

Using a Participatory Learning Approach to Improve Farmers' Knowledge of Organic Agricultural Practices: A Case Study of the Sisaket Province in Northeast Thailand

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Abstract: The purpose of this action research was to improve the knowledge on organic agricultural practices of 79 target farmers in the Sisaket province of the Northeast Thailand. The research developed a training curriculum on organic agriculture production using a participatory learning approach. The participatory activities include field trip, knowledge sharing forum between successful farmers and targeted farmers, knowledge management and peer assist. The research results reveal that the target farmers knowledge increased significantly ($p < 0.01$) after the participation. In addition, about 98.70% of the farmers learned the knowledge and were able to improve their farm with 62% of them shared the knowledge to their neighbors.

Key words: Participatory learning, farmers' knowledge, organic agricultural practices, agricultural extension, Sisaket province, Thailand

INTRODUCTION

In the past, Thailand had a policy on agriculture development that aimed at using external factors to increase farm productivity based on the Green Revolution's approach. This led to the encouragement of using chemicals fertilizers and pesticides (Pornpratansombat, 2007). The measures had inevitable effects on the agrarians' way of life and self sufficiency as well as the natural resource system itself. The cost of producing agriculture related products also went up. Furthermore, the prolonged use of chemicals has deteriorated soil conditions, the environment and the ecosystem (Pornpratansombat, 2006). The underlying reason for using such external input factors, especially chemicals fertilizers and pesticides was based on the manufacturers, researchers and agriculture developers (McCaslin and Tibeziinda, 1997).

At present, Thailand has changed its direction to organic farming with aims to build a secure and stabilized usage of the natural resources and producing safe food for the consumers. This will also reduce the health problems of farmers who used to use many chemicals. Apart from that the Thai government also has other purposes in encouraging organic farming to increase farmers' income and at the same time to improve their living conditions. Therefore, the Thai government has made organic farming the national agenda (Lorlowhakarn *et al.*, 2007). Organic farming has been

widely encouraged since the past few years throughout Thailand but organic farming is still not practiced by most farmers. This may be due to the encouragement approach or perhaps, the organic farming knowledge did not have enough impact to make the farmers change their conventional farming to organic one. On this issue, Ruenglerpanyakul (2008) suggests a strategy to make organic farming a success at the farming level.

The strategy is to make the transfer of organic farming knowledge along with the farmers' involvement so that they can accept what they are learning step by step. This study presents a study on the effectiveness of using a participatory learning method to promote organic farming in the Sisaket province of Thailand. It is expected that the method can be used with farmers in other areas.

MATERIALS AND METHODS

This research was an action research. A purposive sample of 79 farmers in Sisaket province of Northeast Thailand was the target farmers for this research. Design the participatory organic agriculture training curriculum consisted of topics, sub-topics and learning activities. The training course includes participatory learning activities such as field trip, knowledge sharing forum between successful farmers and targeted farmers and knowledge management and peer assist. A knowledge and understanding evaluation was conducted of the target farmers about organic farming before the

start and after of the participatory learning process. Time schedule of the participatory training course was organized for the target farmers during April to May, 2009. A follow-up study of the target farmers was conducted for 1 month after the participatory training course is finished.

The research tools consisted of questionnaires for collecting farmers' basic information, pre- and post-training evaluation forms of the target farmers' knowledge and understanding. The collected data were analyzed using percentage, standard deviation and t-test for the comparison of the target farmers' knowledge and understanding of organic farming.

RESULTS AND DISCUSSION

Basic information about the target farmers: As shown in Table 1, 67.1% of the participating farmers are female and the majority of the participants (72.2%) are in the age of 31-50 years old. The average age of the participants is 40.29 years old.

Most of the farmers (62%) had primary education or lower. About 97.5% of farmers grew rice while 30.4, 17.8 and 77.2% grew vegetable, orchards and rearing farm animals, respectively. It was found that 17.7% of the participating farmers are community leaders. Most of the farmers (84.8%) have not received any training regarding organic farming. Apart from these, 73.4% of the farmers have not met agricultural extension workers in a year (Table 1).

Results from implementing the training course with farmers' involvement: The participatory organic agriculture training curriculum consists of 4 major topics and 12 sub-topics.

Each topic contains on-the-field practice (Table 2). Before the start of the training course, participating farmers were asked to take a test to gauge

their knowledge and understanding about organic farming. It was found that 78.5% have an intermediate level of the knowledge of organic farming (21-40 points), 19% of the farmers have low level (20 points or lesser) and only 2.5% of the farmers have high level of knowledge about organic farming (41-60 points). After receiving the training course, the farmers had a better overall knowledge of organic farming.

From the 2.5% of high knowledge level farmers, the number increased to 82.3%. This simply showed the success of the training program in educating the participating farmers to have a better knowledge of organic farming. Most of the farmers shifted one level

Table 1: General background of the participating farmers

Items	No. (person)	Percentage
Sex	26	32.9
Male	53	67.1
Female		
Age group (years)		
≤20	3	3.8
21-30	8	10.1
31-40	27	34.2
41-50	30	38.0
51-60	11	13.9
Education level		
Upper elementary school or less	49	62.0
Lower high school	12	15.2
Upper high school	14	17.7
College or above	4	5.1
Types of agriculture practiced*		
Rice cultivation	77	97.5
Vegetable crops	24	30.4
Orchard	14	17.7
Rearing of animals	61	77.2
Community leader		
Yes	14	17.7
No	65	82.3
Used to attended a training program on organic farming		
Attended	12	15.2
Never attended	67	84.8
Met with officials from agricultural development department during the past year		
Met	21	26.6
Not met	58	73.4

*Answer >1 item

Table 2: Main topics, sub-topics and learning activities of the participatory training course

Main topics	Sub-topics	Learning activities
Production with the organic farming method	Meaning of organic farming	Lecture sessions
	Differences between organic farming and chemical farming	Brainstorming
	Directions in performing organic farming	Exchanging of knowledge, ideas and opinions between farmers who were successful with organic farming and the participating farmers.
	Steps in producing organic rice	Advices given by the farmers who were successful with organic farming (Peer assisting). Field-trips.
Supporting technologies for organic farming	Making organic fertilizers	Sharing of experiences in organic farming using story telling method
	Fertilizers from plants (using legumes to adjust soil conditions)	Practice sessions
Certification and standardization of production and the market	Making bio-organic liquid extract	
	Certification and standardization of organic farming	
	Marketing of harvests and crops from organic farming	
Food processing for products from organic forms	Creating a network of organic farming producers	
	Food processing for products from organic farms	
	Designing appropriate packing	

from low to intermediate level of knowledge and from intermediate to high level. Interestingly, 1.3% of the farmers who were initially classified as having low level of knowledge of organic farming were graded as having high level of knowledge after receiving the training course.

Figure 1 shows the results of the tests taken by the participating farmers before and after participating with the training course. The statistical analysis of the results of farmers' learning before and after the training course shows significant improvements of the farmers' knowledge ($p < 0.01$) (Table 3).

Based on the farmers' level of understanding of each topic after the training course, the results were satisfactory as it shows improvement for every topic (Table 4). The research supports Ruenglerpanyakul (2008) suggestion that apart from individual farmer's

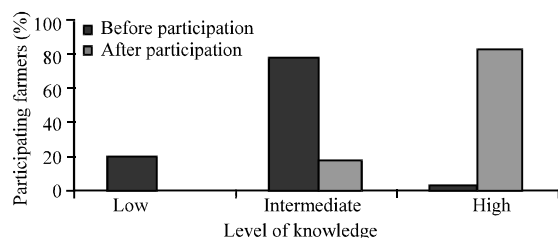


Fig. 1: Comparison of the participating farmers' knowledge of organic farming before and after the participatory training course

Table 3: Results of the tests of the participating farmers' knowledge on organic farming before and after the participatory training

Evaluation periods	Mean±SD	t-value
Before participate in learning activity	26.87±6.85	-20.44**
After participate in learning activity	47.06±6.76	-

**Statistical significant difference at $p < 0.01$

personal and economic factors that influence farmers' knowledge another important factor is the knowledge of actual implementation of organic farming. The education of organic farming will be most appropriate and effective when educational programs and training are conducted through actual involvement of the farmers.

A follow-up study: About 1 month after the participatory raining program, the follow-up study was conducted and it was found that the majority of the farmers (98.7%) had actually used what they learnt from the training course to improve their farm production. Only 1.3% of the farmers did not implement any knowledge they obtained from the training course.

Interestingly, 67% of the participating farmers had even passed on the knowledge of organic farming to their neighbors. The follow-up study also tells us that farmers actually accepted the idea of organic farming on several factors:

- First, the training program involved farmers into practicing organic farming during the training program
- Second, the average age of the participating farmers which is only 40.3 makes it easier for the farmers to accept changes in their agriculture practice. This is supported by Reukrai (1984)
- Third, the participating farmers themselves saw the positive outcome in practicing organic farming such as reducing production costs, increasing the sale values of their crops, the produces are safe for consumers, a greener environment and a better health status for the farmers themselves

Table 4: Framers' understanding of each topic before and after the participatory training

Sub-topics	Understanding levels		
	Before (Mean±SD)	After (Mean±SD)	t-values
Meaning of organic farming	Little (2.34±0.80)	Much (4.06±0.74)	-13.80**
Differences of organic farming and chemical farming	Little (2.37±0.88)	Much (4.14±0.67)	-14.21**
Directions in performing organic farming	Little (2.40±0.78)	Much (4.01±0.65)	-14.59**
Steps in producing organic rice	Little (2.20±0.87)	Much (3.97±0.73)	-15.37**
Making organic fertilizers	Moderately (2.51±0.87)	Much (4.14±0.73)	-14.48**
Green manure (using legumes to adjust soil conditions)	Little (2.42±0.90)	Much (4.11±0.83)	-14.64**
Making bio-organic liquid extract	Little (2.43±0.89)	Much (4.10±0.78)	-15.31**
Certification and standardization of organic farming	Little (1.97±0.73)	Much (3.61±0.91)	-14.12**
Marketing of harvests and crops from organic farming	Little (1.99±0.81)	Much (3.66±0.84)	-14.90**
Creating a network of organic farming producers	Little (2.05±0.71)	Much (3.75±0.91)	-13.82**
Food processing for products from organic farms	Little (2.14±0.76)	Much (3.76±0.89)	-13.08**
Designing appropriate packing	Little (2.05±0.70)	Much (3.75±0.81)	-15.83**
Total average	Little (2.24±0.57)	Much (3.92±0.56)	-20.42**

*Understanding level were determined as follows: 1.00-1.50 = Least, 1.51-2.50 = Little, 2.51-3.50 = Moderately, 3.51- 4.50 = Much and 4.51- 5.00 = The most; **Statistical significant difference at $p < 0.01$

CONCLUSION

The curriculum of the participatory organic agriculture training was devised with 4 major topics and 12 sub-topics. Learning activities concentrate on action learning and farmers' participation. All of the participating farmers were able to improve their levels of knowledge from a low level to intermediate or high level and from the intermediate level to high level. Based on the statistical test, the increase in the test scores of the farmers' knowledge levels is significant at $p < 0.01$ after receiving the training course.

The follow-up study indicates that 98.7% of the farmers had actually implemented the knowledge of organic farming in their own farms and 62% of the farmers passed on their knowledge to their neighbors. The learning processes of the participatory organic agriculture training curriculum is appropriate and can be used to approach farmers elsewhere to promote the change from chemical to organic agriculture.

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