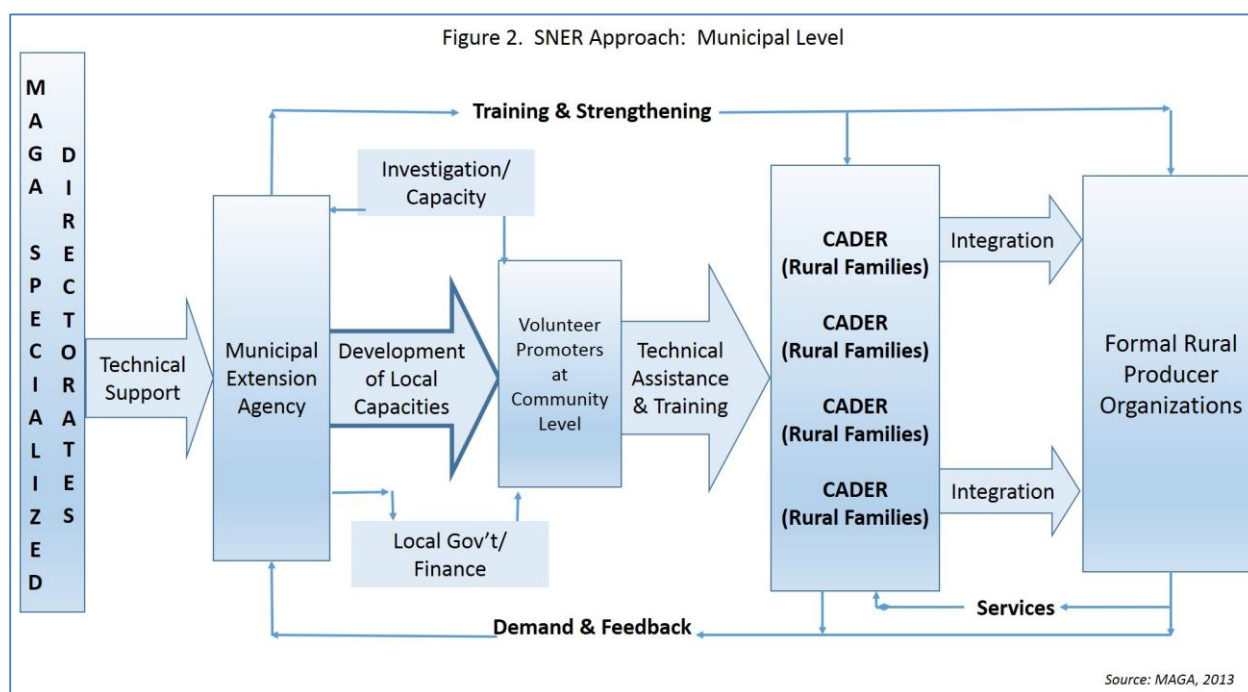
MAGA's intention is to have the three municipal level extensionists work together as a team, with each having specific areas of expertise. The DRE is to have a Bachelor's degree. He or she has administrative responsibilities, supervises the other two extensionists, and is to engage with others—NGOs, other ministries—involved in extension in the municipality as well as assist in the organization of farmer groups. The EAF is to have a minimum of 12 years of education, with some years focused on agriculture. The primary tasks of this person are to carry-out participatory assessments of farmer needs, organize farmer groups based on their needs, and train volunteer extension promoters (called *promotores*) to provide technical and organizational leadership to farmer groups. The Healthy Household Extensionist, almost always female, is to have the same level of education as the farming extensionist, the EAF. Her tasks include addressing issues of food security and nutrition which include backyard food production and

processing, training promoters, and organizing and working with groups. Although there are three extensionists in every municipality, the number of farm families who should receive extension services, estimated at 1.5 million, is far greater than MAGA extensionists alone can serve. An explanation of how this is to be addressed operationally follows.

3.4 APPROACH

SNER addresses coverage through its approach. SNER uses a farmer-to-farmer approach which at its most basic involves training extensionists who subsequently support and develop the capacity of volunteer extension promoters who then work directly with groups of farmers to improve their livelihoods. The approach is less linear than it may seem with feedback and dialogue among the elements of the system and other capacity development activities occurring along with training. SNER promotes (1) organizing farmer groups through establishing Centers of Learning for Rural Development (CADER), (2) developing the capacity of volunteer extension promoters selected by their CADER to provide guidance and capacity development to the CADER and (3) utilizing a cascading training system to develop capacity within and technically backstop the system as a whole. The farmer-to-farmer approach expands the reach of SNER because including promoters in the system adds considerably to the number of farmers extensionists alone can reach. Figure 2 depicts the approach.

CADERs are not physical locations nor facilities. They are a group of people organized around community challenges and opportunities. More specifically, members of CADERs share interests in improving their livelihood activities, in production, processing, and/or marketing of agricultural and/or of livestock or livestock products. CADER members learn by doing—building on their existing knowledge and acquiring and applying new learning and skills. A minimum membership of ten members per CADER is suggested, although groups can be larger.



The municipal level extensionists are charged with organizing the CADER and with training CADER promoters. The group promotor and an extensionist lead a set of participatory diagnostic exercises to determine needs of farmers in the CADER. These needs are prioritized and used to formulate a group plan. Group plans are consolidated into a Municipal Agricultural Plan which is part of the Municipality Development Plan, an official document of the municipality. Thus, SNER is to be a demand-driven system. The expectation is that ultimately, CADERs who share interests will join together to form larger, more formal, rural producer associations/organizations able to provide extension and other services to their members.

Volunteer promoters are selected by their group. They are involved in capacity development activities, led by the different extensionists, and in turn relay the knowledge, skills, and attitudes they learn to their group. Those working with public sector CADERs are not paid. However, they may receive incentives such as inputs for demonstration plots and training as well as recognition in their communities.

Capacity development of people in the system begins at the national level. At the national level, 88 trainers (44 for rural development and family farmer extension and 44 for Healthy Household extension) provide training to agents at the department and/or municipal level. Municipal level agents then train promoters who then train their group. Annual capacity development plans are developed at the various levels.

Capacity development for extensionists includes both technical agriculture and extension methodology and covers subjects ranging from crop production, home gardens, conservation agriculture, CADER plan development, and demonstration plot establishment and facilitation. MAGA has led the development of several comprehensive guidebooks for use in training and for use by extensionists in their everyday work. *Extension Notebooks*, hard-copy documents which every public-sector extensionists is said to have received, are in Spanish and translated into several local languages. *Notebooks* cover for example, the SNER system, gender, extension tools and methodologies including participatory techniques for establishing and working with groups, and numerous best practices related to natural resource management, production for consumption and marketing including home gardens, seed banks, and marketing practices (MAGA, 2014). MAGA and FAO (n.d.) developed a *Rural Extension Technical Guide*. This comprehensive soft-copy guide covers the concepts of good practices and family farming and technically covers backyard gardening, maize systems, soil conservation, healthy households, and seed banks as well as management and reduction of risk through climate change adaptation strategies. Competitive production practices, post-harvest practices and processing, as well as forestry and fisheries practices are also addressed.

3.5 PLURALISM

SNER, is the *system* of extension and is designed to provide entry points for private and civil society sector engagement. Ideally, this engagement begins with interaction with the AME. Municipal level development plans and CADER group plans then help to identify where there is a match between what the community (as expressed in these plans) wants and what the private or civil society sector has to offer. While there are some reports of private sector engagement in extension in the Western Highlands, this is primarily in other parts of the country and with commercial crops. There are various NGOs working in the Highlands, a few of which are later discussed in this report.

3.6 KEY ACHIEVEMENTS AND CHALLENGES

3.6.1 Key Achievements

The creation of a national extension system has been achieved, no small endeavor. In a very short time, MAGA has managed to recruit and place over 1,000 people in extension posts across the country. There are now cadres of people across the country who have some extension experience and have received some extension capacity development. The extension system explicitly includes farming and farm household extension services which address production for market and consumption and also nutrition. The latter is not typically included in government extension services and represents an important component of the system. While quantitative data is lacking on the quantity and quality of achievements, CADERs are organized, farmer needs assessments have been carried-out, group and Municipal Development Plans have been made, and extension activities with farmers and farm families have been implemented. There is a network of promoters who have been trained and who work directly with farmers and their households. Extension materials to backstop extension field work are available in Spanish and in several local languages. Reports are there is a budget line for extension in the Government's 2016 budget.

It is not within the scope of this report to detail the extension activities that have had impacts on Guatemalan farm families. Evaluations of the efficiency and effectiveness of SNER have yet to be achieved, although Tropical Agriculture Research and Learning Center (CATIE) graduate students are currently carrying-out some evaluative studies of SNER. The development of SNER is continuing and represents a dynamic process which will be useful and interesting to follow as the development of the system unfolds.

3.6.2 Key Challenges⁴

Some challenges faced by public-sector extension are similar to challenges faced by extension systems in various other countries. Some are more specific to Guatemala. Both are highlighted here.

- **Politicalization.** The most frequently heard critique is that public-sector extension is highly politicized. Critique centers largely on claims that staff positions are distributed based on party affiliations, resulting in hiring extension staff who do not have the requisite qualifications and subsequent poor service. Reports indicate staff are compelled to campaign for or otherwise promote a given party or candidate/official. Also, the distribution of inputs, or other goods, in which extension is involved is politicized, with those in the “right” party receiving them and others less so. Politicization is viewed as endemic in Guatemala, not only in MAGA, creating resentment and distrust among the different actors engaged in extension.
- **Staff Stability.** It is not clear that all extension posts are affected by this challenge. However, municipal level posts definitely are. Staff are currently not civil servants and are typically hired on an annual basis. Many government extensionists do not know if their contract will be continued or not. This means a lack of continuity in both the people and the work of extension from year to year. New staff will require training and benefits of previous investments in staff

⁴ See Hernández (2014) for challenges facing extension in three other departments in the Central Highlands.

training may not accrue to public-sector extension and those they serve, if those trained are not rehired. In 2016, a new government will be seated. Planning is largely put on hold until the situation is stabilized. While there is discussion of using performance to inform hiring decisions, the performance evaluation system is very weak and ineffective at this point. Although the government document describing the SNER system calls for permanent positions for all public-sector extension staff (MAGA 2013), this is currently not the case.⁵

- ***Distrust and Lack of Confidence.*** Often, the different actors in the SNER system do not trust each other, and/or have little confidence in each other. Underlying this distrust and lack of confidence is the reality that although the Peace Accords were signed in 1996, Guatemala can still be viewed as a post-conflict country with all the negatives associated with such a situation. Further, NGOs are generally better resourced than MAGA extensionists which tends to create tensions. Questioning whether international donor resources should flow to government institutions or NGOs brings out related sensitivities. There are NGOs who essentially refuse to work with public-sector extension based on historical and trust-related issues and differing philosophies of development; others simply do not engage with public-sector extension for reasons such as the challenges associated with doing so. Some extensionists advise it is difficult to develop trust with the farm families they work with and that trust is critical to their work. This all seems not so much a distrust of individuals working in public-sector extension as it is of the government it represents.
- ***Coverage.*** Estimates given indicate that MAGA extension can reach 20% to 30% of the 1.5 million farm families who should receive extension services. As a pluralistic system, the SNER system is designed to increase coverage. SNER success in this matter is currently an unknown. Coordination of the extension work of actors in the system is very limited, although part of MAGA's coverage strategy is to establish strategic alliances with others in the system.
- ***System Components.*** The Municipal Extension Agency (AME), central to the effective operation of SNER, is weak. Concerns range from AME's lack of interaction with other official bodies at the municipal level to limited interaction by NGOs with AME. Extensionists report to MAGA at the national level which may have a limiting effect on their interaction with authorities at the municipal level.
- ***Capacity Development Opportunities.*** Although there are differing opinions, at the municipal level, many extensionists receive less capacity development than they need to efficiently and effectively carry-out their jobs. This is reportedly particularly so for extension methodology and planning their work program. Conversely, some extensionists report receiving induction and technical as well as extension methodology training and developing weekly or monthly work plans. While teaching/learning materials are available, some extensionists receive the materials without explanation or training in how to best use them.
- ***Resources.*** There are reports of inadequate office facilities and equipment, of salaries not being paid on-time, and of the infamous lack of extension mobility. For the latter, extensionists are not

⁵ Experience shows this as a complex issue. While the trending response is to make all extensionists civil servants, this will not have the desired result unless there is assurance that there are sufficient program funds to support service provision by these civil servants.

given a transportation nor a fuel allowance. However, it was explained that contract extensionists receive a significantly higher salary than civil servants to allow them to pay for their own transportation.

- **Expectations.** Various programs, including both government and NGO programs, provide free goods to people in need. Overtime, this has become more widely-expected and people's participation in activities is to some degree influenced by the existence and type of goods provided. MAGAs resources for distribution of inputs are constrained, in cases making it challenging for extensionists to engage with communities, particularly if communities have alternatives to work with better resourced organizations.

4. BUENA MILPA PROJECT

4.1 DEVELOPMENT

The Buena Milpa project came about largely as a result of collaboration between New Seed (Semilla Nueva), a U.S. based grass roots NGO working in sustainable agriculture development in the Pacific Coast region of southern Guatemala; CIMMYT; and the Institute of Science and Technical Agriculture (ICTA), Guatemala's national research institution. These entities were interested in innovation systems and research to development projects.

The development of the project draws on CIMMYT experience with the Sustainable Modernization of Traditional Agriculture (MasAgro) project in Mexico⁶. Mas Agro intends to address challenges facing Mexico's smallholder maize (and wheat) farmers using a system of experimental platforms (also referred to as innovation platforms), with results moving to technically-supported project implementation by innovative farmers in the field (named extension modules), onward to testing by farmers in their fields (called transfer of technologies). Feedback loops are built into the system. While the Buena Milpa project draws on MasAgro experience, it is not a replication of MasAgro.

4.2 OBJECTIVE AND FOCUS

Buena Milpa, funded by USAID as one of its Feed the Future activities, is a four-year activity which began in 2015. Its original objective is to contribute to the reduction of poverty, food insecurity, and malnutrition, while increasing sustainability and resilience of maize-based farming systems in the Western Highlands of Guatemala. Maize growers in the highland are less involved in production for the market than for consumption, thus the objective was shifted from reducing poverty to increasing food security (Buena Milpa B, n.d.).

The project is meant to be a scaling-out activity, which implies a major emphasis on extension activities. Previously studied technologies, practices, processes, and models are to be scaled-out (Buena Milpa B, n.d.). To avoid a technology-driven project, the project adapts these technologies, practices, processes, and models based on farmer and other stakeholder needs. The project focuses on three technical areas: (1) milpa-maize germplasm improvement, (2) natural resource conservation in farming systems, and (3)

⁶ For details, see <http://masagro.mx/index.php/en/components-en/take-it-to-the-farmer>

maize-based farming systems and diversification and on two enabling environment process areas: (1) agricultural innovation systems and (2) social inclusion.

The conceptual framework for the project is the agricultural innovation system. This is described by the project as the organization of stakeholders (farmers, extensionists, researchers, institutions, NGOs, companies, etc.) to work together around common agricultural problems to stimulate innovation and change towards solving those problems (Buena Milpa A, n.d.). In 2014, much of Buena Milpa work concentrated on diagnostics of farmers' situations/needs and mapping of stakeholders in the agricultural innovation system. In 2016, the emphasis is on developing and consolidating the requirements for scaling. These requirements, as defined by the project, are numbered below along with examples of activities related to achieving these requirements (Buena Milpa B, n.d.).

- *Making scalable technologies, practices, methodologies, and models available.*
 - a. Research demonstration plots primarily for validation or refinement of technologies and/or practices. For example, improved bean seeds developed by the national research institution are to be validated.
 - b. Innovation plots, as the focal point for farmer-to-farmer interaction, designed to test outputs of research-demonstration plots with farmers and under farmer conditions.
 - c. Seed banks as the basis for participatory local maize plant breeding with farmers to improve farmer yields and ensure genetic diversity.
 - d. Soil conservation, for example: green manures and post-harvest practices.
 - e. Maize and farm-system diversification for example mixing various local traditional vegetables and small livestock in the systems.
- *Creating an environment conducive to scaling.* The primary intervention is the facilitation of a multi-stakeholder network⁷ of actors in the agricultural innovation system, further discussed in this report.
- *Strengthening capacity for scaling.* Buena Milpa plans a program of capacity development for three sets of stakeholders: researchers, extensionists, and farmers.

Importantly, the project has a cross-cutting social inclusion component. The focus of this component is to ensure all project activities explicitly include those stakeholders often previously excluded: primarily women and indigenous people.

4.3 APPROACH

As noted above, the conceptual framework for the project is the agricultural innovation system. The underlying rationale is to move away from a linear technology transfer and delivery model whereby researchers develop technologies which extensionists then disseminate to farmers to an acknowledgement that innovation emerges from interactions among multiple actors and in addition to

⁷ The network could be considered an innovation platform. Buena Milpa uses the term 'network' (Buena Milpa B, n.d.), likely to differentiate it from MasAgro's use of the term 'innovation platform' which is essentially an experimental research platform.

technical, has organizational (new ways of organizing groups) and institutional (new or revised institutional set-ups) dimensions (Nederlof, Wongtschowski, & van der Lee, 2011).

Buena Milpa staff do not work directly with farmers. Rather, the project has developed an innovation network of collaborating institutions and organizations. This network implements, along with farmers, the research-related and much of the extension work of Buena Milpa. Referred to as collaborators, they are not sub-contracted entities per se, even though the project manages a small grants program to finance collaborator activities. In general, the idea is to utilize the strengths of different actors in the innovation network, including farmers and their groups, to jointly learn, refine, test, and promote the uptake of innovations (technologies, practices, and processes). The primary role of Buena Milpa is that of innovation system broker, or facilitator, in the network. Innovation brokers are persons or organizations that purposefully catalyze innovation through bringing together actors and facilitating their interaction (Klerkx & Gildemacher, 2012, p. 221). Buena Milpa also acts to strengthen the capacities of innovation network participants. As earlier defined in this report, the role of extension is also that of innovation broker⁸. In this sense, the Buena Milpa extension approach is embodied in its overall approach and in the innovation network it facilitates. Further, collaborators within the network have their own extension approaches which Buena Milpa strengthens through training.

4.4 COLLABORATORS

The innovation network is comprised of collaborating institutions and organizations from public, private, and civil society sectors, most of them based in and all working in various locations in the Western Highlands. Buena Milpa facilitates meetings, trainings, workshops, agricultural fairs, and other pertinent activities with collaborating members of the network. Collaborators are listed below in Table 1. These are initial members. Others may be added over time. Collaborators were identified by Buena Milpa staff through a mapping process. Many Buena Milpa staff have close working relationships with many network members, having worked with them previously in other projects.

Table 1. Buena Milpa Collaborators, November 2015⁹

	Organization	Role
1	MAGA , Ministry of Agriculture, Livestock, and Food (Ministerio de Agricultura, Ganadería, y Alimentación)	Government ministry dedicated to agricultural development, among others, includes a department of agricultural extension.
2	ICTA , Institute of Science and Technical Agriculture (Instituto de Ciencia y Tecnología Agrícola)	Semi-autonomous government institution dedicated to agricultural investigation.
3	ASOCUCH , Association of Organizations of the Cuchumatanes (Asociación de Organizaciones de los Cuchumatanes)	An association of organizations that works to develop resilient and diverse farming systems through both participatory investigation and a network of farmer organizations.
4	CDRO , Cooperation for Rural Development of the West (Cooperación para el Desarrollo Rural de Occidente)	Community-based association of various organizations providing various services focusing on social inclusion and the participation of all members of the community.

⁸ While there are various definitions of knowledge brokering, extensionists are also considered knowledge brokers. Knowledge brokering is about filtering relevant research, translating research into plain language and helping people to use it in practice, and making connections between researchers and users of research (Klerkx, Schut, Leeuwis, and Kilelu, 2012). These are all expected roles of extension specialists in some extension systems.

⁹ Table Source: Based on personnel communication, Lisa Eash Semilla Nueva/Buena Milpa, November 2015.

Table 1. Buena Milpa Collaborators, November 2015⁹

5	SerJus , Legal and Social Services (Servicios Jurídicos y Sociales)	Advocacy and service organization supporting various legal, economic development, health, education, and other development activities.
6	Save the Children	International NGO that shares the goal of diversifying farming systems through demonstration parcels and training sessions.
7	AgExport , Association of Guatemalan Exporters (Asociación Guatemalteca de Exportadores)	Export market for smallholder vegetable and other producers.
8	ASODINE , Integrated Development Association (Asociación de Desarrollo Integral)	Assists farmers in vegetable production and commercialization with the support of AgExport.
9	ADIPO , Integrated Development Association for the West (Asociación de Desarrollo Integral para la Occidente)	Works directly with farmers to assist in the administration of sustainable projects that focus on community health, agriculture, and education.
10	ADIES , Integrated Development Association Sacapulteca (Asociación de Desarrollo Integral Ecológica Sacapulteca)	Work directly with farmers to improve onion production and food security among the communities in which they are involved.
11	Helvetas	A Swiss intercooperation organization that promotes basic rights of marginalized groups by supporting services provided by governments and other development organizations.
12	The Nature Conservancy	International NGO focused on making smallholder farming systems more productive and resilient to climate change through demonstration parcels and collaboration with other extension systems.
13	USAC , University of San Carlos (Universidad San Carlos)	Public university that hosts and provides student support for investigation projects.

Buena Milpa has a process for identifying the specific activities collaborators implement. Collaborators submit written proposals for activities designed to serve men and women farmers and their families that are aligned with their own and Buena Milpa interests. These proposals are the primary space where Buena Milpa can influence the approach and activities of collaborators. Following proposal review, negotiation, and selection, a legal document of understanding is written. Financial support from Buena Milpa for implementation is based on what is agreed in the document.¹⁰ This process was occurring during the consultancy. Thus, details regarding most of the activities to be implemented in 2016 were unavailable. However, earlier proposals either in process or accepted included carrying-out bean seed variety validation trials, establishing community-based maize seed banks, and milpa and farm diversification with amaranth and poultry.

4.4.1 Existing Collaborators

Notably, not all collaborators use the Spanish word for extension (extensión) to identify their extension activities nor do all who work in extension identify themselves as extensionists. It was not clear whether this was due to negative associations with “extensión” or otherwise. Spanish words used by some, such as “acompanante”, do not translate well and extension and extensionists are used throughout this report.

¹⁰ Under existing regulations, MAGA cannot enter into a legal agreement with Buena Milpa. Therefore, MAGA implemented activities, funded by Buena Milpa, are financially administered by a third organization having the authority to do so (such as a registered NGO).

It should also be noted that, excluding ICTA and Food for Progress, the other collaborators interviewed do not typically engage with MAGA extensionists. Their exposure to MAGA extensionists is occurring through their collaborative work with Buena Milpa.

Table 1 lists Buena Milpa collaborators as of November 2015. Interviews were held with the first five collaborators listed.¹¹ Interview information from MAGA extensionists is incorporated in the earlier discussion of SNER. Highlights of the other interviews and of the one e-mail respondent follow.

ICTA

ICTA, Guatemala's national research institution, was not closed in the 90's along with extension and other government departments but continued to operate, albeit on a more limited scale, due to its status as a semi-autonomous institution. Its purpose is to contribute to Guatemala's agricultural development through science and the development of agricultural technologies for sustainable agricultural production systems. ICTA's farming clients are all farmers in the three categories of farmers Guatemala characterizes, (1) less than subsistence, (2) subsistence, and (3) surplus.

ICTA and MAGA have experience working together in field activities. As well, ICTA seeks linkages with bilateral donors, NGOS, private sector extension, and other sectors of government. For example, prior to SNER, ICTA engaged in projects with the Japan International Cooperation Agency and FAO to train municipal level extensionists in production technologies. ICTA has also trained Rural Health Workers from the Ministry of Health and agricultural staff of various NGOs. ICTA currently has a program to train a new generation of researchers which includes some coverage of extension material.

ICTA scientists have had considerable success in substantially improving maize yields in the Pacific Coast area of Guatemala using hybrid seed and other inputs. However, they advise they have had much less success in doing so in the Highlands. This situation prompted ICTA scientists to contemplate how to better respond to needs of Highland small farmers. Contemplation resulted in development of a small program focused on local knowledge systems and traditional and alternative systems of food production. The program is championed by a senior ICTA scientist who was also instrumental in the development of the Buena Milpa project.

In addition to participating in innovation network activities, ICTA scientists are involved in Buena Milpa training and other capacity development efforts. During the project, ICTA will lead several on-farm trials related to Buena Milpa focus areas to fine-tune existing technologies and practices. Over time, as problems arise in implementation of field activities by network members, ICTA will be a major contributor to developing research-informed solutions to these 'second generation' problems.

The framework for ICTA research processes is shown in Figure 3. ICTA has used this framework for many years and expects to continue to do so although it is currently under review to identify any needed modifications.

¹¹ Due to unforeseen circumstances, planned interviews in San Marcos, with ADIPO and with San Carlos University, were not held.

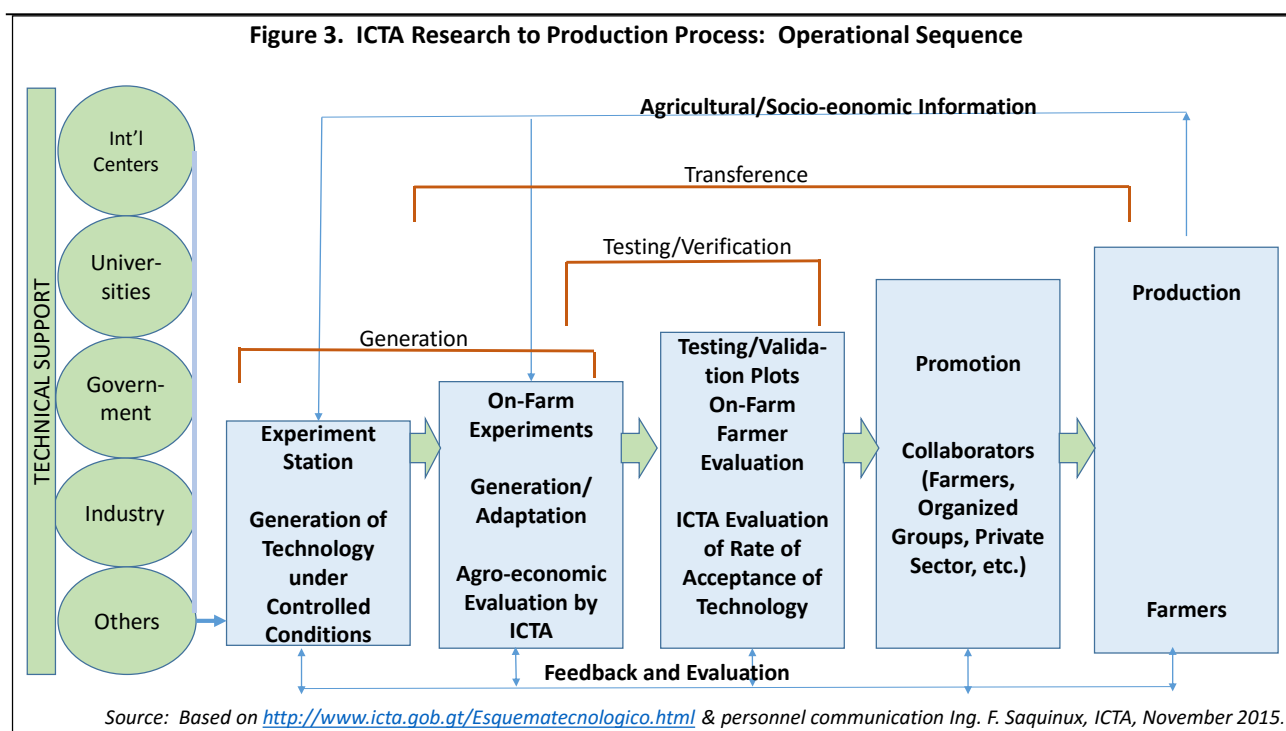


Figure 3 indicates technical support to the research process is provided by various institutions and organizations. ICTA identifies three components in the process: generation, testing/validation, and transference of technologies¹². Five phases are identified. The first is experimental work on experiment stations to generate technologies under ICTA controlled conditions. The second is on-farm experiments which continue the generation process and adapt technologies with evaluation by ICTA. This is followed by on-farm testing and validation of technologies with farmer evaluation. The conditions under which the testing/validation is carried-out are those of the farmer. The only change in conditions is the specific variable under examination (e.g., bean seed varieties). ICTA's role is to evaluate the acceptance of technologies. The fourth phase is promotion whereby various collaborators use the technology on their own farms. Typically, this is where ICTA engages with extension. The final phase is expanded production by greater numbers of farmers using the technology/practice. The overall process has feedback and evaluation loops and is informed by agricultural and socio-economic information.

ASOCUCH

Growing from an initial project in 1994, ASOCUCH is now a second-level organization working with numerous associations and cooperatives. With the aim of empowering rural men and women, farmers, and youth, ASOCUCH has five focus areas:

- Building a strong network of local organizations and building social capital
- Improving local competitiveness and promoting local economies
- Promoting natural resource management, community tourism, and local environmental management

¹² ICTA is reviewing the issue and language of transference.

- Stimulating citizen participation and promoting gender equity
- Strengthening financial sustainability and efficient management

ASOCUCH provides various services to its member groups. These include administration of project finances and sub-contracts, representing the organizations in various fora such as the National Indigenous Committee on Climate Change, and annual planning of activities. The organization has an on-line M&E system to track the various activities including extension.

The organization supports its agricultural extension activities primarily through training of extensionists. ASOCUCH specialists provide training to its members' extensionists over a one-year period in technical subjects and extension methodologies including diagnostics to identify farmer problems. Each association or cooperative has two extensionists, who are either paid by the association or cooperative or through a project managed by ASOCUCH. These extensionists, about 10% women, work directly with groups of farmers. ASOCUCH extensionists speak Spanish and local languages. Farmer groups are involved in vegetable, potato, onion, coffee, sheep production as well as in reforestation and other natural resource management activities. Some groups have participated in the Collaborative Program on Participatory Plant Breeding in Mesoamerica, a program designed to strengthen the participation of farmers in conservation and utilization of genetic resources, in breeding (selection, validation, and seed production) and sustainable management of crops. ASOCUCH efforts have resulted in the establishment of at least two maize seed banks. Future plans are to collaborate with Buena Milpa on maize activities. Such activities will be implemented by extensionists in the ASOCUCH system and the promotores and groups they work with. Their experiences with seed banks underscores the need to plan for seed banks to be profitable and sustainable.

CDRO

CDRO's history begins in 1984 with leaders of two communities in Totonicapán. These leaders created an indigenous approach to development based on Mayan precepts of the interconnectedness and interdependency of Mayan communities and on the related principles of total community participation and locally-driven development. This approach continues to inform CDRO activities and is a unique feature of its identity. CDRO's mission is to promote the comprehensive development of rural communities in western Guatemala by way of their unique approach and empower communities to establish their own organizations in harmony with nature. CDRO supports development activities in over 40 communities and with around 20 organizations.

CDRO works in a wide-range of subject-matter areas: organizational and capacity development, education, health and natural medicine, natural resource management, and food security. Gender is a cross-cutting issue in all of these areas.

CDRO's extension activities are framed by the farmer-to-farmer approach and thus similar in approach to other extension activities examined in this report. Agricultural technicians from CDRO work directly with volunteer promotores and community groups. CDRO has its own training system whereby promotores are trained in an agroecology school for two days every two months. For the agroecology school, participants are provided transportation and food. Follow-up training for promotores is delivered on a periodic basis. CDRO technicians and/or promotores train groups in various technical subjects. A majority of group members are women, particularly in groups led by women technicians. However, it was noted that men

become more interested in group activities as activities prove to be successful. Demonstration plots are frequently used as teaching tools. Promotors and groups establish demonstration plots using inputs typically provided by CDRO and the community.

Several CDRO technicians have participated in Buena Milpa training. They plan to collaborate further with Buena Milpa in organic fertilizer and native seed activities. These activities are to be implemented with CDRO technicians and the promotors and groups they work with.

SerJus

SerJus, founded in 1987, is a second-level social-activist support and coordination organization for community-based organizations located, for the most part, in the Western Highlands. SERJUS also has links and works with organizations in other regions, nationally, and in Central America. Its development came about in response to the need of indigenous communities to overcome the years of violence and repression. It has an exceptionally strong orientation towards representing the underrepresented.

SerJus provides a wide-array of support and coordination services to its constituent organizations from economic development activities, legal advice, to dissemination and capacity development related to theoretical and methodological approaches to community organization, social power, and popular education. SerJus envisions and works toward a just, equitable, and democratic society through a pathway of organizing and developing the capacity of communities to develop themselves and empowering them to influence government at local, municipal, regional, and the national level.

SerJus is involved in a number of agricultural development activities and has agricultural extension staff. In addition, many of the organizations working with SerJus have agricultural extension activities. As a member of the innovation network, several SerJus staff have received Buena Milpa certification training. SerJus is overtly opposed to the use of genetically modified seeds and participates in Buena Milpa efforts to improve local corn varieties. Their agricultural extension system is similar to that of other collaborators in that their extension staff works directly with volunteer promotors who engage directly with farmer groups. Promotors install demonstration plots to assess technologies and practices on-farm and use plots as teaching tools with their group. SerJus has proposed milpa/farm diversification activities using amaranth and local poultry to be carried-out by extensionists, promotors, and groups working with SerJus.

Although SerJus shares a similar farmer-to-farmer approach with other organizations reviewed, there are underlying differences that inform SerJus extension. These include SerJus' history, its political orientation, its vision of development, and its emphasis on popular education. These elements influence how their extensionists work and with whom. As well, given historical and some would say the current situation, it tends to create tension in relationships between SerJus and government.

Save the Children

It was not possible to schedule an interview with Save the Children. However, their Livelihoods Specialist responded to a brief e-mail questionnaire regarding Save's extension approach. It is similar to the farmer-to-farmer approach adopted by other organizations examined in this report. Two figures comprise the extension structure at the community-level: an agricultural leader (akin to an extensionist) and a promotor. The agricultural leader works in two or three communities, each of which has two or three promotors. Under the supervision and support of the agricultural leader, each promotor works directly with around 30 farmers. The leaders and promotors are supported by technical specialist in Save who

provide capacity development in both technical subjects and in methodologies. Capacity development is based in adult non-formal education methodology and emphasizes learning by doing. Manuals and brochures are available for use in capacity development activities.

4.4.2 Collaborator Training¹³

Buena Milpa plans to develop the capacities of three stakeholder groups: researchers, extensionists, and farmers. At the time of the consultancy, information was available on extension certification training. One program of extensionist training for 32 persons has been completed. Information below reports on plans for upcoming training.

Training of extension collaborators is a primary input Buena Milpa provides to the network. Buena Milpa certifies those who participate in their training, although the certification is not a recognized part of the formal educational system. Nonetheless, it is deemed very important by participants and acknowledges their additional capacities. Basically, the certification program is meant to prepare participants to successfully engage with communities, promoters, and farmers in the extension work of Buena Milpa in a participatory and inclusive manner and in a way that supports innovation and the collective construction of knowledge.

Two or three people who have extension responsibilities from each of the collaborating institutions and organizations are selected for certification training. Training is held for a total of about 20 days over a period of 8 months and delivered by various experts within Buena Milpa and CIMMYT and from other organizations. Field visits are included in the curriculum. The curriculum covers aspects of Buena Milpa's five focus areas: native maize improvement, soil and water conservation, farm diversification, social inclusion which considers participatory extension methodologies, and network development. Popular education is the educational approach proposed. Buena Milpa intends to use existing educational materials, as much as possible, to facilitate learning and reduce investments in developing new materials. Plans are to provide tablets to participants for learning and data collection purposes and to develop a project virtual learning and communication web-space.

4.4.3 Potential Collaborators

Interviews were held with other organizations and programs involved in extension activities: FAO, CATIE, Mas Frijol, and Food for Progress. These organizations are generally aware of the purpose of Buena Milpa and some have had discussions regarding potential collaboration. At the time of the consultancy they were not among those collaborating directly with Buena Milpa, although Mas Frijol expected to and the others advised they would be open to collaboration.

FAO

FAO, in-line with its global mission to eradicate hunger in the world, works closely with Guatemala's Secretariat of Food and Nutrition and is a major supporter of MAGA. FAO assisted in the development of the SNER system and promotes its implementation. It has supported institutional development activities to strengthen MAGA's capacity to function at the center of the SNER system and has supported MAGA in

¹³ While Buena Milpa uses the word "formación", the best translation in English is training which is used in this report.

various extension activities. These include designing a capacity development plan for MAGA extensionists, providing training of MAGA extension workers, and developing learning materials for extension agent use. FAO/MAGA have previously supported several extension projects in the Western Highlands including a small farmer livelihoods project.

CATIE

CATIE is a regional institution, headquartered in Costa Rica and similar to a US land grant university, that offers graduate education in agriculture and is involved in research and outreach programs. Organizationally it has three divisions: an Educational Division which operates its graduate school and training programs; a Division of Research and Development which manages various projects around themes of agriculture, forestry, livestock, environmental management, and climate change; and a Division of Outreach and Development which administers its Country Offices, Communication and Policy Office, and Management and Service Offering Unit. CATIE has a country office in Guatemala.

CATIE, in partnership with MAGA and with funding from Norway, implements an innovative extension-oriented project known as Knowledge Management for Sustainable Rural Development Innovation in Guatemala: Strengthening Family Agriculture and Farmer Economy. The project operates in the Central Highland's departments of Alta Verapaz, Baja Verapaz, and Chimaltenango. Among its objectives are the strengthening of SNER and the design and introduction of a new structure within the SNER system, that of Local Systems of Extension.

The Local System of Extension is essentially a coordinating unit of pluralistic extension actors who come together at the municipal level to coordinate all extension activity in the municipality. These systems are led by the municipal level extension agency and closely aligned with the work of another government entity at the municipal level, the Municipal Commission of Food and Nutrition Security. The system was introduced to increase synergies, improve information sharing, and reduce duplication of services among extension actors. The Local Systems also are collectively involved in identifying problems small farmers face and organizing interest groups to address them.

The Knowledge Management project has its own staff of extensionists who work in concert with MAGA extensionists. For example, the project has developed the capacity of around 70 MAGA extensionists in extension methodology, agrobiodiversity, gender, and seed bank development. Close to 400 promotores have been trained, the majority of whom are women (60%). Using Field School methodology, the project works with around 400 CADERS. CADERS were supported in developing their group plans and municipal development plans with subsequent training received based on their plans. The large majority of CADER members are women. CATIE is considering a study to determine the factors influencing women's participation as promotores and as CADER members.

Mas Frijol

Mas frijol means 'more beans'. Tortillas and beans have been the major staples of Guatemalan diets for many decades. Together in the right quantities they are a good form of protein in diets although they do not provide certain needed micro-nutrients. Currently, Guatemalan's are eating less beans and traditional vegetables than previously which negatively impacts their nutritional status. The Mas Frijol project, a Feed the Future activity implemented by Michigan State University, is designed to address these deficiencies. Its objectives are to increase the production of beans in the Western Highlands and to

improve the nutritional quality of diets through increased consumption of beans in combination with other nutritious vegetable and animal-source foods. To contribute to achieving its objectives, the project uses a training-of-trainers approach. The project provides training for MAGA extensionists, public sector health workers, and staff from several NGOs in nutrition-sensitive agriculture focusing on the production and value of beans in the diet and ways to increase diet diversification. Trained partners then in turn work with farmers and their families to increase production and consumption of beans.

Food for Progress

Food for Progress, a US Department of Agriculture funded initiative, is part of USAID/Guatemala's Feed the Future program. Beginning in 2012, it operates in the same Feed the Future focus departments as Buena Milpa and will continue to do so in 2016. Counterpart International, along with partners MAGA, the University of San Carlos School of Agriculture, Zamorano Pan-American Agricultural School, and the University of California at Davis, implements the project. Its goal is to increase sustainable agricultural knowledge in rural communities in the Western Highlands and improve livelihoods.

The project's focus includes: support for local farming cooperatives and CADERs, collaboration with a partner credit union, and support for strengthening SNER. The project carries-out diagnostics of cooperatives, assists them with organizational development and with developing business plans, and provides other targeted training. Food for Progress has a small grant program to support CADERs and extensionists in carrying-out their field activities. A cost-share arrangement with MICOPE, a Guatemalan credit union, has facilitated expanded financial services to cooperative farmers with more than \$9 million in loans over the period of the project.

As part of its support for SNER, the partners developed certificate training for SNER extensionists. This is a four-month training program which emphasizes development policies and plans relevant to agriculture and extension, extension methodology including adult learning and monitoring and evaluation, low-cost agricultural technologies, and food security and nutrition. Four cycles of training have been implemented since the beginning of the project with 283 certified extensionists graduating. In a pre-emptive move to address the issue of whether certified extensionists would continue to hold their MAGA positions over time, talks were held with MAGA who signed an agreement to keep certified extensionists on-staff, barring disciplinary problems. While questioned by some who believe the rates to be much lower, project estimates are that 80% of graduates continue working in MAGA extension posts. Discussions are underway with San Carlos University to determine the feasibility of including the certification training in its diploma-level offerings.¹⁴

The project itself has a small cadre of extensionists who work with volunteer promotores and CADERs using a farmer-to-farmer approach. The incentives for promotores are similar to those of other projects reviewed: training, possibly inputs for demonstration plots, and increased status in the community. Food for Progress emphasizes recognition of the accomplishments and contributions of promotores, finding that such recognition from municipal and MAGA authorities, as well as from the project, has an important role to play in encouraging and sustaining promotor participation.

¹⁴ Further details of the curricula are to be available early 2016. Counterpart and its partners plan to write-up project achievements including details of the curricula used for extension certification.

4.5 KEY ACHIEVEMENTS AND CHALLENGES

4.5.1 Key Achievements

The Buena Milpa project has organized a team of experienced men and women from different disciplines and ethnicities to staff its Guatemalan office. The Guatemalan office is located in the area in which the project operates, on the ICTA compound in Quetzaltenango. It is newly-renovated, and backstopped by various CIMMYT scientists headquartered in Mexico. A lengthy process of identifying collaborators, explaining the Buena Milpa project to them, and forming an initial network of collaborators has been accomplished. The innovation network brings together researchers, extensionists, and other development workers from both government institutions and NGOs. This represents a major achievement. Buena Milpa has held meetings, workshops, and training events and has developed a small grants program to support network members. Survey work on socio-economic status of farmers in the areas of Buena Milpa operation has been carried-out and will continue. Efforts to develop typologies of farmers based on their farming system are underway. Training and communication strategies have been developed to guide the work of Buena Milpa. A cadre of collaborator staff have received extension certification training. Other extension events, such as rural fairs, have been held and informational brochures have been developed.

4.5.2 Key Challenges

As a fairly new project, Buena Milpa faces a number of key challenges including the following.

- **Innovation Systems Approach.** Even though innovation systems have been discussed in the literature of agricultural extension and research for some time, the operationalization of the concept in real life in the field is easier said than done. The Buena Milpa project is complex with many moving parts. Concepts such as extension, innovation, platform, network, scalability, sustainability, social inclusion, and popular education are not well-understood by all stakeholders. Securing and maintaining active commitment of network collaborators is challenging given their diverse backgrounds, experiences, philosophies of development, planning and administrative processes, levels of power, and readiness to participate. An overarching critical challenge is how to build trust among collaborators given this diversity. As well, achieving gender and ethnic diversity among participants requires careful attention. Carving out time and space to collectively reflect on innovation network development and the successes and failures of network field activities so that lessons are learned will require an explicit effort. Ensuring that communications flow, not only among those directly participating in network activities but also to others in collaborator institutions and organizations, needs concerted attention. The sustainability of the system is an important challenge which requires thinking through and advance planning.
- **Delivery System: Extensionists, Promoters, and Farmer Groups.** All collaborators providing extension services use a similar farmer-to-farmer delivery system. Their extensionists receive training and subsequently train promoters who train farmers, typically through farmer groups. Buena Milpa's success largely hinges on the successes of the people in the system who are accountable to their institutions and organizations—not to Buena Milpa. Challenges are selecting and supporting the entities and people in the system. This includes challenges of selecting and supporting institutions and organizations for inclusion in the innovation network, their respective extensionists for Buena

Milpa training, and subsequently the promotores and the farmer groups with whom they will work. Although data for the Buena Milpa situation are not available, experience has shown that promotores may discontinue their voluntary efforts over time and farmer groups may disband. Maintaining their active participation and organization represents a major challenge.

- Training.** Buena Milpa has developed and delivered certification training to collaborating extensionists and intends to provide training to researchers and farmers.¹⁵ Several network collaborators have called for more extension certification training: more contact hours, more intensive coverage of subject matter, and coverage of more subjects. Some request additional training on extension methodology and on extension program planning. Given the diversity of extensionists who participate in the project through their institution or organization, it is challenging to diagnose what they already know and can do and to identify the gaps in their knowledge and skills relative to the training Buena Milpa offers. Buena Milpa expects to teach critical thinking skills and to use the pedagogy of Popular Education. However, these do not appear to be currently well-integrated in the curricula and doing so represents a significant challenge. All field extensionists have a role to play in the delivery of nutrition messages, not only those whose work focuses on healthy households (Sigman, 2015). However, this necessitates a move away from traditional roles of agricultural extension, requires additional training, and thus can be challenging.
- Technologies, Practices, and Processes.** It is recognized that Buena Milpa's focus is on innovation and not on technology transfer; that some technologies, practices, and processes such as seed banks and methods of soil conservation are available or potentially available for farmer use; and that Buena Milpa seeks farmer input into the further development of technologies, practices, and processes. However, there is a lack of clarity regarding which technologies, practices, and processes are of priority or which are at what stage of availability. What is to be scaled needs to be clarified as does the content of extension's and promotores' engagement with farmers and farmer groups.
- Politicized Maize.** There are issues related to genetic property rights that impact maize seed development. Indigenous populations in the operational area of Buena Milpa may view maize breeding activities as a threat to their native maize and thus to their culture.
- Balance between Research and Extension.** Per project documents, Buena Milpa is meant to be a scaling-out activity. Balancing the quantity and quality of research and extension efforts is highly-likely to be challenging for several of the following reasons. Between research and extension, research historically dominates, at least in terms of funding and perceived status. There is a historical disconnect between research and extension (which new approaches—such as innovation systems—are attempting to address). CIMMYT has not worked previously in Guatemala. As a research institution, it can be expected that one of its important contributions will be improving, if not emphasizing, research-based knowledge related to Buena Milpa work in Guatemala. Even though ICTA has adapted some of its research approaches, shifting the emphasis to scaling with increased engagement with extensionists and farmers involves corresponding attitudinal change.

¹⁵ As earlier noted in this report, during the consultancy, information was only available on extension certification training.

- **Headquarters and Field Linkages.** These linkages are frequently challenging in any organization. Complicating the challenge is the mandate for Buena Milpa to emphasize scaling-out activities, which implies an emphasis on extension and extension activities, within the leadership framework of a research institution. This could be viewed as a rather new and quite exciting opportunity or as a struggle between disparate forces.

5. RECOMMENDATIONS

Recommendations are put forward for consideration in the spirit of collegial collaboration. They are either directly linked to the challenges noted above or are linked to the project as a whole.

5.1 RECOMMENDATIONS ADDRESSING CHALLENGES

RECOMMENDATIONS FOR THE CHALLENGE OF INNOVATION SYSTEMS APPROACH.

- **Clarify Concepts.** Convene an innovation network meeting to define and develop shared understanding of the concepts identified above (i.e., extension, innovation, platform, network, scalability, sustainability, social inclusion, and popular education) and other related concepts the group identifies. Based on results, write an information brochure of concepts and definitions for distribution to collaborators and others.
- **Obtain and Maintain Innovation Network Commitment.** Design and implement an innovation network development strategy to include network purpose, clear roles and policy guidelines for participation (e.g., how will decisions be made and who will make them), meeting guidelines, financial resources available, and leadership structure. Integrate quarterly feedback sessions in the strategy to assess how the network is operating and an annual retreat to review progress and rejuvenate. The process used to develop strategic plans under MEAS offers an option for strategy development.
- **Build Trust.** This is a particularly thorny challenge and the recommendation is to further research the issue. Investigate studies of trust and collaboration theories and approaches to determine possible ways to build trust among network collaborators (see Kramer & Tyler, 1996; Mattessich, Murray-Close, & Monsey (2001); Sloan & Oliver, 2013; Wood & Gray, 1991). Trust-building possibilities include openly discussing the issue and its impact on mutually-shared Buena Milpa and collaborator goals; experimenting with team building exercises; and actively modelling trust in relationships with collaborators.
- **Promote and Measure Diversity.** Include gender issues in all Buena Milpa training and as feasible, develop an on-line gender-focused short-course for use by innovation network members. Buena Milpa uses Sim's Diversity Index, described in Buena Milpa's Performance Management Plan (CIMMYT, 2015b), to measure the diversity of those participating in its activities. As a complement, try out the Women's Empowerment in Agriculture Index.¹⁶ The Index measures the inclusion of women in project activities and also women's empowerment and agency. The Feed the Future program uses the index to monitor and track changes that occur in these measures as a direct or indirect result of Feed the Future resources.

¹⁶ For details and resources, see <http://www.ifpri.org/topic/weai-resource-center>

- **Reflect.** Build time into innovation network activities to reflect on and document successes, failures, and lessons learned. Request that network members volunteer on a rotating basis to lead reflection activities.
- **Communicate.** Document innovation network activities and request those representing institutions and organizations to hold discussions with others in their respective agencies around this documentation in order to increase and expand the flow of communication.
- **Link to Additional Resources.** A range of resources exist related to extension and agricultural innovation systems, both in the Central American context and other countries, that could be beneficial to strengthening the system in which Buena Milpa operates. Identify and assess the available information (through MEAS and elsewhere) as a starting point.
- **Consider System Sustainability.** Determine which aspects of the system should be sustained and why. Develop and implement a timely Buena Milpa exit and innovation system sustainability strategy.

RECOMMENDATIONS FOR THE CHALLENGE OF DELIVERY SYSTEMS: EXTENSIONISTS, PROMOTORS, AND FARMER GROUPS. Involve innovation network members in identifying shared criteria for including institutions and organizations in the network and for including participants in Buena Milpa training. Consider developing shared criteria for project participating promoters and farmer groups. Given the importance of these actors to Buena Milpa success, ensure investments are sufficient to amply prepare these different actors for success within the framework of the Buena Milpa project, provide them with sufficient technical and methodological follow-up backstopping and support, and consistently check their progress and problems in order to obtain feedback, address weaknesses, and build on strengths identified. Collaboratively with network members, plan and implement a recognition program to identify ways to acknowledge the contributions of outstanding extensionists, promoters, and/or individual or groups of farmers. Search for additional ways, such as exchange visits to other villages and study tours, to sustain promotor and farmer group participation and enthusiasm. Explore the possibility of promoters providing certain for-free goods and services to their groups such as vegetable seedlings. Similar indirect financial benefits have been shown to support promotor sustainability (Lukuyu, Place, Franzel, & Kiptot, 2012).

RECOMMENDATIONS FOR THE CHALLENGE OF TRAINING.

- **Adopt a Learning Theory.** A learning theory provides a unifying framework for training. Consider using, on a trial basis for specific subjects, Kolb's (1984) theory of Experiential Learning (EL). EL incorporates critical thinking skills and is in-line with popular education. EL is a structured, facilitated, cyclical 'learning by reflection on doing' process. The four cycles are: concrete experience (doing), reflection (processing the experience), generalization (thinking through/understanding general principles), and experimentation (applying principles in action) (UNESCO, 2010). EL is well-suited to extension certification training because it utilizes and builds on learners' real life experiences and facilitates new experiences and learning.
- **Improve Learning Diagnostics.** It is not feasible to develop individualized training plans. However, it is feasible and recommended to experiment with pre-testing training participant's existing knowledge relative to content of Buena Milpa training to assess the extent to which Buena Milpa training is targeted at the right level. In other words, as a diagnostic tool, pre-testing

helps to avoid significant duplication of learning and helps to establish whether the degree of difficulty of material included in training should be lowered or raised.

- **Include Extension Theory.** Rogers (2003) articulates a diffusion of innovations theory which has practical application to extension work and programming. Including this material in extension certification training facilitates critique and understanding of elements central to extension activity such as the diffusion process, characteristics of innovations, stages in the innovation-decision process, and categories of adopters.
- **Review additional training material. Consider complementing Buena Milpa training with existing training materials developed by other actors in extension, including the MEAS project and the Global Forum for Rural Advisory Services.**
- **Include Healthy Household Extensionists and Nutrition Messages.** The government extension system employs Healthy Household Extensionists, typically women, whose work focuses on the home, home farm, and nutrition. Including them in extension certification training along with male extensionists will help emphasize the importance of nutrition and will strengthen their capacity to serve their clients. Dietary diversification is a strategy for contributing to the reduction of malnutrition and is in-line within Buena Milpa objectives. Including explicit training on the links between agriculture and nutrition and the nutritional value of local traditional vegetables and small livestock as part of examining farm-system diversification during certification training will contribute to improving dietary diversification.
- **Develop Personal Narratives to Document Training Impact.** In addition to the quantitative data to be collected per the project's Performance Management Plan to measure training impact (CIMMYT, 2015b), select several training participants who agree to document their training experiences. Analyze these narratives to capture and report aspects of training impact.
- **Facilitate Additional Training.** All collaborators provide some type of training to either extensionists, promoters, and/or farmer groups. To respond to calls for more training of extensionists, hold a training review workshop with collaborators to review their training and Buena Milpa's training programs. Identify areas of commonality and which trainings would complement Buena Milpa certification training. Utilize this input to adapt Buena Milpa certification training curricula as necessary. Develop and fund an exchange program whereby selected collaborators participate in each other's existing training activities.

RECOMMENDATIONS FOR THE CHALLENGE OF TECHNOLOGIES, PRACTICES, AND PROCESSES. Articulate project-related technologies, practices, and processes and create a tool for use by innovation network collaborators, particularly extensionists, to guide their field activities. Create the tool by (a) developing an inventory prioritizing these technologies, practices, and processes cross-referenced with a scale of their 'readiness for use' and by (b) matching inventoried technologies, practices, and processes with their users as described by the CIMMYT typology of Highland farmers currently under construction. To provide input to inventory prioritization, assess the technologies, practices, and processes against the factors that have been shown to influence the adoption of innovations (innovations being ideas, technologies, practices, and processes perceived as new by potential adopters) (Rogers, 2003). Rogers (2003) identifies five factors which influence the adoption of innovations:

- **Relative advantage:** extent to which the innovation is perceived as being superior to that which it replaces. Among others, relative advantage may have economic, convenience, and/or status dimensions.
- **Compatibility:** degree to which the innovation is perceived as consistent with the values, norms, and culture of the social system in which it will operate.
- **Complexity:** perception of how difficult the innovation is to understand and use in practice.
- **Trialability:** degree to which an innovation can be experimented with on a trial basis. For example, to what extent can it be tried-out or demonstrated before making a full commitment to using it.
- **Observability:** extent to which innovation results are visible to others.

RECOMMENDATIONS FOR THE CHALLENGE OF POLITICIZED MAIZE. Use best practices in approaching communities such as having respected members of the local community, or neighboring leaders who have participated in breeding activities, introduce and explain proposed participatory maize breeding activities to community members prior to initiating activities. If deemed necessary, obtain the permission of authorities to carry-out participatory breeding activities. Following initial agreement, hold community meetings to explain benefits of activities, what will be done by whom and when, and to answer questions the community may have. Emphasize transparency in community relationships.

RECOMMENDATIONS FOR THE CHALLENGE OF BALANCE BETWEEN RESEARCH AND EXTENSION. Categorize project activities according to a research to extension typology. Design a mechanism to track the categories of activities implemented and report results to the innovation network. Per their current diagram of the research process, ICTA engages with extension in the fourth (promotion) and fifth (production) phases of the process. Extensionists must be involved earlier in the process, at the third phase (testing/validation), in order to facilitate learning and the exchange of ideas among farmers, extensionists, and researchers. Per the diagram of the research process, ICTA testing/validation is carried-out on-farm with farmer evaluation of the technology and with ICTA's evaluation of the rate of acceptance of the technology. While ICTA should continue its role, extensionists should be involved in meaningful ways at this early stage in order to learn experientially about the technology prior to its promotion, to engage with farmers in this process, and to provide feedback to ICTA regarding the technology.

RECOMMENDATIONS FOR THE CHALLENGE OF HEADQUARTERS AND FIELD LINKAGES. Consistent and continued communication between the two is called for. Communications may be enhanced by developing a set schedule of video conference calls between those available to converse at headquarters and the field; announcing in advance the schedule of visits of CIMMYT scientists and the purpose of their visits; requesting that visiting scientists briefly present results of their visits to local staff using a round table discussion format; implementing annual collaborating planning sessions; and sharing work plans. The recommendation is to increase the opportunities to communicate rather than suggest everyone involved in Headquarters and the field participate in all opportunities to do so.

5.2 ADDITIONAL RECOMMENDATIONS

EXPAND COVERAGE TO ACHIEVE GREATER IMPACT. To reach greater numbers of farmers and ultimately achieve greater impact, consider the following:

- Engage more with government structures such as the Municipal Commission for Food and Nutrition Security and the Office for Women. Such structures may be in position to assist Buena Milpa reach its objectives. Utilize Municipal Development Plans, which are designed to reflect community member (including farmer) needs, to inform Buena Milpa activity.
- Encourage selected farmer group members to become promoters themselves, organizing and facilitating new additional farmer groups.
- Enhance collaboration with partners in USAID's Western Highlands Integrated Program which shares many of Buena Milpa's objectives.
- Identify farmer apex organizations (cooperatives or associations) and invite them to become collaborators in the innovation network. Their voice will add an important dynamic.
- Assess their potential roles and invite network participation from Mas Frijol, Food for Progress, FAO, and CATIE. Mas Frijol is in strong position to assist with incorporating nutrition messages in Buena Milpa training. The other three entities have substantial experience training extensionists.
- Including Information and Communications Technologies (ICT) training in extension certification training and allocating competitive grant funds to network member proposals for ICT use in support of extension activities.

APPENDIX A: CONSULTANT'S SCOPE OF WORK

SCOPE OF WORK: DRAFT

**Buena Milpa, International Center for the Improvement of Maize and Wheat (CIMMYT), Guatemala
and
the Modernizing Extension and Advisory Services Project (MEAS), University of Illinois.**

In the Western Highlands of Guatemala, a majority of three-fourths of the population lives in poverty and over two-thirds of children under five are chronically malnourished. The dominant Western Highlands farming system is maize-based with most cultivation occurring on eroded hillsides. The Buena Milpa project (focusing on maize) and the MEAS project (focusing on agricultural extension) intend to collaborate to contribute to rural poverty alleviation and nutrition improvement in the USAID five Feed the Future focus departments in the Western Highlands. Two of Buena Milpa's priority activities involve (1) generating and disseminating information on maize genetic improvements, soil conservation, and farming systems diversification and (2) strengthening capacities of extension agents to engage with farmers around this information. MEAS, through action-oriented research and outreach, will assist Buena Milpa with information dissemination through improving understanding of extension services capacities and ways they may be strengthened.

The activity described below represents the first collaboration between Buena Milpa and MEAS. It is anticipated that this will be followed by further collaboration in the future.

SCOPE

Under the supervision of Dr. Paul McNamara, MEAS Project Director, Dr. Vickie Sigman, MEAS Sr. Agriculture Extension Advisor, will be fielded to Guatemala to accomplish the following:

- Conduct a rapid review of the status of existing agricultural extension services in the target FTF departments giving emphasis largely to public sector extension services while also briefly considering private and civil society sector services.
- Assess the potential feasibility of future cooperation between Buena Milpa and extension services reviewed.
- Develop a set of recommendations to strengthen existing services reviewed and to support potential future cooperation between Buena Milpa and extension services reviewed.

LEVEL OF EFFORT

The total number of work days to be allocated to this consultancy is 24. These are to be divided as follows: 2 days preparation (documents review, literature search), 2 days travel, 12 days in-country (6 day work week), and 8 days for report preparation and finalization. The consultancy is to begin around November 16, 2015 and all final deliverables are to be submitted by January 15, 2016. The consultant is to begin work in-country by/around November 23, 2015.

DELIVERABLES

The primary deliverable is a report written in English that provides (a) results of the review of extension services, (b) an assessment of potential for cooperation between Buena Milpa and services reviewed, and (c) a set of related supporting recommendations. A secondary deliverable is a round-table discussion with Buena Milpa staff and the consultant to discuss preliminary findings.

APPENDIX B: LITERATURE/INFORMATION REVIEWED AND REFERENCES

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