
Experiences from supervising a farmer network for sustainable agricultural development in central Thailand

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Introduction

Depletion of natural resources and deterioration of quality of life of rural population were recognized as key problems faced by the country in the Eighth and Ninth National Plans (1997-2006) of Thailand. Development planning tried to promote programs that benefited deprived people and favored cooperation between the government, civil society and the private sector. The Ninth National Plan stressed on community/farmer participation and integration of modern and traditional knowledge to produce healthier agricultural

products.

Danish Cooperation of Environment and Development (DANCED) supported the Department of Agriculture, Ministry of Agriculture and Cooperatives, Thailand to execute Sustainable Agricultural Development Project during 2000-2002. The immediate/short-term objective of this project was to promote systematic and efficient training/learning programs for enhancement of Sustainable Agriculture (SA). The wider and long-term objective of the project was to improve environmental conditions, reduce land degradation, provide consumer options by promoting green agricultural products, and to improve the quality of life of smallholder farmers. The project is timely and conforms to the objectives of both the Eighth (1997-2001) and Ninth (2002-2006) National Plans. This project has been highly valued by the society at large for following reasons:

- The green revolution approach whilst increasing aggregate agricultural production appeared to have contributed little to improve the economic conditions of small holders. This project lays emphasis on sustainable livelihood of small farmers.
- Forest area in Thailand has declined by approximately 52% (loss of 89 million *rai* of forest land – 1 ha equivalent to 6.25 *rai*) between 1961 and 1995 largely due to agricultural expansion. This project recognized that agricultural land use was to developed by conserving/improving forest resources.
- The green revolution technology package has given rise to environmental pollution and deterioration of human health on one hand and increased indebtedness among small farm holders. This project was based on a premise that improvement in traditional farming practices provides substantial scope of improvement in agriculture and of livelihood of small scale farmers.

Project Approach

The project was implemented by 8 Regional Offices of Agricultural Research and Development (OARD). The project provided a local consultant to each OARD. Potential of farmer groups was identified with the help of Regional Implementing Committees (RICs). Training on appropriate technology and participatory

technology development (PTD) for sustainable agriculture was provided to OARD officers and other relevant staff of government and non-government organizations (GOs and NGOs). Farmers, sub-district level staff and OARD and NGO representatives were organized as Working Groups (WGs). These WGs interacted regularly with the target farmers to identify key problems, their possible solutions and implementation arrangements. Program elements agreed by WGs were passed to the RICs for approval and subsequent funding. Project activities revolved around (a) participatory field trials; (b) farmer training to support the trials; and (c) training of the GO and NGO staff so as to institutionalize the new approach.

Capacity building

Capacity building of farmers and their institutions is essential for achieving a balance in economic, social and environmental development goals. The main elements of capacity building in this project were:

- Farmer-centered development: Enabling environment was created to facilitate farmers to develop by themselves. Development meant not only improvement in farmer's knowledge and capacity but also in morale.
- Participation of farmers: Active participation meant that farmers assumed a major role in decision-making and managing their own affairs. Efforts were made to build confidence in farmers so that they made decisions on how to solve the problems identified by them. Other players such as GOs and NGOs had supportive role in that they provided some guidance, comments, advice and training required for confidence building.
- Interactive learning through action: Learning process was completed in 5 steps viz., (a) rounding up people, (b) brain storming, (c) working together, (d) summarizing the lessons learned, and (e) accepting the outcomes together. This learning process very much helped an adjustment of values, attitudes, and the ways of thinking and working among different actors involved in the task.
- Networking of farmer groups: Exchange and interactions

between individual farmers or farmer groups improved interactive learning and participatory technology development and transfer.

- Focus on self-reliance: An emphasis was placed on self-reliance by mobilizing social capital, local wisdom and natural resources for sustainable rural development.
- Action research by farmers: Farmers were encouraged to conduct field experiments with advice from researchers. Knowledge and experiences gained from field trials by different farmer groups were exchanged.

Establishment of a farmer network

Farmer network is a way of facilitating farmer to farmer exchange of knowledge and experiences related to agricultural practices and natural resources. In the present project, farmer groups were given lectures by resource persons, taken on green study tours, and then left free to discuss and exchange their perceptions.

Farmers participating in the network named “Sustainable Agriculture Network” were split into 3 sub-networks: rice production sub-network, vegetable production sub-network, and integrated farming and community forest sub-network. Thinking on technologies aiming at reduction of production costs and dependency upon external inputs, especially chemical fertilizers and pesticides, was common to all the three groups. The best practices were identified by each sub-network and tested in field by farmers. Thus, farmers themselves developed and implemented their own ‘research’ plans. They collected/analyzed data and exchanged information/experiences with and learned from other farmer groups. Ultimately, farmers came forward with site-specific knowledge and appropriate technology packages. Farmers, with such collective efforts over a period of time, were able to identify key performance indicators (KPIs) reflecting the state of economic, social and environmental conditions (Table 1).

After termination of Sustainable Agricultural Development Project in December 2002, the name of the network was changed from “Sustainable Agriculture Network” to “Panaphol Network”. At present, Panaphol Network has 12 farmer groups comprising about 4,000 farmer members spread over 7 provinces in the Central Region

of Thailand viz., Singburi, Chainat, Nakorn Sawan, Lopburi, Uthai Thani, Suphanburi, and Kanchanaburi. The members of Panaphol Network practice a wide range of activities ranging (Table 2).

Table 1. Key performance indicators identified by farmers in Thailand.

Economic performance indicators	Social performance indicators	Environmental quality
Net income	Expenses for health care	Number of natural enemies
Production costs	Migration from family	Amount of chemical inputs
Dependency upon	Continuity of external inputs	Soil fertility level
		interactive learning for a number of interactive management activities
Amount of savings	Number of group members	
	Number of resource persons	
	Number of Outside organizations involved	

Participatory technology development (PTD) for sustainable rice production in irrigated areas

Background

Central Thailand has a very high potential for rice production as it is endowed with a highly fertile soil, large quantities of irrigation water and a well developed infrastructure. Two-three crops can be harvested in a year using high doses of chemical fertilizers and pesticides. While one gets short-term gains, high production costs, soil degradation, environmental pollution and deterioration of health are the risks associated with high input agricultural systems. Presently, many farmers are falling into indebtedness and forced to migrate to the urban area in search of more secured livelihood.

Table 2. Panaphol Network as in June, 2003.

Province	Number of		Main agricultural activities
	Groups	Farmers	
Singburi	2	296	Irrigated rice and vegetable production
Chainat	2	1,084	Irrigated rice, vegetable, integrated farming and community forestry
Nakorn Sawan	1	2,005	Integrated farming and community forestry
Lopburi	1	15	Vegetable production
Utai Thani	1	505	Integrated farming and community forestry
Suphanburi	4	518	Irrigated rice and vegetable production
Kanchanaburi	1	6	Vegetable production

Identification and study tours of best practices

In May 2000, an interactive learning forum was organized. This forum included 40 representatives from 4 rice-based agricultural groups located in 3 provinces viz., Singburi, Chainat and Suphanburi. Quite a few researchers and development practitioners were also involved but as observers/facilitators. The forum reviewed impacts of past agricultural development on livelihoods. At last, farmers identified the high cost of rice production as the most pressing problem. Farmers exchanged their local wisdom and agronomic practices. Eventually, they identified the 'best practices' and the 'best farmers' from among themselves and organized study tours to learn from the 'best'.

Development of improved practices and filed trials

Some farmers of the network volunteered to conduct trials for the practices/technologies considered to be superior to the ongoing practices. Improvement in methods of application of fertilizers and pesticides was considered as an effective way of reducing the production cost of rice. It was agreed to have common methods of land preparation and pest management in all trials. Rice straw was not burned as in the conventional method but bio-extracts (5 l of

Table 3. Best practices identified by different farmer groups for sustainable rice production in Thailand

Best practices	Province (location of farmer groups)
Seed selection and preparation before planting	Chainat
Land preparation with reduced tillage and incorporating rice straw	Suphanburi
Bio-fertilizers (bio-compost) production	Suphanburi
Bio-pesticides production	Suphanburi
Integrated pest management (IPM)	Chainat
Rice straw management after harvest	Singburi
Techniques for taking care of the rice field	All provinces

extract of plants that reduce pests/diseases mixed with 200 l of water per rai (1 ha = 6.25 rai) applied along with irrigation water such that it percolated down to 5-10 cm soil depth. Subsequently, the land was ploughed using a small rotary cultivator and left for 7-15 days until straw was substantially decomposed. There were 3 treatments: (a) bio-extract only, (b) bio-extract + half rate of normal doze of chemical fertilizer, and (c) half rate of normal doze of chemical fertilizer + incorporation of biomass of azolla @ 30 kg rai-1. Based on the results of trials in the year 2000, farmers planned two new trials in the year 2001: (d) bio-extract + azolla biomass and, (e) bio-extract + half rate of normal doze of chemical fertilizer + azolla biomass. Yields from traditional practices were higher than all so called improved fertilizer treatments. However, majority of farmers were satisfied with treatments (c) and (e) as these treatments reduced production costs together with improvement in soil fertility. With experience gained during 2000-2001 period, farmers evaluated a new treatment in the year 2002: (f) bio-extract + azolla biomass + bio-compost @ 160 kg rai-1. This treatment gave yields higher than the yield from bio-extract + azolla biomass treatment, but lower than the yields available in traditional farming. In the year 2003, farmers decided to increase the rate of bio-fertilizer application to 200 kg rai-1 with addition of a plant hormone (the growth hormone locally made of duck eggs). Indeed, farmers' way of experimentation suffers from

some statistical drawbacks. However, what is noteworthy here is the way farmers improve their knowledge and capacity with time (Table 3).

Conclusions

Networking creates an opportunity for farmers to express opinions and share experiences from what they have learned from field trials. Exchanging ideas with people from the same occupation help them to gain some additional knowledge that can immediately be applied. Farmers are inspired to solve problems by themselves and to recognize the importance of self-reliance. Research and development efforts should aim for enhancing farmers' capacity instead of giving them some instructions to follow.