
The development of Organic Farming Network Learning Centers for youths in Kantharawichai district, Mahasakham province, Thailand

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Bunnaen, W. and Yartniyom, O. (2018). The development of Organic Farming Network Learning Centers for youths in Kantharawichai district, Mahasakham province, Thailand. International Journal of Agricultural Technology 14(7): 1077-1088.

Abstract The organic farming network learning centers for youths was developed to investigate the needs of organic farming management in elementary schools in Kantharawichai District, Mahasarakham Province, Thailand, and to improve the attitude toward and awareness of organic farming and environmental conservation among youths. The samples consisted of 60 primary school students selected based on purposive sampling method. The research instruments were interviews, attitude questionnaire and awareness questionnaire on organic farming and environmental conservation. The research was conducted by organizing learning and training activities for youths. It was found that 74 percent of organic farming learning centers in schools had the size of 30-50 square meters and the most appropriate ratio of students to organic farming area in schools was 1 student: 30-50 square meters. The comparative analysis of average attitude toward organic farming and environmental conservation after participating in the activities showed that the attitude of youths was improved with the statistical significance of .05 and the comparative analysis average of awareness of organic farming and environmental conservation before and after participating in the activities indicated that the youth were more aware of organic farming and environment conservation with the statistical significance of .05.

Keywords: Organic farming, Learning center, Youth, Attitude, Awareness

Introduction

Agriculture is the major source of food which is vital for life. In order to maintain sustainable agriculture, organic farming should be promoted as it integrates the factors of soil, plants, animals, humans, and well being of the world into the well-being of the ecosystem. With rich soil, the plants will grow well and become healthy. Animals and humans that consume these plants will be healthy likewise. Therefore, well-being could be said to be an integral element of life. The preliminary survey of organic farming learning

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management in schools near Maharakham University revealed that agriculture subject is not actually part of the primary education curriculum. In fact, the subject is included as a supplementary unit of Occupations and Technology subject and Science subject. Most schools do not have teachers who graduated with a direct degree in agricultural teaching. Some schools do not even have clear activity plans or organic farm in the school. As organic farming is a fundamental part of life, it is important to develop organic farming learning management for youths and students in primary and secondary levels so that they have basic skills and knowledge in organic farming and that they can apply in their future learning and occupation in the future. The authors and Maharakham University Demonstration School (Secondary), as the grant awardees of One Program One Community, were inspired to develop organic farming network learning centers for youths who live near Maharakham University in order to improve their basic skills and knowledge in organic farming, awareness of environmental conservation, and youth participation in the curriculum design and organic network development, which will eventually result in sustainable development.

Objectives of this study were to develop organic farming learning centers for youths at Maharakham University Demonstration School (Secondary), to investigate the needs of organic farming management in elementary schools in Kantharawichai District, Maharakham Province, and to investigate the attitude and awareness of organic farming and environmental conservation among youths in elementary education in Kantharawichai District, Maharakham Province.

Materials and Methods

Population and Samples

The population in this research included youths who are school students at elementary level in Kantharawichai District, Maharakham Province. The samples in this research included 60 youths who are school students at elementary level in Kantharawichai District, Maharakham Province, selected based on the purposive sampling method.

Research design and instruments

The Action Research and One Group Pretest – Posttest Designs were used (Thongbu, 2007).

The research instruments are divided into 2 types as follows:

1. Qualitative data were collected by using a survey form, an in-depth interview, a focus group discussion, and the data of organic farming learning activities for youths.

2. Quantitative data were collected by using a survey and a questionnaire, which is divided into 3 parts as below.

Part 1: A questionnaire on the basic needs for organizing organic farming learning activities for youths in elementary schools, with the rating scale from 1 – 5 (very high, high, medium, low, and very low). The translation of data from the questionnaire was based on the criteria as follows: (Sisa-at, 1992)

Part 2: A questionnaire on the attitude toward organic farming and environmental conservation among youths, with the rating scale from 1 – 5 (very high, high, medium, low, and very low).

Part 3: A questionnaire on the awareness of organic farming and environmental conservation with the rating scale from 1 – 5 (very high, high, medium, low, and very low).

Data collection

Phase 1

1. Data were collected from documents, textbooks, concepts, theories, and findings from relevant literatures.

2. Data were collected from basic needs for organizing organic farming learning activities for youths in elementary schools participating in this project and the survey on organic farming in schools.

Phase 2

1. The training manual for organic farming in school and organic farming learning center was established, with consultation from the chairperson of Foundation for Environmental Education. The manual was then evaluated by experts.

2. A meeting with organic farmers was conducted, the organic farming learning center was established, and the organic farming market was operated in Masarakham University Demonstration School (Secondary).

3. The data collection tools were made. The quality of the data collection tools were evaluated by lecturers from Faculty of Environment and Resource Studies, Mahasarakham University and experts in the field of environment or education.

Phase 3

1. The focus group discussion was conducted by the operation committee and the invitation letter was distributed to elementary schools in Mahasarakham Province.

2. The data on the awareness of and attitude toward organic farming and environmental conservation among youths participating in the project was collected before starting the training and learning activities.

3. The youth training activities were held on organic farming and awareness of environmental conservation at Mahasarakham University Demonstration School (Secondary)

4. Students operated the organic market at Mahasarakham University Demonstration School (Secondary) by working with villagers from Ban Don Yom. The market was open on every Friday. The students sold organic products to school staff, other students, parents, and general public.

5. Data on awareness of and attitude toward organic farming and environmental conservation among youths were collected after they had participated in the training and learning activities. The data collection method was in-depth interview (qualitative approach).

Data analysis

1. The analysis of the plan for developing the organic farming learning center and operation of the organic market at Mahasarakham University Demonstration School (Secondary) was conducted in collaboration with the operation committee and the project consultant.

2. The needs for organic learning management for youths at elementary level was analyzed based on the data from the survey and the interviews.

3. Index of Item-Objective Congruence and propensity of the training manual and the questionnaire were analyzed by experts.

4. The awareness and attitude toward organic farming and environmental conservation among youths before and after participating in the organic farming activities were analyzed.

5. The averages of the awareness and attitude toward organic farming and environmental conservation among youths before and after participating in the organic farming activities were compared using paired *t*-test

Statistical tools used for data analysis

The statistical tools used in data analysis of this research are as follows:

1. Basic statistics

1.1 Frequency and percentage

1.2 Average

1.3 Standard deviation

2. Statistical tools used for testing the quality of research tools

2.1 Index of Item - Objective Congruence was evaluated by experts.

2.2 Propensity value of the questionnaire was evaluated by experts.

2.3 Item discrimination of the questionnaire on the awareness of consumption of organic products and environmental conservation was calculated using item-total correlation.

2.4 Reliability of the check list and the questionnaire on the awareness of organic product consumption and environmental conservation were calculated based on the formula of α –Cronbach Coefficient.

2.5 The statistical tools for proving the results and hypotheses included paired t-test, comparison of average of attitude toward and awareness of organic farming and environmental conservation among youths before and after participating in the activities at the organic farming learning centers.

Results

According to the survey on school area and the demand for organic farming learning area in elementary schools in Kantharawichai District, Mahasarakham Province, most elementary schools or 60% was the area of 5-10 rais (8,000 – 16,000 square meters) while the other 40% had more than 10 rais (more than 16,000 square meters). Regarding the demand for organic farming learning area, most elementary schools or 74% needed the area of 30-50 square meters, while 17.4% of the school needed more than 50 square meters. The suitable student-organic farming area ratio was 1 student: 3 square meters (61.3%), followed by 1 student: more than 3 square meters (33.4%). The most suitable school: teacher ratio for organic farming learning is 1 teacher: 10-15 students (53.3%), followed by 1 teacher: 5-10 students (26.7%). According to Table 1, data were collected regarding organic farming learning activities for youths in school. It was found that the organic learning activities were organized for students in elementary schools in Kantharawichai District, Mahasarakham Province, at medium and high levels as most of the answers to the above questions were at medium level, followed by high level.

Table 1. Organic farming learning management in schools

Questions	(n = 60), (N=5)		
	\bar{X}	S.D.	Translation
1. Is there an organic farming lesson in school subjects for students?	3.50	1.23	Medium
2. Do students get to learn about organic farming every day?	2.96	1.24	Medium
3. Is there any organic farming learning activity in school?	3.42	1.17	Medium
4. Is there any activity that promotes organic farming in school?	3.27	1.19	Medium
5. Do students have knowledge in organic farming?	3.86	1.18	High
6. Can students do organic farming in school themselves?	3.61	1.18	High
7. Can students apply organic farming knowledge at home?	3.62	1.25	High
8. Can student explain to their parents how to do organic farming?	3.40	1.22	Medium
9. Do students have the awareness of consuming organic products?	3.64	1.09	High
10. Do students join the organic farming activities in school regularly?	3.49	1.20	Medium
Total	3.47	1.19	Medium

According to Table 2, data were collected regarding to organic farming learning management for youths and of organic learning in school for youths. It was found that the level of preparedness of organic learning in school for youths was high in almost every topic. The answers to Item 7 (school's interested in having a model center to take students to a field trip about organic farming) and Item 9 (school's interested in having the market to sell organic farming products) were at medium level. In general, preparedness of organic learning in school for youths was at high level.

Results of comparison of the attitude toward organic farming and environmental conservation among elementary school students in Kantharawichai District, Mahasarakham Province, revealed that students had good attitude toward organic farming and environmental conservation before participating in the activities at high level in every question, with the average score of 4.01, that students had rated very high on Item 8 (importance of organic farming and environmental conservation) and high on other topics, with the average score of 4.21. In other words, their good attitude has increased after participating in the activities. According to Table 3, the average attitude toward organic farming and environmental conservation before and after participating the learning activities among elementary school students in Kantharawichai District, Mahasarakham Province, revealed that they developed the attitude

from before and after participating the activities significantly. In other words, after participating in the activities, student had better attitude toward organic farming and environmental conservation.

Table 2. Preparedness of organic learning in school for youths

Questions	(n = 60), (N=5)		
	\bar{X}	S.D.	Translation
1. Does the school have the policy to support organic farming learning in school?	3.53	1.10	High
2. Does the school have organic farming area in school?	3.74	1.01	High
3. Does the school have adequate equipment for organic farming in school?	3.71	1.08	High
4. Is the school environment suitable for doing organic farming in school?	3.78	0.94	High
5. Does the school have enough budget to do organic farming in school?	3.38	1.01	Medium
6. Does the school have good integration between classroom instruction and organic farming?	3.51	1.14	High
7. Does the school want to have a model center to take students to a field trip about organic farming?	3.43	1.15	Medium
8. Is every teacher and student interested in learning about organic farming?	3.64	1.12	High
9. Does the school have the market to sell organic farming products?	2.94	1.31	Medium
10. If Mahasarakham University Demonstration School (Secondary) has the organic farming learning center and organic market, will your school be interested in being a network school and joining the project?	3.86	1.17	High
Total	3.56	1.10	High

Table 3. Results of comparison of the attitude toward organic farming and environmental conservation before and after participating the learning activities

Condition	Before participation (N=5)			After participation (N=5)			<i>t</i>	P
	\bar{X}	S.D	Level	\bar{X}	S.D	Level		
(n=60)	4.01	1.07	High	4.21	0.84	High	-4.353	.000*

1/: *Statistical significance level of .05 (Paired *t*-test)

Table 4. The comparison results of awareness of organic farming and environmental conservation before and after participating in the activities

Condition	Before participation (N=5)			After participation (N=5)			<i>t</i>	P
	\bar{X}	S.D	Level	\bar{X}	S.D	Level		
Awareness (n=60)	4.04	1.06	High	4.32	0.75	High	-12.726	.000*

1/: *Statistical significance level of .05 (Paired *t*-test)

According to the questionnaire on awareness of organic farming and environmental conservation among youths in elementary school in Kantharawichai District, Mahasarakham Province, it was found that students had high awareness with the average of 4.04. After participating in the activities, they also had high awareness, but the average increased to 4.32. In particular, students had the highest awareness in the topic that organic farming in school does not only benefit them as a lesson, but it also promotes saving and environmental conservation and importance of growing groundcover plants and integrated farming because the techniques help maintain good quality of topsoil. According to Table 4, elementary school students in Kantharawichai District, Mahasarakham, had more awareness of organic farming and environmental conservation after participating in the activities with statistical significance.

According to the survey on school area and the demand for organic farming learning area in elementary schools in Kantharawichai District, Mahasarakham Province, most elementary schools or 60% had the area of 5-10 rais (8,000 – 16,000 square meters) while the other 40% had more than 10 rais (more than 16,000 square meters). Regarding the demand for for organic farming learning area, most elementary schools or 74% needed the area of 30-50 square meters. The suitable student-organic farming area ratio was 1 student: 3 square meters (61.3%), followed by 1 student: more than 3 square meters (33.4%). The most suitable school: teacher ratio for organic farming learning is 1 teacher: 10-15 students (53.3%), followed by 1 teacher: 5-10 students (26.7%).

The fundamental data of organic farming learning activities for youths in school revealed that the organic farming learning activities for youths in Kantharawichai District, Mahasarakham Province, were organized at medium - high level. Youths and schools were prepared for organic learning in general at high level. Students in Kantharawichai District, Mahasarakham Province, had good attitude toward organic farming and environmental conservation at high level before participating in the activities, with the average score of 4.01. After

participating in the activities, good attitude toward organic farming and environmental conservation remained at high level, with the average score increasing to 4.21. To be specific, students had the strongest attitude toward the importance of organic farming and environmental conservation.

According to the results of comparing the average attitude toward organic farming and environmental conservation among youths in elementary schools in Kantharawichai District, Mahasarakham Province, the attitudes before and after participating the activities were different with statistical significance of .05. In other words, after participating in the activities, student had better attitude toward organic farming and environmental conservation.

According to the questionnaire on awareness of organic farming and environmental conservation among youths in elementary school in Kantharawichai District, Mahasarakham Province, it was found that students had high awareness with the average of 4.04. After participating in the activities, they also had high awareness, but the average increased to 4.32. In particular, students had the highest awareness in the topic that organic farming in school does not only benefit them as a lesson, but it also promotes saving and environmental conservation and importance of growing groundcover plants and integrated farming because the techniques help maintain good quality of topsoil. By comparing the awareness of organic farming and environmental conservation before and after participating in the activities, students had more awareness of organic farming and environmental conservation after participating in the activities with statistical significance of .05.

Discussion

In this research to develop organic farming network learning centers for elementary school students in Kantharawichai District, Mahasarakham Province, it was found that the suitable size of land for making organic farming area was 30-50 square meters. Organic farming was not a subject in the school curriculum directly. Instead, it was integrated into science, social studies, and occupation subjects or extracurricular activities. The fundamental data of organic farming learning activities for youths in school revealed that the organic farming learning activities for youths in Kantharawichai District, Mahasarakham Province, were organized at medium - high level. It should be noted that organic farming learning activities were rather low, considering a large proportion of people working in agricultural sector in Thailand. Regarding preparedness, youths and schools were prepared for organic learning in general at high level. In order to raise awareness of organic farming, it is advisable to organize more instruction and training in school as the

fundamental knowledge to produce safe food and so that students could apply in their daily life in the future. The findings were consistent with Khanpradoem (2016), who developed integrated farming training manual for environmental conservation, and Inthasorn (2013), who investigated the promotion of organic farming for environmental conservation and organic farming for sufficiency and environmental conservation at Ban Si Wilai, Muang District, Mahasarakham Province. It could be concluded from the above studies that more integrated farming for environmental conservation and organic farming for sufficiency and environmental conservation for farmers could be applied to daily life.

By comparing students' attitude toward organic farming and environmental conservation, it was found that their attitude toward organic farming and environmental conservation before participating in the activities was at high level with the average score of 4.01. After participating in the activities, the attitude toward organic farming and environmental conservation remained at high level, with the average score increasing to 4.21. To be specific, students had the strongest attitude toward the importance of organic farming and environmental conservation. The findings pointed out that the learning activities at the organic learning center at Mahasarakham University Demonstration School (Secondary), including the training and learning from the real place, helped develop better attitude toward organic farming and environmental conservation.

According to the questionnaire on awareness of organic farming and environmental conservation among youths in elementary school in Kantharawichai District, Mahasarakham Province, it was found that students had high awareness with the average of 4.04. After participating in the activities, they also had high awareness, but the average increased to 4.32. In particular, students had the highest awareness in the topic that organic farming in school does not only benefit them as a lesson, but it also promotes saving and environmental conservation and importance of growing groundcover plants and integrated farming because the techniques help maintain good quality of topsoil. By comparing the awareness of organic farming and environmental conservation before and after participating in the activities, the students had more awareness of organic farming and environmental conservation after participating in the activities with statistical significance. Higher awareness leads to application of organic farming in daily life. In addition, students may suggest their parents to be more aware of organic farming to improve the quality of environment of the household and the community they live in. This also means that students have become more aware of the danger from consuming the agricultural products with chemical contamination. The findings were consistent with Khwaenthaisong (2013) who investigated about promotion

of organic farming for quality environment in Ban Nong Hin, Khok Ko Sub-district, Mueang District, Mahasarakham. In his research, Ubon found that participants' knowledge and practice about organic farming for quality environment were higher before than after participating in the training with statistical significance of .05. Also, the findings of this research agreed with those of Hatsarang (2010) who found that farmers could apply organic farming technique according sufficiency economy by self-dependence, using local wisdoms and local materials for the optimal benefits. According to Hatsarang (2010), farmers could reduce the cost and were prepared for economic changes and they had knowledge in organic farming and would not produce dangerous products for consumers. Finally, the findings of this research were also in line with those of Gomiero *et al.* (2011) who found that organic farming is an agricultural system that increases soil fertility by using local materials effectively.

All in all, promoting organic farming learning since the students are young will imbed the knowledge, attitude, and awareness of organic farming and environmental conservation in their habit and way of thinking. Teaching them these topics when they are still young also makes them realize the danger of agricultural products with chemical contamination on health and the environment. Learning should be promoted in school and students should be allowed to get more hands-on experience so that they can develop safe organic farming and apply in their daily life, encourage their parents to do the same, and develop themselves for self-dependence and sustainability in the future.

Acknowledgement

The authors are thankful to the experts from Environmental Education subject, Faculty of Environment and Resource studies, Maharakham University and Assist. Prof. Dr. Prayoon Wongchantra for his suggestion regarding the research methods and students in Kantharawichai District, Mahasakham Province, Thailand, for their participation.

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(Received: 1 October 2018, accepted: 10 November 2018)