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# **EXPERIENCE OF THAILAND IN PROMOTING PEA TO IPNS FOR FOOD CROP MANAGEMENT PROMOTION POLICY**

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# Experience of Thailand in Promoting PEA to IPNS for Food Crop Management Promotion Policy

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## Abstract

Thailand is known as a fertile agricultural land “Kitchen of the World”, an important policy of the Thai Government and efforts are being concentrated on translating this vision into reality. To be the “Kitchen of the World”, Thailand’s agricultural produces and food products must meet international standards. There is thus a need to improve quality of production by taking into full consideration those differences. The strategies call for the improvement of soil and the irrigation system.

Integrated Plant Nutrition system IPNS is one of the key important issue to meet the goal of the strategies. The methodology to increase widespread adoption of Integrated Plant Nutrition System (IPNS) by the farmers as an integral part of their farming system, a number of researches has been done and transferred to a number of the stakeholders. Although there has been wide interest, the technology information has limited transfer and were not widespread adopted by them. It was found that there are some limitations on the transferring of the research information to all stakeholders. To overcome this, several programs were done as the conducting and promoting collaborative research and related activities, aspects of IPNS operating in partnership with national research and extension systems, the building links between national and international research and extension organizations in a manner that contributes to strengthening capacities are the solution. The improved technology transfer mechanism for the better livelihood of farmers coupled with their widespread adoption of IPNS, contributed to sustainable agricultural production and better household incomes.

We have learned that the Participatory Extension Approach (PEA) to IPNS to transfer the IPNS technology to the target farmers in widespread area is quite important to look at the systematic on the process of the impact. We have learned that PEA as to *establish the networking system* for both officers and farmers should be set up and be more functionally active. The *cross-visits and training led farmers* are quite effective to farmers’ **empowerment**. The **research and extension linkage** are very important for development and have to be improved. The extension program should be **integrated among agencies** at the *grass root level*. Some activities for research and extension linkage program should be set up as the participatory concept as more decision making involving, regular meeting and monitoring program. The key words to achieve the conducting the Participatory Extension Approach(PEA) are the *empowerment* to both officers and farmers; the *participatory manner* concept, the **networking system** approach and the **monitoring and assessment** of the program is needed.

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## **Introduction**

Thailand is known as a fertile agricultural land “Kitchen of the World”, an important policy of the Thai Government and efforts are being concentrated on translating this vision into reality. In the past, emphasis on agricultural development and food production was primarily on increasing the quantity of supply to meet domestic demands and less attention was given to quality improvement. But now, the government has reaffirmed the policy of making the country recognized as the kitchen of the world, teeming with food items, fresh from farms and processed from plants, enough to feed the population, with the surplus sold as exports to the world market. As consumers become more concerned with food safety issues and as marketability becomes more and more driven by the standards and quality, it has become more evident that development policies need to address these concerns as well as that of increasing productivity. Not only does ‘quality’ affect demand, there are also distinct differences between different groups of consumers. There is thus a need to improve quality of production by taking into full consideration those differences. The promotion of integrated plant nutrition system to make the quality and quantity of the production be more emphasis.

The development of Participatory Extension Approach PEA as a extension tool has been developed. The more wider spread adoption of the small scale farmer to the IPNS technology be the more successful of the government policy. To reach the final goal of increased crop production, farm income and sustained their productivity, several supporting factors are needed. One of these factors is sustainable soil fertility and improvement. Consequently, soil and fertilizer extension services should emphasize more on various improvement of soil fertility methods such as the integrated use of organic fertilizer and mineral fertilizer in the recommendation packages to farmers. In fact a challenging task is to promote and campaign the increasing of soil fertility; the integrated plant nutrition system be modified in cultivation practices for presently used traditional practices at the farm level. The present transition phase in technological development is also the capability of the agricultural extension service. The challenge to extension now is to push IPNS for sustainable agriculture in the countryside. By improving farmer’s cultural practices it is envisioned that utilization of farm inputs will become more efficient. Extension as a conduit of information and technology will play a big role in the rapid adoption of sustainable crop management practices by small scale farmers.

## **1. Agricultural Situation in Thailand**

Total land area is 51.311 million ha, approximately 21.014 million ha (41%) was classified as farm holding land, 12.897 million ha (25%) as forest land, and 17.399 million ha (34%) was unclassified land. Of the country’s farm holding land, paddy land accounted for 10.51 million ha (50%), field crops 4.61 million ha (21.9%), fruit trees and timber 4.17 million ha (19.85 %), vegetable and flower gardens 0.164 (0.78 %), pastures 0.128 million ha (0.61%) and the remains are housing area, idle land and other.

### **1.1 Rice Production in Thailand**

Rice is a major food staple and a mainstay for the rural population and their food security. It is mainly cultivated by small farmers in holdings of less than 1 ha. In the rice strategies, a vision has been set for Thai rice to become one of the top food items in the world. Planting areas will be maintained at 66.6 million rai, or 25.5 million acres, during the five-year period. Paddy production will be raised from 25.87 million tonnes in the 2002/2003 production year to 33 million tonnes in the 2007/2008 production year.

Thailand has become the world's largest rice exporter since 1981. Its market share in 2003 was 27%, followed by India, with 18%, and Vietnam, with 14%. In terms of production, Thailand ranks sixth, with China coming first, followed by India, Indonesia, Bangladesh, and Vietnam.

The strength of Thai rice is that it is well recognized in the world market in both quantity and quality. Several varieties of Thai rice, especially **Hom Mali rice**, are popular among consumers. Weaknesses mainly involve insufficient machines and the lack of research and marketing promotion for processed rice products.

## 1.2 Fruit Production in Thailand

Thailand is recognized as the land of tropical fruits. More than 40 fruit varieties are produced for both internal consumption and export. With the manipulation of the production techniques, local experienced intelligence, high-skilled labor, plenty genetic resources and suitable climate etc., we have continual supply of fruits to markets. Due to climacteric variables, each region of Thailand is differently suitable for certain kind of fruits e.g. lychee and longan are mainly in the North, durian, mangosteen and rambutan are potentially produced in the East and South. Tamarind and Mango are in the Northeast. At present, pineapple, mango, banana, durian, tangerine, rambutan, jackfruit and longan have the great share of production in Thailand. Most of fruit growers in Thailand are small farmers with land of approximately 10 - 20 rai (1.6-3.2 ha) per orchard. The commercial – oriented farm with more than 50 rai (8 ha), employing modern production technology and proper orchard management are minority. Therefore, to produce a uniform quality product is major task. Grower groups or cooperatives for producing of good quality products for export are encouraged with assistance of the Ministry of Agriculture and Cooperatives through these grower groups, Thailand can conduct the GAP, grading, and enhance product quality more effectively.

## 1.3 Vegetable Production in Thailand

Thailand produces a large number of vegetables, including several indigenous vegetables. Vegetables are not only utilized in local consumption, but also for export as fresh and processed products. More than 50 varieties are produced for both domestic consumption and export. Production area is diversified throughout the country particularly in big cities and area closed to the big cities. There are some temperate vegetables such as beet, carrot, celery, head lettuce, leek, turnip which are grown in the highlands by hill tribes.

## 2. Role of Extension

Farmers in the developing countries have been left behind by the rapid change in agricultural technology and information. For the farmers to keep track of these rapid changes, extension will play a big role in terms of *knowledge, attitude and practice (KAP)* development. To strengthen *the capacity* of small scale farmers, it is necessary to integrate the important factors such as agricultural credit, production inputs and organized marketing strategies through a comprehensive agricultural extension program.

The technology disseminated must meet the needs of farmers and has to be modified and adapted to the farmers' condition in each locality to make it more appropriate and relevant. KAP development must build upon **farmers as the learning base** for enhanced capacity building. Farmers need to participate in the development of work plan to adopt a new innovation.

### **3. Participatory Extension Approach (PEA)**

To facilitate the farmers' adoption, the participatory approach is promoted and farmers become the center of the extension process. PEA is a way of improving the effectiveness of rural extension efforts by government agencies, NGOs and other organizations engaged in rural development. PEA can help to improve organizational performance at the interface between the service providers (the extensions) and the clients (the farmers).

#### ***Characteristics of PEA***

- Integration of community mobilization for planning and action with rural development, agricultural extension and research.
- Based on equal partnerships between farmers, researchers and extension agents who can all learn from each other and contribute their knowledge and skills.
- Strengthening of rural people's problem-solving, planning and management abilities.
- Promotion of farmers' capacity to adapt and develop new and appropriate technologies/innovations (usually agricultural technologies and practices, but also social institutions, health, water and sanitation, and other rural development domains).
- Encourage farmers to learn through experimentation, building on their own knowledge and practices (Implicit knowledge) and blending them with new ideas (Explicit knowledge). This takes place in a cycle of action and reflection which is called 'action learning'.
- Farmers' communities are not homogenous but consist of various social groups with conflicts and differences in interests, power and capabilities. The goal of IPNS promotion is to achieve equitable and sustainable development through the negotiation of interests among these groups and by providing space for the poor and marginalized in collective decision-making. The role of the extension agent is to facilitate this process to all stakeholders.

### **4. Objectives of the Study**

The objective of this study is to review the Thailand experience in Promoting Participatory Extension Approach (PEA) to increase widespread adoption of IPNS by the farmers as an integral part of their farming systems, to improve the livelihoods of farmers through their widespread adoption of IPNS which will lead to sustainable farming and better household incomes.

### **5. IPNS Development & Dissemination in Thailand**

Several factors are needed to increase crop production. Soil nutrient management is one of the major factors that affect the quantity and quality of the crops produced. To ensure rapid widespread adoption of technologies on improved soil nutrient management, the extension strategy must involve several methods and must be multi-disciplinary.

The main task of the extension personnel is to adapt and transfer the technology to farmers from experiments of the institutions concerned. Likewise, the duty of the extension personnel is to continuously evaluate the technology generated through research for further fine-tuning.

Training is a major strategy in the extension of soil nutrient management technologies. A training curriculum is developed and focuses on technologies on soil and fertilizer management including the proper use of soil diagnostic tools.

One of the key mechanisms to extension technologies to the target farmers be set up a body of the villagers as a representative of them. The knowledge and methods gained from the training will be transferred to the *Tambol* (Village) via *Technology Transfer and Service Center* (TTC) in target areas, respectively. One of well trained volunteer farmer in the village will be Soil Doctor (Mor Din Arsa) and be the committee of the TTC of each village.

The strategies to prioritize and select the innovations to be promoted have to be identified to fit into the farmers' condition. The technology generated through research has to be modified and adapted to fit the existing conditions of farmers' resources and the field. Information about the new technologies as well as timely service to diagnose nutrient deficiency problems is lacking at the countryside. The development of *easy field soil test kit*, *fertilizer hand book*, and a *decision support system* be facilitated the farmers adoption.

The concept of using a *decision support system* and *easy test kit* is an attractive approach to disseminate IPNS technology and create a positive change in the farmers' attitude. The soil test kits coupled with a decision support system are innovations that be assisted farmers to solve the nutrient management problems. The approach of extending the technology involves active participation of farmers and empowers them to decide what technology best fits to their farming needs.

## **6. Methodology**

### **6.1 Site and Farmers' Selection**

#### 6.1.1 Participatory Site Selection

Participatory rural appraisal (PRA) and rapid rural appraisal (RRA) were used to assess the household circumstances. Farmers acted as partners in the site selection process. The criteria for site selection were location in a area with physical problems, villagers' awareness of the problems, and the willingness of local extension officers to cooperate. The extension workers acted as facilitators to aid farmers in identifying village problems and farmers' needs and preferences, including finding potential solutions. Reports and proposals were prepared and presented by the farmer representatives in provincial meetings, which were attended by stakeholders who are involved, that is, extension workers, farmer representatives from each village in target areas, subject matter specialists, researchers and provincial project coordinators. After the presentation and discussion, field visits were conducted and the potential villages were subsequently selected to be pilot IPNS farming villages.

The key steps on the extension project are the site selection while the major objectives of the program are for how to make widespread adoption of the technology under the limited of resources. The right possible sites and clients of the target group selection are the key components of the successfulness of the project where the villages in target areas have been selected to be pilot IPNS farming villages for introducing IPNS technologies and management. The Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) are used as a tool for site selection technique.

### 6.1.2 Participatory Client Selection

The farmer groups in the target villages are formed based on their interest, readiness, and willingness to volunteer. The volunteer farmers would be selected among themselves to join the project's activities and would be called as Lead Farmer.

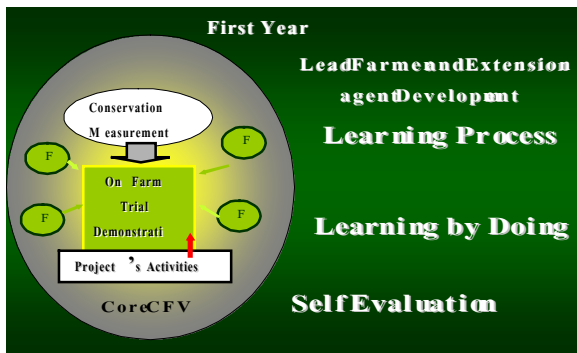
### 6.2 Establishing Core IPNS Farming Communities/Villages

Selected villages in target areas are developed to be pilot IPNS farming villages for introducing improved soil fertility management technologies. The farmers in these villages are encouraged to test whether the recommendations are suitable for adoption or need adaptation. The on-farm farmer-managed testing and verification have been conducted by a group of trained farmers and farmer volunteers with technical advice and support from extension agents and collaborative agencies. The combination of indigenous knowledge and new ideas practices are discussed with the farmers to identify alternative solutions to the problems encountered. The activities are based on the participatory approach and equivalent partnership.

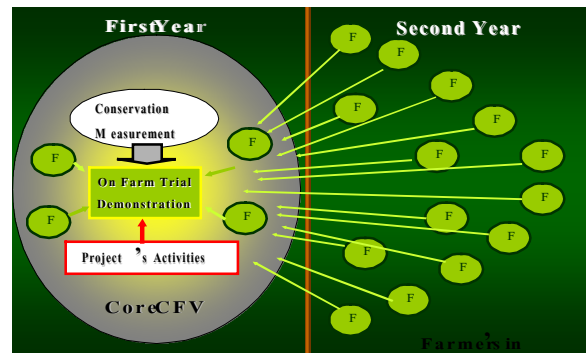
The core IPNS villages are a core, or nucleus, for learning and for the dissemination of IPNS management practices to neighbouring or surrounding villages for widespread adoption. The volunteer lead farmers were trained, and with a farmer-to-farmer extension approach, a number of farmers in the core villages and have been carrying out IPNS practices in their individual farms.

### 6.3 Establishing Satellite Villages

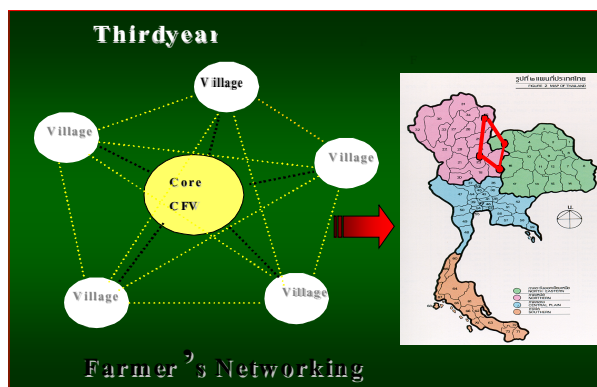
Neighbouring villages were persuaded by lead farmers in the core villages to join the activities as satellite villages for the application of IPNS practices in their individual farms. The IPNS promotion activities have been started from core villages, through the selected lead farmers.



**Core IPNS village as Farmer's Learning Base**



**Core Farming Village**



**Satellite Villages**

## **6.4 Using the Farmer-to-Farmer Extension Approach**

The farmer-to-farmer extension approach has been emphasized to encourage the involvement of farmers in conducting their own field studies, sharing knowledge and experiences, learning with each other and using the field as the primary learning base. The farmers “learn by doing” through comparing different soil fertility management. Consequently, they become experts on the particular practice they are investigating. Such farmers can therefore serve as farmer promoters, or farmer scientists. The extension workers act as facilitators to the learning process and provide assistance and support.

The volunteer farmers who attended the training program jointly conducted on-farm farmer-managed trials in their villages when they returned home. Farmer’s fields of about 0.8 ha in each village were offered by the owners for this collective activity. The farmers independently selected different recommendation of IPNS for their investigations. In addition to a joint on-farm farmer-managed trial, each farmer has also been testing IPNS practices of personal interest in his fields at a small scale of about half a hectare. In consequence, the farmers have learned together through a joint on-farm trial for investigating IPNS recommendation in comparison with the traditional practice.

They observed changes in each plot and between plots from week to week and shared ideas mutually, and also with the extension worker, on what was occurring. The soil test, crop growth investigation and yield comparison showed the effect of various practices. The farmers also observed and learned about changes in their own fields and were aware of the effectiveness of IPNS recommendation.

However, this is not the final solution. The farmers and extension workers have initiated discussion about how to improve soil fertility for improved agricultural production.

### **6.4.1 On-Farm Trial/Demonstration as Technology Education Sites**

One of the major aims is to find out how to transfer the IPNS technology to the target farmers. Core villages and satellite villages are as the target sites for it. On farm trial/demonstration was set up as a tool–technology education site to help them. These on farm trial/demonstration were conducted under the participatory approach. Lead farmers from each core villages who have been the representative from each target area be one who identified their problems and solutions. The farm trial designed and technologies were selected by them under the supervision of research and extension agents. The management of their on farm trial/demonstration in each village be discussed among themselves under the member of the village should work on it together.

### **6.4.2 Farmer’s Training Program by Lead Farmers**

The farmer to farmer training program was set up. The well trained lead farmers were passed the intensive training for the trainers program which included the use of the extension material for the technology transfer, how to be the good trainer and practices. The one-day-training program for their farmers was planned by themselves with the consultation of the extension agents. This training program was consisted of the village’s problems on crop production analysis, the overview of the solutions, the possibility recommendation and on farm trial /demonstration site visiting.

### 6.4.3 Farmer's Networking

Apart from mutual learning in the village, farmers also benefited from cross-site visits to other villages. Farmer networking or linkages have been initiated and the farmers have exchanged knowledge and experiences including the sharing of planting materials for non-profit purposes. By caring and sharing, individual farmers, and groups, have been empowered and can further improve their agricultural production through self-help and mutual aid.

The farmer's network was established. The main objectives are for stimulate and close cooperation between and among farmers within and among villages. Farmers have shared their experiences and their local resources among them via this networking. The selected lead farmers were voted to be the farmer's networking committee as a steering committee for the networking.

## 6.5 Connecting the Research-Extension Network

The research and extension network at local and national levels has been developed to strengthen the collaboration between partner agencies including non-government organizations (NGOs). The collaborative activities done are meetings, training, sharing resources and information, and field visits. This networking was established both at local level and the national level

The network became active under the supported of the farmers in the core villages All stakeholders as research, extension and NGOs agents have been showing working closely with farmers.

## 6.6 Capacity Building

The capacity building of all the stakeholders, several activities were built through the integrated activates as training workshops, meetings and discussions, and cross-site visits were conducted as follows.

### ***For Extension Agents***

The extension workers have obtained knowledge and skills on IPNS practices so they can facilitate farmers in applying introduced technologies to increase soil fertility on their farms. In addition to empower them several activities be done as training workshops, discussions, meetings, field visits (within and cross site), and supervision were conducted to stimulate closer and better collaboration; it is evident that very good relationships have developed between and among researchers, extension workers, farmers, and local administration.

### ***Farmers' Networking***

The farmer network was established for sharing experiences and resources, and also for caring amongst themselves for mutual benefit. The committee composed of lead-farmers from villages participating in the project. A number of activities for farmers networking were done as committee meeting, cross-site visit. The main objectives of the meeting are to review their activities, planning and the cross-site visiting was for exchange their field of experiences.

### ***Farmers' Training***

Three to five volunteer farmers from each village were nominated to attend a five-day training workshop. This enabled a core group of farmers to jointly conduct on-farm farmer-managed trials in their villages. The extension workers in charge of the five target villages also joined this training workshop to learn and share knowledge and experiences with the farmers. Teaching and learning activities were lectures (as necessary) and discussion, class exercises, field exercises, study trips, and workshops.

### ***Cross site Visiting***

There were a number of cross-site visiting for lead farmers. Lead farmers got a chance to visit discussion and exchange their experiences. The cross-site visiting by lead farmers who were representative from the villages showed an effective activity to empower them and supported the farmer's networking activity.

## **7. Lessons Learned**

- Learned that to encourage widespread adoption of IPNS and management by farmers, we need an *interdisciplinary approach* and should be conducted in a *participatory manner*. Team members from various disciplines should work together to identify problems, needs and interests of the farmers, then plan, execute, monitor and evaluate the project.
- The technology development and transfer have to be *integrated with human resource development* to ensure that the introduced IPNS can solve their productivity problem and being socially and economically acceptable.
- The implementation in a participative manner, various strategies and activities has been conducted. For example, establishing pilot CFVs as nucleus/core villages for IPNS management technology verification and dissemination to satellite villages through the farmer-to-farmer extension approach. Also developing of easy field soil test kit, decision supporting system tools on Plant Nutrient management to provide useful and practical information to field extension workers for discussion with farmers to help sound decision-making, plus building the capacity of field extension workers and farmers, and also *monitoring and evaluation*. These activities are like the pieces of jigsaw coming together to produce a full picture of the task's goal.
- We have learned that a participatory approach in transferring IPNS technologies to target farmers is productive and efficient. The activities as regular meetings, cross-site visits, and the training of lead farmers are effective for *empowering farmers*.
- The *Human Resources Development* be a key to success on to increase wide spread adoption of the technology.
- The *farmer networking* proved to be quite effective in stimulating farmer participation so they shared experience and resources and cared amongst themselves leading to growth and development based upon self-help principles. There are no strict rules and regulations but only active participation as an equal partnership by all.
- The Farmer to Farmer Extension program is one lesson learned from the Participatory Extension Approach that makes more efficiency on technology transfer technique.

## 8. Summary and Conclusions

We have learned that the participatory approach in transferring IPNS technologies to target farmers in remote areas is productive and efficient. The extension program should be integrated among agencies both at the national and grass roots level. Activities for the research and extension linkage program should be conducted in a participatory manner, involving regular meetings for decision making, and a monitoring program should be implemented. Collaboration between and among diversified groups of stakeholders needs to be strengthened to ensure that the activities suits the real circumstances and meets farmers' needs, interests, values, and preferences.

Several activities have been implemented under the participatory extension approach; however a weakness is the preparation of extension workers to collaborate with IPNS and improving agricultural production through the combination of indigenous knowledge and new management technologies. The farmer-to-farmer approach is new for extension workers; although they are aware of it, they have never had direct experience in implementing it. As facilitators, they need to review their methods of interaction and to provide expert and concise feedback. *The national policy level as a leader* provided important advice and support to empower them.

To make wider spread adoption of IPNS, several activities are tested and conducted. The outputs be benefit poor farming families, through participatory technology development and the dissemination of IPNS farming systems for productive and sustainable agriculture. Participated farmers shown more active in investigating and applying IPNS practices to increase their soil fertility they have become active partners instead of being passive recipients, which was characteristic of past initiatives in this area.

The Participatory Extension Approach to IPNS to transfer the IPNS management technology to the target farmers in widespread area is quite important to look at the systematic on the process of the impact. We have learned that to *Establish the networking system* for both officers and farmers should be set up and more active functional. The *cross-visits and training led farmers* are quite effective to farmers' *empowerment*. *The research and extension linkage* are very important for development and have to be improved. The extension program at the grass root level should be *integrated among agencies* at the *grass root level*. The networking system for both officers and farmers are quite important for rural development. Some activities for research and extension linkage program should be set up as the participatory concept as more decision making involving, regular meeting and monitoring program. The project activities should be better planning of the integration among agencies at the grass root level. The key words to achieve conducting the Participatory Extension Approach are the *empowerment* to both officers and farmers, the *participatory manner* concept, the *networking system* approach, the *monitoring and assessment* of the program is needed.

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