Chapter 1
Introduction

Principles

The Project on Promoting Value-Added Agricultural Product Technologies (Chili) in the Agricultural Learning Center (ALC) was implemented through collaboration between the Asian Food and Agriculture Cooperation Initiative (AFACI) and the Department of Agricultural Extension (DOAE) under the Improvement of Rural Agricultural Technology Extension System in Asia (RATES) Project, Phase III. The objectives of this project were to conduct a comparative study of value-added agricultural product technologies implemented in the ALC in Phrae and Surin Provinces; to identify good practices in agricultural extension through ALC; and to propose policy recommendations for advancing agricultural extension through ALC, including the development of a manual and video demonstrating appropriate agricultural extension practices and the process of applying value-added chili production technologies.

The findings on good practices in agricultural extension through ALC were derived from systematic analysis and knowledge extraction based on operational data, including information on farmers, agricultural practices, production–marketing linkages, experiential learning processes, problems and challenges, and farmers' needs for promoting quality chili production. The study also examined operational methods, success factors, problems and solutions, and the effectiveness of extension management through ALC, as well as development needs and recommendations at the local level. Data were collected from DOAE personnel, including central administrators, specialists, provincial and district agricultural officers, and key staff managing ALC in Phrae and Surin Provinces.

Data collection employed interviews, focus group discussions, both participatory and non-participatory observations to obtain insights into how personnel implemented the ALC Operational Manual for Fiscal Year 2025. The activities examined included capacity development of ALC and their networks, farmer development, service support, management operations, and monitoring and reporting.

A Systematic Evaluation Framework was applied, covering four key dimensions: Context, Input, Process, and Output/Outcome. Additionally, the Participatory Action Research (PAR) cycle — Planning (P), Action (A), Observing (O), and Reflecting (R) — was integrated to explain the operational process.

The advisory team analyzed and synthesized operational results and recommendations using qualitative research methods, particularly Narrative Research and Analytic Induction. This approach involved interpreting and summarizing data from observed events, identifying relationships between key and subthemes, categorizing data using Content Analysis, and drawing inductive conclusions framed by theoretical and conceptual models. Data triangulation was applied to ensure reliability and consistency.

The process yielded a conceptual model of Good Practices in Agricultural Extension through ALC in Thailand, termed "FARMS Lifelong Learning", comprising five stages:

1. Focus (F) – Setting goals and identifying key issues
2. Adaptation (A) – Learning through experience and adaptation
3. Reinforcement (R) – Empowering and validating new knowledge
4. Management (M) – Implementing effective management and driving actions
5. Show & Share (S) – Presenting, sharing, and co-creating learning

This model reflects the lifelong learning process of farmers — a continuous and cyclical process that strengthens farmers, communities, and learning networks, enabling self-reliance and sustainable agricultural development.

Objectives of the Manual

1. To enable agricultural extension officers and model farmers to apply good practices in developing ALC as centers of safe and standardized agricultural production.

2. To create effective learning and knowledge transfer processes that allow farmers and networks to develop and apply agricultural innovations, technologies, and management systems in practice.

3. To enhance the strength and sustainability of main ALC and their networks under the concept of "Strong Networks for Sustainable Development", contributing to tangible rural and community-based economic growth.

Expected Benefits

1. Agricultural extension officers and model farmers will gain a clear operational framework to apply in developing ALC as centers for safe and standardized agricultural production.

2. Farmers and networks will be able to learn and transfer agricultural innovations, technologies, and management practices into real applications.

3. Main ALC and networks will become stronger and more collaborative, promoting sustainable agricultural communities and grassroots economic development.

Scope of the Manual

1. Content Scope: This manual presents appropriate agricultural extension practices through Thailand's ALC model, based on case studies from the Project on Promoting Value-Added Agricultural Product Technologies (Chili), under the collaboration between AFACI and DOAE within the RATES Project, Phase III.

2. Geographical Scope: The study focuses on two case sites — the ALC in Nong Muang Khai District, Phrae Province, and the ALC in Lamduan District, Surin Province.

3. Time Scope: The study was conducted following the ALC Operational Manual for Fiscal Year 2025 over a period of 160 days (June–November 2025).

Definition of Key Terms

Good Practices in Agricultural Extension: Refers to effective processes or methods implemented in the ALC, derived from the practical experiences of extension officers in Nong Muang Khai (Phrae) and Lamduan (Surin). These practices integrate theory, principles, and experiential learning to create transferable models for disseminating knowledge, technology, and innovation that are contextually applicable.

Agricultural Learning Center (ALC): Refers to agricultural learning hubs established by the Ministry of Agriculture and Cooperatives to serve as centers for technology transfer, production management, and marketing for farmers. ALC acts as mechanisms for integrating inter-agency collaboration within the ministry, using model farmers as the core of learning. Operations are guided by the concept "Market-Led, Innovation-Driven, Income-Enhancing," emphasizing cost reduction, productivity improvement, product quality enhancement, and behavioral transformation aligned with the Bio-Circular-Green (BCG) Economy. ALC aims to build strong, environmentally friendly, and self-reliant agricultural communities for sustainable development.

Chapter 2

Good Practices in Agricultural Extension through ALC (Case Studies)

From the analysis of good practices and effective models for agricultural extension through ALC at both the local implementation level and the central administrative and monitoring level, the advisory team applied qualitative data analysis based on the Narrative Research approach. The analysis employed the method of Analytic Induction, which involves interpreting and deriving conclusions from concrete observations or phenomena by describing the relationships between main and sub-themes. Subsequently, the data were categorized according to key research questions and systematically organized into themes through Content Analysis, using theoretical and conceptual frameworks as explanatory lenses. The interpreted data were then inductively synthesized to form conclusions grounded in empirical evidence. To ensure accuracy and reliability, Triangulation techniques were employed, enabling cross-verification among data sources and perspectives. This rigorous analytical process resulted in the development of a new body of knowledge a model of good practices in agricultural extension through Thailand's ALC framework, known as the "FARMS" Model. The details of this model are as follows:

Operational Plan

The implementation under the "FARMS" model focuses on driving the mission of the Agricultural Learning Center (ALC) in alignment with the context of local farmers. It particularly emphasizes experiential learning promotion, integration of local wisdom with modern science, and the creation of flexible and open learning innovation spaces that respond to the needs of communities and society in the 21st century.

This plan is systematically designed to cover all processes from preparation, activity implementation, and monitoring and evaluation, to joint lesson learned reflection leading to the development of a quality and sustainable lifelong learning approach. The implementation period is 12 months, in accordance with the fiscal year cycle, and consists of the following operational steps:

Operational Procedures	12-month period											
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
Step 1 Focus (F)	◄	─	►									
Step 2 Adaptation (A)				◄	─	─	─	─	►			
Step 3 Reinforcement (R)				◄	─	─	─	─	►			
Step 4 Management (M)				◄	─	─	─	─	►			
Step 5 Show & Share (S)										◄	─	►

Note: Subject to change depending on agricultural production conditions and the complexity of operational activities.

Implementation Techniques

Flow Chart	Details	Responsible Person	Associated Documents and Tools	Activity Duration
Start				
Step 1 Focus (F)	-Set development targets at the local level, such as designating "chili" as the primary economic crop of the Agricultural Learning Center (ALC). -Establish the learning center as a model for Good Agricultural Practices (GAP) and as an instrumental mechanism in government policy.	-Agricultural extension academic -Smart farmers / local wisdom experts	-Focus group discussion -Interview -Data recording -Official documents / Government documents -Information data	3 months
Step 2 Adaptation (A) Revise	-Adjust attitudes, knowledge, and behaviors to accommodate potential limitations and uncertainties, such as budget constraints, natural disasters, and market fluctuations.	-Agricultural extension academic -Smart farmers / local wisdom experts	-Local wisdom data -Modern technology data	6 months
Step 3 Reinforcement (R)	-Facilitate repeated learning, consolidate new knowledge, and empower farmers to confidently adopt behavioral changes.	-Agricultural extension academic -Smart farmers / local wisdom experts	-Learning management plan -Reflection data recording form -Activity evaluation form	6 months
Revise Step 4 Management (M)	-Establish a robust management system at the group, Agricultural Learning Center (ALC), and network levels to enhance production efficiency, reduce costs, and strengthen market stability.	-Agricultural extension academic -Smart farmers / local wisdom experts	-Agricultural safe product standards -Group formation regulations -Network meetings and integration	6 months
Step 5 Show & Share (S)	-Disseminate and scale up knowledge outcomes to farmers within the community and network.	-Agricultural extension academic -Smart farmers / local wisdom experts	-Knowledge signboards -Knowledge exchange forums -Online social media platforms	3 months
Finish				

Step 1: Focus (F)

Main Objectives:

- Define development targets at the local level, such as selecting "chili" as the primary economic crop of the Agricultural Learning Center (ALC).
- Establish the learning center as a model for Good Agricultural Practices (GAP) and as an instrumental mechanism in government policy.

Procedures:

- Analyze the local context, determine main crops/targets, and plan five core activities: (1) capacity building for ALC and networks, (2) farmer development, (3) support services from ALC and networks, (4) management for operational driving, and (5) monitoring and reporting.
- Initiate development of a strong target group (e.g., Khun Priya Group).
- Assess consistency of targets with local potential.
- Adjust target groups and economic crops according to situational changes.

Tools:

- Conduct forums/meetings (group discussion records, interviews, data collection)
- Use area statistics data (cultivated area, yield, income)
- Good Agricultural Practices (GAP) manuals

Key Indicators:

- Number of farmer groups selected as targets
- GAP certification achievement
- Alignment with provincial/ministry policy

Step 2: Adaptation (A)

Main Objectives:

- Adjust attitudes, knowledge, and behaviors to accommodate potential constraints and uncertainties such as budgets, natural disasters, and markets.

Procedures:

- Gather opinions to identify operational risks like floods, price volatility, administrative policy changes.

- Develop new operational techniques or test new production technologies (e.g., greenhouse chili cultivation, flower/thinning pruning, seedling methods, Integrated Pest Management (IPM)).
- Conduct After Action Reviews (AAR) after implementation.
- Exchange learning on adaptation methods.

Tools:

- Local wisdom data (knowledge)
- Tested technologies such as drip irrigation, temperature-controlled greenhouses
- AAR reflection data recording forms

Key Indicators:

- Reduction in crop pest and natural disaster damage
- Production cost reduction
- Farmer acceptance of production technology

Step 3: Reinforcement (R)

Main Objectives:

- Facilitate repeated learning, confirm new knowledge, and empower farmers to confidently change behaviors.

Procedures:

- Plan experiential learning processes.
- Conduct regular learning activities, developing model farmer plots into farmer schools with clear learning activity bases and knowledge signboards as community learning sources, using mentors or agricultural officers as process facilitators to transfer knowledge, skills, and experience primarily through model farmers.
- Use authentic assessment and record data in the Department of Agricultural Extension's RBM (result monitoring system).
- Adjust learning methods and content to meet current demands.

Tools:

- Model farmer plots/ALC main areas and networks
- Learning management plans
- Authentic activity evaluation forms

- RBM activity data recording forms

Key Indicators:

- Number of training sessions/farmers participating
- Percentage of knowledge applied in practice
- Proportion of income increased after participation

Step 4: Management (M)

Main Objectives:

- Establish strong management systems at the group, ALC, and network levels to enhance production efficiency, reduce costs, and ensure market stability.

Procedures:

- Systematic planning: (1) operational area planning including learning area, farmer members, capital, and related entrepreneurs, (2) office operation planning including teams, budgets, materials, modern technology, and suitable markets emphasizing product price risk insurance.
- Manage strong farmer groups by creating shared rules, allocating benefits, analyzing costs and profits, using production factors systematically, applying appropriate machinery/technology, maintaining marketing channels, and ensuring quality and quantity outputs meet market conditions.
- Monitor product quality and maintain safe chili standards (GAP).
- Improve group rules, marketing, group formation, and network expansion.

Tools:

- GAP standards/soil analysis
- RBM system
- Group rules and internal meetings
- Partnership integration

Key Indicators:

- Increased percentage of GAP certified farmers
- Decreased average cost per rai
- Increased production yield per rai (kg/rai)
- Transparent financial accounting by farmer groups
- Increased direct sales proportion (non-middleman)
- Adoption rates of new technology (machines/farmers)

Step 5: Show & Share (S)

Main Objectives:

- Disseminate and scale up knowledge outcomes to farmers in communities and networks.

Procedures:

- Define knowledge sharing formats such as network meetings, exhibitions like Green Day, and use of online social media platforms for information and useful knowledge dissemination such as Line, Facebook.
- Organize knowledge exchange forums, exhibitions, and communication channels through social media.
- Collect participant data and monitor knowledge utilization.
- Adjust knowledge access channels from ALC and content to suit learners, e.g., simpler online media, clear and understandable text focusing on outcomes.

Tools:

- QR codes on learning plots
- Knowledge exchange forums
- Line Open Chat / Zoom Meetings

Key Indicators:

- Number of learners reached (on-site/online)
- Percentage of knowledge applied or used to develop livelihoods
- Number of knowledge dissemination events into communities

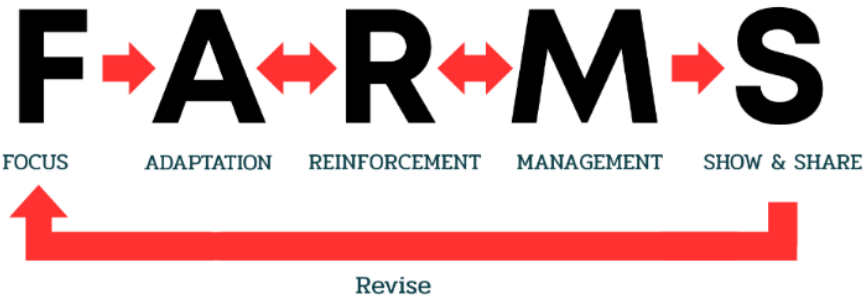
Success Factors for Agricultural Extension through ALC:

- The vital role of exemplary farmers who possess clear expertise and volunteer spirit is the core driving force and source of inspiration.
- The formation of strong farmer groups and supportive networks foster collective learning and management.
- Effective marketing, including certification of agricultural product safety standards and brand development.
- Appropriate and cost-effective technology use aligned with community context.
- Robust management that does not rely continuously on external budgets for sustainability.

Summary: The FARMS Lifelong Learning model represents an innovative concept integrating lifelong learning processes, enabling Agricultural Learning Centers (ALCs) to effectively respond to changing local contexts, fostering strong, sustainable, and self-reliant agricultural communities in the long term. To enhance the model's completeness, factors contributing to success, potential challenges, and clear solutions at each stage must be considered. These include the role of clearly defined and fully committed model farmers, strong group formation with supporting networks, connectivity with local and external markets including premium markets offering opportunities for GAP-certified chili products, and suitable technology applications for management.

Relevant personnel may face constraints such as budget limitations, changes in production behavior, diverse workloads, and risks from natural disasters and market volatility. Flexible planning aligned with local context is necessary, alongside promotion of new farmer and youth development, emphasis on adopting appropriate technology to reduce risks, and integrated cooperation among all sectors to build stability and sustainability.

Thus, reinforcing these elements makes the FARMS Lifelong Learning model not only a conceptual framework but also a flexible, comprehensive practical tool addressing real challenges in the field, enabling Agricultural Learning Centers and agricultural communities to sustainably develop and achieve success aligned with local conditions.



Chapter 3
Cautions and Recommended Solutions

It is crucial to recognize that the agricultural extension process while focused on development and enhancing production efficiency is inherently complex and influenced by multiple environmental factors that may affect success. These include the diversity of local conditions, farmer behaviors, personnel capabilities, resource availability, and market fluctuations. Awareness and preparedness for these limitations, coupled with appropriate management and corrective strategies, are necessary to maximize operational effectiveness and sustainability.

Lessons learned from practical implementation serve as vital data sources for refining processes and mitigating future risks. Detailed considerations include variability of site conditions, diverse farmer attitudes and readiness, human resources, infrastructure, and dynamic market conditions. Management strategies must be flexible and context-sensitive to accommodate these factors. Emphasizing capacity building, technological adaptation, integrated collaboration among stakeholders, risk mitigation, and sustained empowerment of new and young farmers are essential components of successful practice.

Such an approach ensures the agricultural extension system through ALC remains resilient, efficient, and sustainable over the long term, with adaptive frameworks grounded in experiential knowledge to address evolving challenges effectively.

The details are as follows:

Issue 1: Decreased/Inconsistent Budget

Caution:

A lack of or irregular budget allocation may cause discontinuity of activities, lack of advance planning, and reduced promotion efficiency.

Corrective Measures:

Adjust promotional activities to fit available budgets, such as organizing training and activities locally to reduce costs; use online media and digital technology to expand learning channels; and develop projects to continuously seek external budget support.

Example:

Conduct online training via teleconference platforms; modify activity formats to focus on local knowledge exchange instead of traveling to multiple locations.

Issue 2: Labor Shortage/Successor Deficiency

Caution:

Decreasing workforce and absence of successors to transfer knowledge may impact the sustainability and stability of the centers.

Corrective Measures:

Promote youth farmer groups in schools and communities to attract young people into agriculture; develop and establish succession mechanisms such as selecting new generation farmers for training and leadership support.

Example:

Establish a "Model Young Farmer" project in schools and organize experience exchange forums between senior and junior generations.

Issue 3: Staff Workload

Caution:

Heavy workload may reduce promotion quality or lead to incomplete data collection.

Corrective Measures:

Make work plans flexible, prioritize activities, and establish mentoring systems or support teams to help distribute workload.

Example:

Collaborate among provincial and district agricultural offices and local learning centers for joint work facilitation.

Issue 4: Access to Modern Technology

Caution:

Some farmers and staff may have limitations in using modern technology, reducing the effectiveness of knowledge transfer and learning.

Corrective Measures:

Select technology suitable for user capabilities; provide continuous training to develop technology skills; establish tech-support teams for ongoing consultation.

Example:

Conduct smartphone use training for farmers with technical staff assisting in the field for basic troubleshooting.

Issue 5: Uncontrollable Disasters

Caution:

Natural disasters such as floods, droughts, or epidemics may affect production and activity continuity, threatening national security.

Corrective Measures:

Continuously alert water and disaster conditions; promote experiential learning to adjust planting schedules and risk management methods.

Example:

Establish flood warning systems through community networks and organize training to adjust chili planting schedules appropriately.

Understanding and preparing to address these limitations appropriately will help ensure sustainable and maximally effective agricultural extension through Agricultural Learning Centers in real field conditions.

Chapter 4
Conclusion

Agricultural extension through the Agricultural Learning Centers (ALCs) is considered a crucial mechanism for strengthening and sustaining Thai agricultural communities. This approach employs appropriate practices developed from the real experiences of staff and in-depth data analysis from field areas in Phrae and Surin provinces, using the FARMS framework. The framework emphasizes clear goal setting, promoting farmer adaptation, reinforcing continuous learning, comprehensive resource management, and shared knowledge and experience exchange.

Nevertheless, despite having good practices and a context appropriate model, there are still limitations and challenges such as reduced or uncertain budgets, labor shortages, staff workload, technology access, and uncertainties from natural disasters. Being prepared for these constraints and having appropriate management solutions, such as adjusting activities to fit available budgets, promoting youth farmer groups, implementing flexible working systems, selecting suitable technology, and establishing effective warning systems, will help sustainably enhance the effectiveness of agricultural extension through ALC.

A holistic agricultural extension in the context of ALC integrates knowledge, resources, and innovation, aligning the needs of farmers and communities while fostering cooperation across sectors. It aims to develop agricultural production capabilities aligned with market demands, focusing on cost reduction and income increase simultaneously. It instills environmental responsibility and expands sustainable outcomes broadly into the future.

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