

5-2022

Small Farm Resource Centers as Informal Extension Hubs in Underserved Areas: Case Studies from Southeast Asia

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Recommended Citation

Bicksler, A., Trail, P., Bates, R. M., Burnette, R. R., & Thansrithong, B. (2022). Small Farm Resource Centers as Informal Extension Hubs in Underserved Areas: Case Studies from Southeast Asia. *Journal of International Agricultural and Extension Education*, 29(2), 74-90. DOI: <https://doi.org/10.4148/2831-5960.1060>

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Keywords

agricultural extension methods, needs-based assessment, rural advisory services, Southeast Asia; demonstration plots, learning center

Erratum

A correction has been issued for this article. The DOI of the article was incorrect as published. The correct DOI is: 10.4148/2831-5960.1060. Link to Erratum: <https://doi.org/10.4148/2831-5960.1461>

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Abstract

A Small Farm Resource Center (SFRC) is an informal in-situ extension model used for testing promising agricultural and rural livelihoods options on a physical central site, with some measure of extension methodology. There is a need to evaluate SFRCs as research-extension models operating outside of formal government extension and advisory services. Seven SFRCs located in Southeast Asia were studied to classify extension methodologies adopted by those centers, evaluate extension efficacy, and to provide recommendations for amplifying their services. On average in 2013, SFRCs were 21.1 years old, covered 24.2 ha, cost 242,000 USD to establish and had a yearly operating cost of 28,500 USD. The work of the seven SFRCs could be classified into five predominant extension methodologies: on-site and off-site demonstrations, on-site and off-site trainings, and off-site extension outreach. Most of the SFRCs utilized combinations of these and tailored their methods to the particular context. Besides agricultural production, SFRCs also offered socio-cultural and socio-economic assistance, owing to a cycle of extension knowledge refinement. SFRCs were re-engaged in 2021 and all 7 were still operational, and the majority provided the same number or more services (57%) as in 2013, utilized the same amount of space (71%), and were perceived to have the same or more efficacy (71%) even in the face of decreasing or stagnating funding (71%) due to the COVID-19 pandemic. Overall, SFRCs continue to be used successfully throughout Southeast Asia and provide cost-effective and needs-based extension and advisory services to underserved populations outside of formal extension services.

Keywords: agricultural extension methods; needs-based assessment; rural advisory services; Southeast Asia; demonstration plots; learning center

Introduction

A Small Farm Resource Center (SFRC) may be defined as an informal in-situ extension model for testing promising agricultural and rural livelihoods options on a physical central site as well as on fields of individual farmers (Price, 1993). Most SFRCs operate as research-extension models operating outside of formal government extension and advisory services. Any new ideas, techniques, technologies, crop or livestock introductions, practices, technologies, crops, etc. can first be evaluated at the SFRC, and then tested via on-farm and in-household trials in the community. The ultimate purpose of the SFRC is to evaluate, within the community, ideas that have been proven elsewhere and that show promise for a particular cultural, socio-economic and environmental context. The best of these ideas can be adapted to become the backbone of the SFRC's agricultural outreach and community development efforts, developed into a variety of educational and training formats, outreach projects and poverty alleviation initiatives. To date, SFRCs have played an important role in strengthening the relevance and impact of their sponsoring organizations, which have historically been national and international development organizations, missionary agencies, and local church associations, that often do not fit the formal model of government-sponsored extension.

Although different farmer training centers have existed over various periods of time, and manuals have even been written on how to set up and run a rural community resource center (Giggey, 1988), SFRCs have taken a multifarious approach to research, demonstration, and extension that usually includes a distinct localization and participatory context feature and for this reason, have rarely been studied for their efficacy. Rather than formal or state-implemented extension or rural advisory services providers, SFRCs have typically been affiliated with civil society and non-state actors (e.g. NGOs, INGOs, churches, cooperatives, etc.). A similar model of extension but with resources from and connections to a larger international institute is that of a "Rural Resource Center (RRC)," such as utilized by the World Agroforestry Center (2016) and summarized by Degrande et al. (2015) and used successfully in Africa (Takoutsing et al., 2014). However, longitudinal and participatory assessments of efficacy of SFRCs operating within the informal advisory sphere, especially in Asia, are lacking.

In Asia, as early as the Sung and Yuan Dynasties (960-1368), local government administrations were involved with organizing and promoting agricultural research as well as extension work and teaching. Such efforts continued through the Ming (1368-1644) and Ch'ing (1644-1912) Dynasties (Jones & Garforth, 1997). Particularly since the 20th Century, non-governmental organizations (NGOs) have played a key role in humanitarian and development work worldwide. Even earlier, the involvement of Christian missionaries in development activities often included "prototypical NGO initiatives" attempting to address concerns related to education, health, women's rights, and agricultural development (Lewis & Kanji, 2009).

During the early 20th Century, a growing number of missionaries in Asia were engaged in serving the poor through agriculture, including Sam Higginbottom (1874-1958), an English missionary who served with the North India Mission of the Presbyterian Church (Higginbottom, 1921). Higginbottom's approach set a standard for a localized approach to agriculture that incorporated the environmental and cultural contexts into the testing of new innovations, which if deemed suitable, could then be disseminated to local populations.

Following World War II, the role of NGOs and non-formal actors throughout Asia grew. However, with the growth and modernization of agricultural education and extension provided

by governments throughout the region, there was less need for large agricultural schools such as those established by Higginbottom. In contrast, smaller agricultural development centers, often associated with civil society and theological institutions, were established with financial support from churches and mission agencies abroad. Matching the description of Small Farm Resource Development Centers provided by ECHO's Dr. Martin Price (Price, 1993), these smaller agricultural institutions tended to focus on the frontier and providing services to rural groups too marginalized to benefit from formal institutions and state provided extension services.

In the late 1980s, following the advent of Participatory Rapid Appraisal (PRA) (Van den Berg, 2004) and Farmer Field School (FFS) extension models (Braun & Duveskog, 2008), an increased emphasis was placed on the importance of farmer-led extension, causing many extension and development experts to question the cost and role of traditional agricultural centers as useful tools for agricultural extension.

Although many SFRCs in Asia are still in existence and RRCs have been summarized elsewhere (Degrande et al., 2015) and evaluated for their efficacy in Africa (Takoutsing et al., 2014), the extension benefits and efficacy of local and regional SFRCs on local livelihoods have never been measured or evaluated comprehensively and longitudinally in Asia, perhaps because of their multifarious foci, diversity of extension techniques, secondary role to other institutional priorities, lack of understanding or interest in extension best practices, and/or lack of institutional vision, visibility, or sustainability. It is the purpose of this research to characterize and assess SFRC's in Southeast Asia as models of informal extension and rural advisory services.

Theoretical and Conceptual Framework

There is a need to document, evaluate and empower existing SFRCs as useful research-extension tools operating outside of the formal government extension models in Southeast Asia. This is particularly relevant if SFRCs are to have a continued role in reaching underserved or marginalized/neglected segments of populations, such as rural smallholders, minority ethnic groups, and others living far from power and administrative centers. Often faced with environmental and climatic challenges, these marginal communities often lack natural resources needed for resilience and to sustain livelihoods. To justify continued existence of these centers, important questions regarding their extension efficacy needed to be assessed: (1) Are these centers capable of engaging a particular focus group on the basis of that group's needs? (2) What extension strategies have been used, and are they producing documentable positive changes related to sustained livelihood and food security improvement? (3) How adaptable to change are SFRCs in a rapidly developing Asia, and (4) what can be done to amplify these extension impacts? In light of the COVID-19 pandemic and changing landscapes of extension and rural advisory services, the need also exists to document how SFRCs have been able to adapt to changing challenges in order to evaluate their efficacy.

Purpose and Objectives

The purpose of this research was to explore a suite of seven SFRCs located in Southeast Asia, in both 2013 and as a follow up to the research in 2021, to highlight the concept of the SFRC model, classify extension methodologies adopted by those centers, evaluate outreach and extension efficacy, evaluate their ability to meet evolving challenges and to provide

recommendations for amplifying effective alternative extension services. Seven SFRCs, across four countries, were assessed in 2013 and 2021 by answering a suite of research questions. Open ended questionnaires, visits, and participatory impact assessments were designed to evaluate the concept of the SFRC and to determine if the concept of the SFRC can remain relevant as an extension and development tool. Participating SFRC's included the Aloha House Farm, Philippines; the Silom Karen Baptist Life Center, Thailand (CUHT); the Farm Center Indochina (FCI), operators asked for its location not to be disclosed; the Ntok Ntee Farm, Cambodia; the Sustainable Agriculture Training Center (SATC), Myanmar; the Thai-Lahu Christian Churches Bi-Vocational School (TLCC), Thailand; and the Upland Holistic Development Project (UHDP), Thailand (Table 1).

Table 1*Summary Statistics of Seven Small Farm Resource Centers in Southeast Asia in 2013*

SFRC Name	Location	Year Founded	Farm Size	Legal Status	Cost to Establish	Annual Cost to Operate	Income Stream Breakdown
Aloha House	Puerto Princessa, Philippines	1999	7 ac (2.8 ha)	Non-profit NGO	40,000 (USD)	Net profit of 15%	Meets 75% of orphanage food needs & offsets 25% of operating costs; farm products; trainings; events; consulting
¹ CUHT	Chiang Mai, Thailand	1960	9 ac (3.7 ha)	Christian Service Foundation	Not Reported	Not Reported	Donations from TKBC/US-based churches & other faith organizations; student tuition; handicraft sales; rent to other NGOs.
² FCI	Indochina	2009	111 ac (45 ha)	Registered Business	350,000 (USD)	40,000 (USD)	Sale of organic produce in town; trainings.
Ntok Ntee	Mondulkiri Cambodia	2012	75 ac (30 ha)	Registered Cambodia NGO	Not Reported	Not Reported	Fruit & hardwood seedlings; livestock sales; donations.
³ SATC	Hmawbi, Myanmar	2005	195 ac (79 ha)	Registered Myanmar NGO	Not Reported	Not Reported	Trainings; lodging fees; sale of farm produced seed, plants, education materials; consulting; donations.
⁴ TLCC	Doi Saket, Thailand	2001	7 ac (3 ha)	Rural Care Foundation	428,571 (USD)	Not Reported	Donations from TLBC churches & Reach Global; tuition; Go-Ed participant rent.
⁵ UHDP	Mae Ai, Thailand	1996	15 ac (6 ha)	Registered Thai NGO	150,000	17,030	Trainings; lodging fees, outside organization rental, farm products sales; donations
Average		21 (years)	60 ac (24 ha)		242,123 (USD)	28,515 (USD)	

¹Siloam Karen Baptist Life Development Center; ²Farm Center Indochina; ³Sustainable Agriculture Training Center;⁴Thai Lahu Christian Churches Bi-Vocational School; ⁵Upland Holistic Development Center.

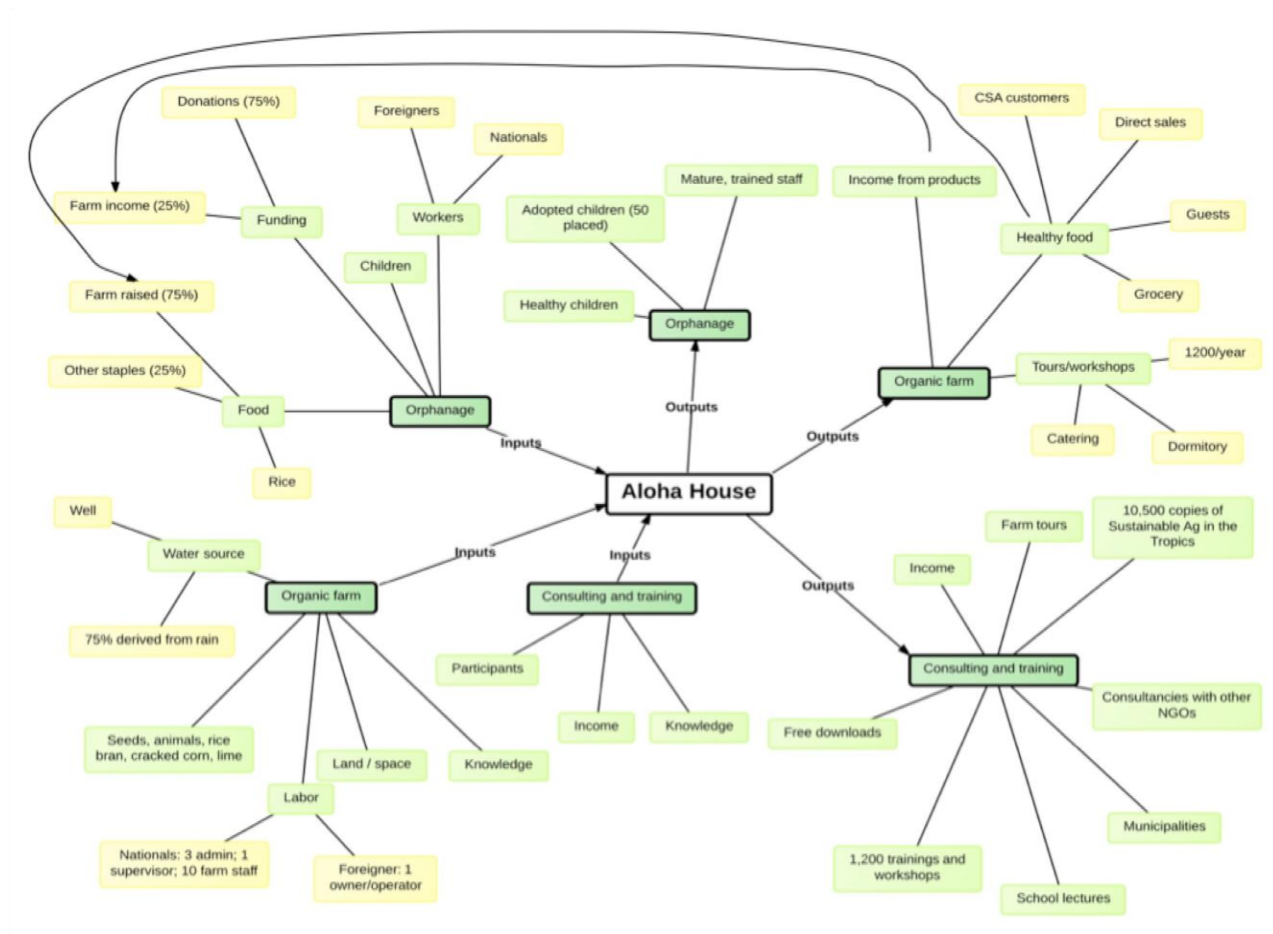
Methods

Seven non-state enterprise Small Farm Resource Centers (SFRCs) were selected based on the authors' knowledge of each farm's existence, and the perception of the center's length of existence, with a desire to have a representative sample of centers with various ages of existence and operation throughout Southeast Asia (Table 1). Data pertaining to the background, extension methodologies, finances, and efficacy of the centers were collected by a combination of questionnaires, targeted surveys (Groves et al., 2011), and on-site participatory appraisal tools (Slocum, 2003). Initial data collection was conducted via questionnaires emailed to SFRC directors in December 2012. The questionnaire consisted of 47 questions on topics related to the history and mission of each center, personnel, institutional affiliations, demographics of stakeholders and beneficiaries served, budgeting and financial mechanisms, monitoring and evaluation procedures, on- and off-site extension work, as well as long-term exit strategies (Groves et al., 2011). This background information was intended to help identify and classify the extension and livelihoods improvement approaches of each SFRC.

Once preliminary questionnaires were distributed and returned, a one-day assessment was conducted on-site in 2013, including a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, key informant interviews, farm tours and inventories, and organizational systems modeling with the SFRC directors and staff (Figure 1) utilizing a snowball sampling method (Parker et al., 2019). These assessments were aimed at understanding the background, operations, services, and perceived value of the SFRCs and identified how extension happens within each SFRC and who is involved in extension activities, both on- and off- site. In addition, a one- (or two, in some cases) day participatory assessment was conducted with stakeholders - which were defined as anyone having a vested interest in the success or function of the center and its work - to understand perceived extension effectiveness and its impact on farmers, their livelihoods, and overall food security.

Figure 1

Example Mental Model of Input-Output Loops of Aloha House SFRC. The first order of dark green rectangles show the major classifications of inputs (consulting and training, organic farm, and orphanage) and outputs (orphanage, organic farm, and consulting and training) driving the flow of resources, people, knowledge products, extension methodologies, activities, and products of the Aloha House SFRC. Mental models were created for all seven SFRCs.



These participatory assessments with stakeholders utilized SWOT analysis, field visits, brief interviews, and systems modeling (Meadows & Wright, 2011) of perceived extension practices. It was important that a combination of staff and stakeholders were present in all of these meetings and translators were well-versed in development and agricultural terminology. To evaluate the SFRC's abilities to adapt to changing conditions and needs, especially given the COVID-19 pandemic, a follow-up survey was conducted in September 2021 utilizing 12 open-ended questions addressed to the centers' directors and staff (Groves et al., 2011). Data from surveys were coded to calculate percentages and ratios and were analyzed and interpreted in addition to development as case studies based on the participatory aspects of the study.

Results

Overview of Seven Southeast Asia Small Farm Resource Centers

The seven SFRCs studied in Southeast Asia were varied and unique but embodied many common attributes. All SFRCs were non-state actors, most were affiliated with umbrella organizations and were attempting to provide agricultural extension and rural advisory services using different combinations of on-farm and off-farm demonstrations, on-farm and off-farm training, and off-farm extension resource provision. Each varied widely regarding size, cost to establish, years in operation, and cost: beneficiary ratios (Table 1).

Extension and Advisory Components Identified in this Model

All SFRCs included in this assessment engaged in a variety of on-farm crop, livestock and appropriate technology demonstrations. These served as the basis for on-farm training, as well as outreach to target communities. In most cases, the demonstrations grew out of local stakeholder interaction, community meetings, and addressed prioritized local needs. Typically, the SFRC staff had a long-term presence within the local communities, and there existed a mutually beneficial relationship between the SFRCs and the communities served. The SFRCs also created and distributed a variety of agriculture and community development resources and training materials locally (including in several local languages), often reaching an audience extending beyond the regions in which they operate. Indeed, most of the SFRCs in this study also conducted on-farm training programs for regional and international development workers.

As they emerged, the extension and advisory components encountered were classified into five categories: (1) On-site and (2) off-site demonstrations, (3) on-site and (4) off-site trainings, and (5) off-site extension outreach for communities (Table 2). As non-state enterprises, these five categories are what make these centers different from typical farmer training centers or rural resource centers, which tend to focus on on-farm research and on-farm training.

On-Site and Off-Site Demonstrations

The perceived quality and frequency of SFRC on-site and off-site demonstrations was varied. Most of the SFRCs' focus was related to on-site demonstrations, but the extent of related off-site efforts varied by the SFRC. The usage of agricultural demonstrations, as opposed to research plots, is a hallmark of the SFRC model. While state-run institutions tend to focus on research (involving replicated, randomized design), many of the SFRCs utilized observational and side-by-side demonstrations to evaluate practices and technologies for appropriate use in their localized contexts. However, some SFRCs (e.g. Aloha House, UHDP) often implemented observational trials, followed by more rigorous data collection on the techniques deemed as good potentials, in some cases even determining statistical significance. Off-site demonstrations were usually used only after various new techniques were proven on-site as a means of risk reduction.

In the case of CUHT, due to various factors, such as changing demographics of beneficiaries and change in vision and leadership, center-based demonstrations declined significantly over 50 years into 2021, whereas the more recently established TLCC facility had new working demonstrations related to paddy rice production, livestock production, and

household gardening. The authors determined this shift was a natural progression based on continued needs-assessment and the need to maintain relevance. While the agricultural component of CUHT had experienced several decades of decline, the agriculture and community development agency based at the facility had played a significant supporting role in helping church communities to set up cooperatives that enabled improved savings and access to credit for farming and other community-based enterprises. Additionally, the project promoted livestock production, natural resource management training, operated as a breed bank, and promoted the construction of backyard biogas units that produce energy from animal waste.

Centers which stood out for the quality and quantity of demonstrations included UHDP, with demonstrations related to agroforestry, underutilized crop promotion, animal integration, organic cropping systems, and nursery production; Aloha House, with demonstrations related to aquaponics, animal integration, mushrooms, and value-added products; SATC, with demonstrations related to animal integration, renewable energy, and organic vegetable production; and Nok Ntee with demonstrations related to underutilized crop promotion, plant breeding, water supply, and organic vegetable production (Table 2). FCI almost exclusively offered on-site demonstrations, except for extension work with an existing Helvitas rice growers' group in the area.

On-Site and Off-Site Trainings

Similarly, the quality and effectiveness of on-site and off-site training via SFRCs was diverse and varied. Most of the institutions examined offered center-based trainings to their communities to provide convenient and accessible opportunities at the center. When offering center-based training, many SFRCs tended to offer accommodations and food services for visitors that also provided limited but value-added income for the center. Not only were trainings offered to local beneficiaries, but several of the centers (e.g. Aloha House, SATC, UHDP) realized steady income from training other local, national, and international actors who had heard about the techniques and processes the SFRCs were utilizing. These actors were not just relegated to farmers, but also included students (national and international university), extension providers, NGO workers, INGO workers, government agents, and academics. In light of the pandemic, the majority (71%) of the SFRCs in this study needed to curtail trainings, and subsequently lost funding opportunities. However, 57% of the SFRCs continued to offer the same number or more services as in 2013 and turned to more self-sufficiency measures to weather the lost income streams.

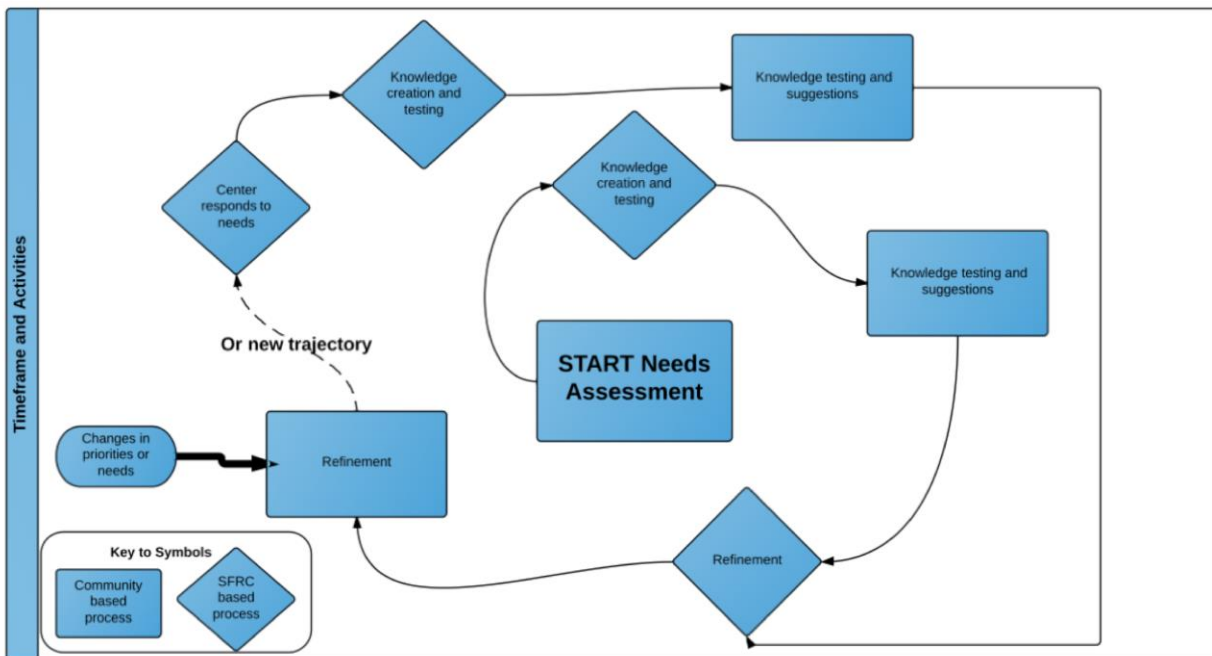
Those centers that did provide off-site trainings tended to do so less often than on-site trainings and often provided trainings for free. UHDP and SATC, while concentrating on on-site trainings, also conducted a significant number of off-site trainings that they determined were important rural advisory services. One exception in Thailand was the Rural Development Project (RDP), a wing of CUHT. Based at CUHT where its agricultural training facilities had been in a decades-long decline, RDP continued to offer a wide offering of community-based trainings throughout its multi-provincial focus area related to cooperatives, livestock production and sustainable agriculture. In contrast, nearby TLCC offered very little community-based training and extension, with most of its agricultural emphasis based at the site and on training next generation farmers and community leaders.

Off-Site Extension Outreach for Communities

SFRC performance in offering forms of community-based agricultural extension services varied by the center and its priorities. Several centers offered minimal extension services whereby agents from the center actually traveled to communities to extend support (TLCC, FCI, Aloha House, Nok Ntee), focusing mainly on the prior models of extension. Other SFRCs, like UHDP, SATC, and CUHT had very active engagement in the communities through an extension and advisory services role, helping to refine information and techniques that the center pioneered and/or evaluated, but the communities adopted and adapted. The inverse of this was also apparent, with several of the SFRCs acquiring seeds and approaches from the focus areas and then propagating, testing, and refining those approaches to disseminate them more widely with other communities and beneficiaries. It appears that this link is vital to helping SFRCs remain relevant in the face of evolving needs. As the felt needs were researched by the center, from which techniques and ideas can be pioneered and then extended to the community for possible adoption and adaptation, eventual feedback was given back to the SFRC, thereby strengthening the technique to better meet needs (Figure 2).

Figure 2

Cycle of Extension Knowledge Refinement Between Communities and an SFRC. The cycle shows how needs assessments drove the establishment of the SFRCs and continued refinement and updated needs assessments have helped to ensure sustained relevance.



Conclusions, Implications and Recommendations

Lessons Learned about SFRCs and Their Role in Extension in SE Asia

From a funding perspective, the cost to build, maintain and operate the centers as of 2013 was remarkably modest (Table 1), averaging 242,000 USD to build and only 29,000 USD to operate annually, which amounts to a rate of return of \$7.9 annually to operate per beneficiary across the SFRCs. These are in contrast to other formal extension schemes, which can run into the millions of dollars to develop and run. For instance, the UN estimates that running a Farmer Field School for a season typically costs between 800-1500 USD, or about \$40-\$80 per FFS member in addition to resources for training, project coordination and any technical support (UNDESA, 2021), making the SFRC model a good value. Many of the centers received donations from outside funding sources, but also look to value addition, product and service sale, and training revenue to help them become more sustainable, which showed their value in 2021 in light of the pandemic and the fact that all were still operational and had an eye to the future and to their continued relevance and sustainability.

Although traditional extension methodologies were used to some extent (Table 2), it is interesting to note that the extension services offered were not necessarily purely agricultural in form. Many centers offered need-based extension services to communities that included agricultural extension, but also other forms of development activities, including citizenship assistance, women's empowerment, micro-finance opportunities, and cooperative formation, showing the adaptability of these centers to help satisfy a diverse set of needs.

All of the seven SFRCs could be regarded as knowledge and training hubs, first collecting and verifying practices, testing those practices, and following with appropriate dissemination. Although several centers had limited extension programs (CUHT, FCI, ALOHA), others emphasized traditional extension methodologies for needs assessment, participatory approaches, and knowledge dissemination on a wide variety of topics through curriculum, which has been proven to be effective elsewhere (Nyamwamu et al., 2014). The majority of SFRCs seemed to find their greatest strength in the offering of on-site demonstrations and trainings. Even though these activities were curtailed due to the pandemic, they still remained a priority and the SFRCs looked to regain lost ground when safe to do so.

Several centers were linked to larger organizations, networks, or communities, which tended to amplify their impact, allowing them to focus on their core niche areas (training, demonstrations), leveraging limited funding compared to traditional RAS providers offered by the government. It should be noted, however, that interaction with government and academia was not always missing; to the contrary, most of the SFRCs surveyed learned and shared quite extensively with formal government actors, both local and national.

It was commonly reported that production increases accompanied by diversification had been made as a result of the different forms of extension, but market access was still a major concern, in line with limitations noted by Price (1993). Several of the SFRCs studied attempted to address this issue by assisting in the formation of cooperatives, training on marketing and value-addition strategies, helping communities find and develop niche-products and by serving as the bridge between producers and consumers.

Almost all the centers in 2013 were being funded to some degree by external contributions from faith-based groups, international donors, and personal fundraising efforts.

However, many centers also attempted to maximize creation of wealth via the farm training site by producing and selling on-farm products (both raw and value added) to local consumers, local markets, or even trainees. Several of the sites also earned significant income from direct training costs as well as through rental costs of training venues and accommodation (sometimes on a long-term basis leasing plots and building to other like-minded institutions to use (UHDP and CUHT)), and meal preparation for training events, although these were curtailed by 2021 with the pandemic. While all SFRC's currently draw on external funding, not all SFRC's are operated by external or international leadership, with six out of the seven having now transitioned to national leadership. All SFRC Directors were sensitive to the funding models they operated under and had concerns about long-term financial viability. Some of the sites, such as Aloha House, had very tight and self-contained input-output loops (Figure 1), maximizing their input efficiency and reducing external costs, showcasing excellence in recycling and efficiency and being noted as one of the reasons the SFRC was still around in 2021.

Table 2*Five Methods of Extension and RAS Identified Across the Seven SFRCs in Southeast Asia*

Method	SFRC Adoption	Examples
On-Site Demonstrations	ALOHA, ¹ CUHT, ² FCI, NTOK NTEE, ³ SATC, ⁴ TLCC, ⁵ UHDP	frog rearing; tire gardens; agroforestry; organic rice production; organic vegetable production; appropriate technology; vermicompost; biogas; SRI; sand biofilters; fish production; fire & fuelwood; fruit tree production; grafting; bamboo propagation; micro-hydro power; dyes & handicrafts creation; herb production; pastured poultry; natural pork; cow & goat milk; vermiculture; composting; aquaculture; aquaponics; value-added products (salsa, jams, pestos, cheese, yogurt, lip balm, toothpastes); evaluating/testing new plant & animal species for inclusion in development work (e.g. passion fruit & stylosanthes); small-scale irrigation; seed banking; groundcover & land management; vegetable plots for vocational training for students to grow food for consumption & sale to kitchen.
Off-Site Demonstrations	ALOHA, SATC, UHDP,	sand biofilters; micro-hydro power; biogas systems; animal husbandry; agroforestry; backyard gardening; livestock production; container gardening
On-Site Training	ALOHA, CUHT, FCI, NTOK NTEE, SATC, TLCC, UHDP	organic rice production; organic vegetable production; vermicompost; biogas; SRI; animal husbandry; Basic Agricultural & Livestock Training Program: soil science, plant nutrition & fertilizers, plant propagation, insects & disease management, safe use of agrochemicals, integrated farming systems; cattle, pig, poultry, & goat husbandry, aquaculture, livestock disease & animal health; environmental sustainability; compost production; Sloping Agricultural Land Technology (SALT); alternative energy; agroforestry; backyard gardening; integrated upland farming; appropriate technology; cooperative development; rental of training facilities; 3-day intensive trainings on sustainable agriculture (includes crop rotation, legume usage, companion planting, composting, green fertilizers, mulching, cover cropping, minimal tillage, habitat for beneficial insects, & livestock integration); one-day specific short courses; farm tours; value-addition training (milk, cheese, jams); seed banking; dissemination of improved varieties of crops; nursery establishment; veterinary methods; vocational training among resident technical school students; turkeys; Introduction to Sufficiency Economy Theory (developed in Thailand by the king)
Off-Site Training	ALOHA, CUHT, FCI, SATC, UHDP	organic rice production; SRI; sanitation; sand biofilters; livestock development; hurricane recovery (SATC); famine recovery; capacity building; rural integrated development; agroforestry; backyard gardening; women's groups; handicrafts groups; green manure cover cropping; animal feeds; household nutrition; germplasm; sheep production; coffee growing & processing; marketing basics; waste management; natural pig production
Off-Site Extension to Communities	ALOHA, CUHT, FCI, SATC, TLCC, UHDP	organic rice production; crop rotation; IPM; cover crops; help with contract agreements; livestock production; rural integrated development; agroforestry training; backyard gardening; women's groups; handicrafts groups; green manure cover cropping; livestock feeds; citizenship; market access; gender equality; minority advocacy; household biogas development; container gardening; composting; dedicated extension staff to share about natural pig raising, vegetable diversification, rice, & fish ponds; community development & participatory rural appraisal techniques

¹Siloam Karen Baptist Life Development Center; ²Farm Center Indochina; ³Sustainable Agriculture Training Center;⁴Thai Lahu Christian Churches Bi-Vocational School; ⁵Upland Holistic Development Center.

Extension Methodologies Not Observed and Recommendations for their Utilization

Although a wide array of extension methodologies were evident, as illustrated above, they mainly focused on tangible forms of training and demonstration both on and off the site. Various extension methodologies that were noticeably missing among several SFRCs included newsletters, website information or technical information dissemination, website training help, videos, radio usage, and other media usage (ICT). It was unclear whether the lack of these ICT tools were absent due to a lack of resources, capacity, or whether or not they were appropriate within the cultural context. In Myanmar, for example, the SATC focused heavily on training different groups from within Myanmar. Being a highly relational culture, many of the trainings took place over weeks or months, on-site, and built not only technical capacities, but also relational and networking capacities. Also given Myanmar's nascent cellular network capacities, it is not surprising that some of these more technologically focused methods were absent.

One center in particular exemplified a diverse portfolio of extension methodologies. Aloha House, in the Philippines, not only utilized a broad repertoire of training and demonstration topics but also a broad array of media for conveying content and skills to interested stakeholders. These included a YouTube channel with videos, a blog, updates on Facebook, as well as contributing to broader circulation extension content, such as via ECHO Asia Notes, and a published Livestock Integration Handbook (Mikkelson, 2019).

Also absent among all of the SFRCs was the usage of other existing mobile apps for dissemination, tracking, M&E, and amplification of extension approaches. This is a key area where SFRCs would benefit from existing and emerging technologies. Other forms of extension have arisen that could easily be utilized by these SFRCs in order to amplify their outreach. Examples include Facebook chats, YouTube videos, virtual group discussions, and online trainings. It appears that the strengths of many of these centers relies upon the two unwavering commitments to community and contextualization. These two epistemological considerations need greater attention by RAS and extension in general and must be maintained in balance with greatest efficacy and amplification of approaches that work.

Longitudinal Updates of SFRCs Since the 2013 Study

Although the initial data collection occurred in 2013, no additional work has been conducted on determining the efficacy and cost-benefits of SFRC's globally or in Southeast Asia in particular. Of interest, more SFRCs have been developed since the initial research, including the Behind the Leaf Coffee Farm in Shan State, Myanmar, ECHO Asia Small Farm Resource Center and Seed Bank in Chiang Mai, Thailand (Trail, 2020), and the Aloha Ranch, in Palawan, Philippines. In the follow-up survey conducted in 2021, all seven of the SFRCs were still in existence and 71% of the centers had not changed their mission or vision, although 57% had retained the same or increased staffing, 57% had retained or increased activities, and 71% felt their efficacy had increased or remained the same. The two centers that varied in their efficacy had actually shifted priorities in an attempt to remain relevant. 57% of the centers had experienced decreased funding due to COVID-19 but all had adapted different strategies to become more self-sufficient, less dependent on funds derived from training while trying to remain relevant. Since the time of initial research, CUHT had shifted its priorities to serving

more as a livestock breed bank and organizing micro-loans but still has an active agricultural outreach dimension and environmental management activities, such as water and burning management. TLCC, UHDP, and SATC continue to be run by local staff with active extension components and are increasingly incorporating self-sufficiency measures into their programming to make up for lost revenue from training. All three played an active role in providing COVID-19 outreach information to beneficiaries during the pandemic. Upon the departure of the expat founder, Ntok Ntee was fully incorporated into the host church and continues to operate its seedbank for church members. Although active demonstrations have ceased, there is a desire by the church to hire a farm manager to continue on-the-ground work. Since 2013, FCI underwent a series of ownership changes, and modified its sales offerings. However, attempts to provide some active extension and rural advisory services to nearby communities continue. Due to its burgeoning success and landlocked position, Aloha House bought additional property to start the Aloha Ranch, a second SFRC, agro-tourism outpost, and fully-integrated farm near a major tourist attraction. The continued existence and evolution of these very economical models of extension and advisory services, even in the face of a global crisis like the COVID-19 pandemic, underscore their continued ability to meet the needs of their constituents independently of formalized institutional support.

Implications and Recommendations

As illustrated above, SFRCs have played an important role in extension and advisory services in parts of SE Asia over the past 50 years. Their independence from government affiliation and bureaucracy has allowed them to find and fill niche needs rooted in community participatory processes. Their methods of extension are diverse but typically revolved around the five models of extension outlined. Their resilience has been evidenced in their continued existence and drive to remain relevant, while searching for sustainable ways to finance their continued operation to meet their mission and vision. Future research should be conducted on how these informal SFRCs can better interface with formal extension and RAS services, the cost-benefit analysis of the 5 methods of extension encountered, and pragmatically, creating a network of SFRCs and RRCs to synergize their efforts. However, it is clear that SFRCs continue to be used successfully throughout Southeast Asia and provide cost-effective and needs-based extension and advisory services to underserved populations outside of formal extension services and are well-positioned to continue to offer their services in the fight to improve food security and livelihoods.

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