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## The development of organic farming promoting manual for agriculturists of Ban Nongtokpan Tambon Nongtokpan, Amphoe Yang Talat, Kalasin province

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**Abstract** The behavior using of chemicals in rice fields farmers of Ban Nongtokpan, Nongtokpan sub-district, Yang Talat district, Kalasin province, was investigated to develop a manual for organic farming for Ban Nongtokpan farmers, and compared knowledge, attitude and skill of doing organic farming for farmers of Ban Nongtokpan. The sample used as the chemical use behavior of farmers were 55 peoples from 25% farmers of Ban Nongtokpan, and the sample used in organic farming training were 35 farmers of Ban Nongtokpan, Nongtokpan sub-district, Yang Talat district, Kalasin province by volunteery. The research found that farmers had understood and knew how to apply agricultural inputs in rice fields at low level ( $\bar{x} = 2.19$ ). The efficiency of the training manual was 94.85 / 81.85. The farmers who use the training manual had advanced to learn for 63.86%. The farmers attending training gained knowledge and attitude after training rather than pre-training, then the farmers got a good skill in organic farming.

**Keywords:** organic farming manual, farmers, using of chemicals in rice fields, knowledge, attitude, skills

### Introduction

Thailand is an agricultural country. Most people have a career or are living in agriculture. In the past, Thai farmers traditionally produced traditional folk wisdom and linked to natural resources. Later, Thai farmers changed their production system, developed into monoculture, which had to rely on external factors to produce. Chemical fertilizer and the pesticide chemicals of Thai peasants are increasing rapidly. Until recently it became the mainstream of Thai agricultural system cause damage to the natural environment. (Jaisan, 2008) Particularly fertile soils contribute to lower agricultural productivity. The environment is deteriorating from the use of chemical fertilizers, pesticides and toxic residues. Farmers lose a lot of money debt consolidation previously. Thai farmers were natural agriculture. But when production is accelerated. The soil is degraded very quickly

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(Mekchai, 2010). Currently, 90% of the country uses chemicals. Farmers have the risk of getting chemicals into the body and harm to themselves and those involved in the area. The Department of Disease Control Ministry of Public Health The Bureau of Epidemiology (2560) reported that patients receiving pesticide poisoning in the year 2000-2009. It has been found that consumers and the general public are at greater risk of exposure to both acute and chronic pesticides by entering the skin, the mouth and the breath. Patients are more likely to get pesticide poisoning from work and the environment. The information that is said that the chemicals used to prevent and eliminate pests are very harmful to users. It also has a long-term impact on the environment (Wilson, 2001).

Reduce the use of chemicals including the correct use of chemicals. It is a matter that should be taken seriously and consistently. If properly educated, it can help farmers to avoid the potential side effects of exposure to chemicals and reduce the cost of chemicals help build awareness of health and environmental hazards. It should promote and encourage more organic agriculture for the health of farmers and reduce the cost of production and liabilities of farmers.

Organic farming Sustainable food production in the environment, social and economic the principle of soil improvement and maintenance, respect for the natural potential of plants and agricultural ecology, reduce the use of external factors and avoid the use of synthetic chemicals such as chemical fertilizers, pesticides and animal supplies but at the same time, trying to apply nature to increase yield and develop resistance to plant diseases and the animals (Panta, 2007). Organic agriculture focus on the conservation of natural resources and ecological agriculture. Therefore, the use of chemical pesticides and chemical fertilizer that cause these agricultural chemicals affect ecological mechanisms and processes (Greenet, 2560).

Tambon Nongtokpan Amphoe Yang Talat, Kalasin Province consists of 10 villages. The population is 937 households, most of whom are agricultural workers. Farmers are using chemical fertilizers, and pesticides in rice farming and has been used continuously to date. Farmers have health problems, chronic illness that cause of death from major diseases five years (2012 - 2016), including liver cancer, heart failure, acute myocardial infarction and renal failure (Summary of health plan performance service unit of Kalasin Provincial Health Service No. 1/2560, 2560). In addition, the results of the blood chemistry tests of farmers in 2016 found that there were 20% of farmers in the risk group and 4% of unsafe farmers surveyed 563 persons. The problem and importance mentioned above, researchers want to solve agricultural problems of Nongtokpan farmers by training the farmers according to the developed organic farming manual. It is an alternative to help farmers have knowledge. Organic farming practices has an agricultural attitude that reduces the use of chemicals and pesticides. It also encourages

farmers to turn to organic farming that is environmentally friendly, safe to own health and consumer. Therefore, the researcher developed a manual for organic farming, for Nongtokpan Farmers of Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin Province to change the concept of farming based on the philosophy of Sufficiency Economy. This helps reduce production costs and increase productivity. The focus is on farmers to develop skills, awareness and promote the concept of sustainable agriculture. The training of organic farming would continue.

The objectives were to study the chemical use behavior in rice field of Ban Nongtokpan, Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin, to develop a manual for organic farming for Nongtokpan Farmers, Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin, to study and compare knowledge and attitude of Nongtokpan Farmers of Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin before and after training and to study the skills of organic farming for Nongtokpan Farmers Tumbol Nongtokpan ,Amphoe Yang Talat, Kalasin.

### **Materials and methods**

The research area is Ban Nongtokpan, Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin Province. The population was Ban Nongtokpan, Tambon Nongtokpan, Amphoe Yangtalat, Kalasin Province, total 218 persons. Sample used in the study of 55 farmers using chemical substances in rice fields from 25 percent of the population (Labmala, 1979) Sample was used in training of 35 persons by volunteery for training. This research and development included research and quasi experimental research, one group pretest-posttest design was used. This research was conducted in 3 phases; Phase 1: Study on chemical use behavior in rice farmer, Phase 2: Organic farming manual for farmers create training tools and tools for training achievement, and Phase 3 Organic farming training for farmers and measure the knowledge, attitude before and after training and study and practice skills in organic farming after training.

The instrument used in this research was divided into 2 parts, consisting of training tools, and the tools to measure and evaluate. Manual for promoting organic farming to develop knowledge, attitude and skills in organic agriculture was set up. The content and procedure consisted of steps and principles of organic farming, organic fertilizer and soil improvement, pest control by natural means, and concepts and techniques of low cost production, chemical behavior questionnaire in Nongtokpan rice farm Tumbol Nongtokpan, Amphoe Yang Talat Kalasin, knowledge test on organic farming for Nongtokpan farmers Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin, attitude towards organic farming questionnaire for Nongtokpan Farmers of Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin and measurement of organic farming skills for Nongtokpan Farmers of

Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin. A manual for organic farming was developed for Nongtokpan Farmers Tumbol Nongtokpan Amphoe Yang Talat Kalasin Province. Data were subjected to basic statistics: percentage, mean, and standard deviation and the statistics used to analyze the quality of the research tools are the content validity (IOC), reliability, discriminative power test, difficulty test, process efficiency (E1), performance value (E2) and index processing (E.I), and the statistic used to test the hypothesis is Paired t-test at statistically significant level at P= 0.05.

## Results

Result of a study on the development of a manual for organic farming for Nongtokpan Farmers of Tumbol Nongtokpan, Amphoe YangTalat, Kalasin province were shown as follows: the manual of organic farming promotion for Nongtokpan Farmers of Tambon Nongtokpan, Amphoe Yang Talat, Kalasin province showed that it developed efficiency at 94.85/81.85, according to table 80/80 as seen in Table 1.The effectiveness of the promotion manual was 0.6386 .This means that the farmers had more knowledge and the result at 63.86% (Table 2). The study and comparison of knowledge before and after training showed that before training, farmers who participated in the training had a moderate level of knowledge at the average score 19.91, or 49.78.% After training, the overall knowledge was at the highest level .The average score was 32.74, or 81. 85percent. When comparing the scores before and after the training, it was found that after the training, the farmers who received the training had the mean score higher than before the training at the .05 level of significance . It showed that farmers participating in organic farming training for Nongtokpan Farmers of Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin province .Knowledge was grown as shown in Table 3. The comparison of attitude before and after training showed that before the training, the farmers who participated in the training had the attitude of uncertainty .The average score was 3.39. After training, the level of agreement was very high .The average score was 4. 65 when comparing scores before and after training .After training, the farmers who participated in the training had an average score of attitude towards organic farming than before training on statistically significant at the .05 level. It showed that farmers participating in organic farming training had a good attitude towards organic farming as shown in Table 3.

Organic farming practices were found that after the training, farmers who participated in the training had skills in organic farming on the average score at very high (4.01).

**Table 1.** The manual of organic farming promotion

Training unit	Full score	$\bar{x}$	S.D.	percent
Process efficiency(E <sub>1</sub> )	40	18.97	2.61	94.85
Effectiveness of results(E <sub>2</sub> )	40	32.74	2.67	81.85

**Table 2.** The effectiveness of the promotion manual

Total score of knowledge before training	The sum of the post-training knowledge scores	Number of participants	Full score of knowledge post-training	Efficiency Index (E.I) of the manual
697	1,146	35	40	0.6386

**Table 3.** Farmers participating in organic farming training

Results	Before training			After training			t	df	P
	$\bar{x}$	S.D.	degree	$\bar{x}$	S.D.	degree			
knowledge (N=40)	19.91	1.63	moderate	32.74	2.67	most	-	34	.000*
Attitude (N=40)	3.39	0.27	uncertain	4.65	0.10	Agree	-	34	.000*
								26.046	

## Discussion

Research development of organic farming training manual for Nongkokpan farmers of Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin province were recorded. Organic farming training manual for Nongkokpan farmers, Tumbol Nongtokpan, Amphoe Yang Talat, Kalasin province which the researcher developed found that when applied to Nongtokpan paddy farmer, it was found that Nongtokpan key farmers could do the training measure (E1) with mean score of 94.85. The mean score after the training was 81.85% which was in accordance with the criteria. The development of organic farming training manual for Nongtokpan farmers on efficiency at 94.85/81.85 which meets 80/80 criteria. And it is suitable for farmers to get interested and understand the content can be used to practice it. The effectiveness of the manual is due to the fact that the researcher studied the concept of development of manuals and research papers and adapted to the development of training manuals. Researchers have defined the objectives and scope of contents of the manual and write the contents of the manual as intended. This makes training manuals more effective. The nature of the content that the researcher focuses on important to learning. The characteristics of the manual meet the objectives set in accordance with the concept Preecha Changkwanyuen and colleagues (2008) that described a manual for doing something to others. The students were expected to understand. Attitude and passion can perform in that regard appropriately and consistent with research by Pornnipa Toomhome and Prayoon

Wongchantra (2559) that studied that development of ASEAN Natural Resources and Environmental Training Manual: Republic of Indonesia found that it is also consistent with the research of Namtip Khamrae and others (2559) that studied on development of environmental education training manuals on efficiency at 80.70/83.68. It is also consistent with the research conducted by Oneuma Songchawa and colleagues (2559). The results showed that the training manual was 82.94/81.23.

Efficiency Index (E.I.) of organic farming training manual for Nongtokpan Farmers of Tambon Nongtokpan, Amphoe Yang Talat, Kalasin province was 0.6386. That means of farmers have a 63.86% increase in score, indicated that the development of training manuals is appropriate for farmers. Farmers were interested in the training manual as well as their motivation to develop their knowledge, attitude and practical skills in organic farming. In accordance with the research of Pannaporn Boonthos and others (2015). It was found that the overall motivation of learning by using motivational technique was 0.7379. The students' academic progress increased by 0.7379 or 73.79 percent. And some of them are consistent with research by Oneuma Songchawa and others (2559) that studied on development of training manual for solving soil problems to grow cassava in Mahasarakham province. The purpose of this study was to develop a training manual for soil fertility improvement in tapioca plantation in Mahasarakham province. The efficiency of the training manual was 82.94/81.23. The efficiency index of the training manual was 0.435. Organic farming training manual for Nongtok Farmers found that Nongtokpan villagers had advanced learning and understand more.

Comparison of average scores of knowledge of organic farmer training participants for Ban Nongtokpan paddy farmers before and after training. It was found that the knowledge about organic farming for farmers before training was moderate. And after the overall training is at the highest level. When comparing the average score of knowledge about organic farming for farmers, it was found that after training farmers have more knowledge than before training on statistically significant at 0.05 level. This is because the training manual is appropriate and interesting. Farmers get new knowledge in more training manuals. The organic farming training manual focus on providing farmers with more knowledge and can be used as a guide to organic farming practices. This is consistent with the concept of Bruchai Sirimahasakorn (2007) said that The meaning of knowledge is that knowledge is information through the process of thinking, comparing with other knowledge and understanding can be used in any subject, and Bloom and his team (1976) said that the concept of perception or cognitive domain of the people consists of knowledge levels at a total of 6 levels. This may be from a minimum level of knowledge to a higher level of knowledge. In addition, the method or training process has resulted in increased knowledge of farmers. The researcher gave a lecture to educate the farmers

and conducted the training in the form of pre-training, training procedures and the training summary. There are also training media, training manuals and brochures that help farmers understand more. This is consistent with research by Wuttisak Boonnan and colleagues (2558). The results showed that students had more knowledge about environmental biology than before learning on statistically significant at 0.05 level. And consistent with Suparat Onkon and colleagues (2559) that studied that it conducted to develop a training manual on natural resources and environment in ASEAN: Socialist Republic of Vietnam. The results showed that the experimental group had higher average knowledge after training than before training.

Comparative attitudes of participants in organic farming training for Nongtokpban Farmers before and after training. It was found that the attitudes towards organic farming of the farmers prior to the training were at an uncertain level. And after the training, the overall level was very agreeable. After training, farmers had more attitude than before training on statistically significant at the 0.05 level. As farmers learn and understand, they change their attitudes according to the concept of Rokeach (1970) that's the meaning of that attitude. It is a feeling of mind toward the experience that humans have received, perhaps more or less and integrate or organize your beliefs about one thing. The sum of this belief determines the tendency of the person to react in a similar way. This is consistent with research by Wannasakphijit boonserm and colleagues (2558) that the results showed that the participants had average attitude after attending the activity more than before participating in activities at the 0.05 level of significance and some of it corresponds to the research of Orathai Phiewkao and colleagues (2559) studied on the development of natural resource and resource training manuals ASEAN : The Kingdom of Cambodia, the study indicated that The average attitude score after training was higher than before training. It also corresponds to the research of Prijit Chaiyong (2556) A study on the promotion of organic vegetable gardening in the Banladphattana community, Tambon Ladphattana, Amphoe Mueang, Maha Sarakham province. That's the problem. Attitude after training increased from pre-training on statistically significant at the 0.05 level. Because the researcher has a sequence of training process. There are also organic farming training manuals in order to increase the understanding of the participants, the attitude of farmers increased.

Organic farming practices for Nongtokpan farmers of the measurement of practical skills was found Nongtokpan key farmers, the trainees were rated average practice. In practice, often showed that the training manual for organic farmin, farmers receive more practical skills. The farmers who received the training received basic knowledge directly in organic farming by composting. The training manual was used to make the farmers understand and more practice skills. This is in line with the concept of Singer (1982) said that learning in practice means learning basic skills

about movement included reflections or submissions of changes that are permanently associated in practice or effects of potential behavior from past practice and experience.

This is in line with the concept of Singer (1982) said that learning in practice means learning basic skills about movement included reflections or submissions of changes that are permanently associated in practice or effects of potential behavior from past practice and experience. Therefore, it can be seen that after the training of organic farming for farmers, the sample had the skills to practice on a regular basis. Because there are practices that make farmers easy to understand based on the concept of Preeyaporn Wonganutarroat (2010) indicated verbal expression or reaction that occurs to face stimuli. It's from inside or outside the body, everything that humans do or feel. Other people will see or see it as behavior such as laughing, crying, eating etc and consistent with the research of Teerapat Thinsaendee (2556) said that demonstrative teaching refers to teaching by describing the use of tools or materials. The students are observing the activities that teachers use. The demonstration uses less materials than the students themselves. The meaning is enough to conclude that demonstration instruction is another technique taught by the instructor or learner, or the algorithm allows me to learn to achieve or aim only. There may be books as an intermediary in the demo, such as the actual tape recorder to demonstrate to the students to learn better showed that from the training of organic farming using practical skills in organic farming assist with training to make the participants learn how to do organic farming and ask questions about the question of organic farming. As a result, the trainees are often practiced in practice.

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