

Factors Affecting Adoption of Vegetable Growing Using Organic System: A Case Study of Royal Project Foundation, Thailand

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Abstract

This study aims to investigate the factors affecting the adoption of an organic vegetable growing system, and the problems faced by and the suggestions of 600 farmers related to vegetable growing in the Royal Project Foundation covering 15 Royal Project development centers in Thailand. A questionnaire was used to collect the answers as responses to the objectives of this study. Logit model was also employed in the study. The results revealed that, of all the samples, there were 304 farmers participating in the project of vegetable growing according to the organic system; the findings also showed that the factors affecting the decision making in growing vegetables in the organic system the most were the willingness of farmers, and the meeting or training in organic vegetable growing, in that order. It was also found that non-Hmong farmers had the opportunity to willingly participate in the project. The results of this study will be used to encourage farmers working in the Royal Project areas to increasingly adopt vegetable growing according to the organic system. In addition, it is expected that the government of Thailand will be able to apply the results of the study to encourage more Thai farmers to grow a variety of vegetables using the organic system.

Introduction

Background

In the past, there used to be rampant deforestation, shifting of cultivation, and opium growing in the northern region of Thailand, especially on the highlands. Later, in 1969, His Majesty the King graciously initiated and donated his treasury in order to develop agriculture on the highlands, reduce narcotic crop growing, and conserve the forest and watersheds. His intention was to help the poor hill-tribe people in Thailand who lived in arid areas, the ones who relied on opium and shifting cultivation in order to have a better life. After establishing the Royal Project Foundation, highland research was a focus in the early stages while there was still lack of basic academic knowledge regarding growing temperate plants. At the same time, performance enhancement and professional development programs were also established for the people in the project areas. These programs included the introduction of the appropriate plant species to the area to encourage farmers to plant them for household consumption, instead of opium, the establishment of rice banks, and many other supporting projects [1]. The Royal Project has brought about a dramatic change in the occupation and livelihood of the farmers. From the tribe surviving with shifting cultivation and the income from opium cultivation, they had now transformed into a tribe relying on the cultivation of plants used for household consumption and commerce in order to earn an income for their families, which proved to be more than the income from the opium cultivation. Currently, there are 36 Royal Project centers in five provinces in the upper north. However, such practice is not capable of solving all the problems that have been encountered.

The Royal Project Foundation has sought alternatives for farmers to participate in the program that will improve the lives. Organic farming of vegetables, which is a system of growing vegetables without the use of chemicals, is one option for farmers of sustainable and safe farming, particularly on the highlands where watersheds are located. The Royal Project Foundation largely focuses on the development of vegetable growing according to organic farming standards, which started in 2002. At present, the various produce of the organic vegetable growers in the Royal Project areas have become more acceptable and developed,

and 20 of them have been certified by the Thailand organic farming standards. An assessment of such promotion showed that only some farmers had adopted vegetable growing using the organic system, and practiced it in their own farmland. At the same time, there are many other farmers who do not grow vegetables according to the organic system. Therefore, in this study, we aim to investigate the factors affecting the adoption of vegetable growing using the organic system, as well as the practical reasons why farmers in the Royal Project areas were not ready to accept vegetable growing according to the organic system. The findings regarding these factors will serve as guidelines for the betterment of farmers living in the Royal Project areas in the development toward growing more vegetables according to the organic system.

Organic vegetable growing of royal project

The Royal Project started growing organic vegetables from the year 2002. In the first stage, the project consisted of the implementation of the pilot project demonstrated in a center or a station so that the staff as well as the farmers could learn about the principles and methods of growing organic vegetables by applying knowledge from research as the basis of operations, which included biological pest control, soil fertility improvement, as well as soil, water, and environmental conservation with assistance from six centers or stations: Ang Khang Royal Agricultural Station, Pang Da Royal Agricultural Station [2], Inthanon Royal Project Research Station, Mae Hae Royal Project

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Development Center, Nong Hoi Royal Project Development Center, and Huai Nam Rin Royal Project Development Center.

The Royal Project Foundation operated the “Organic Vegetable Project,” which is a project aiming at the development of temperate plants and vegetables without the use of pesticides, and without having any GMO plants. Instead, natural materials and the advantages of the biodiversity on the highlands, which make the crops naturally resistant to diseases and insects, are used. The project employs existing research results, such as those for soil fertility improvement, biological disease, and pest control as the base for development and farmer support in order to grow vegetables that are high in quality and safety for consumers, farmers, and the environment. Moreover, they can reduce the loss of money caused by purchasing imported chemicals, and reduce the debts of farmers on the highlands, which will result in sustainable farming in the future. Based on the Thailand organic farming standards, the project currently covering 15 areas has successfully passed the certification of Organic Thailand. Besides the care from planting to harvest, the Royal Project has established a quality standard in order to produce quality output to meet the needs of the market, or the customers, including a monitoring system of the center for plant protection so as to ensure safety by randomly sampling the produce in the plantation before delivering them to the consumers.

In addition, the Royal Project organic vegetable plantations are also stations for the study of general interest, as well as a place for the exchange of knowledge between the staff and the farmers [3].

Meaning of organic farming

“Organic farming is an agricultural system that produces food and fiber with environmental, social, and economical sustainability by focusing on improving the soil, and respecting the natural capacity of plants, animals, and ecological agriculture. Therefore, organic farming reduces the use of external production factors and avoids the use of synthetic chemicals such as fertilizers, pesticides, and medical supplies for animals. However, at the same time, it also tries to apply nature to help increase productivity and develop disease resistance in plants and animals. Organic farming is the main and universal principle that is consistent with the economy, society, geography, climate, and local culture conditions.”

How Does Royal Project Produce Organic Vegetables? (Table 1)

Apart from farmer development and promotion, the Royal Project also has various means of procuring knowledge and conducting research. Consequently, organic vegetable production focuses on the implementation of the findings of the research as a basis for development, which is carried out in two phases [4].

Phase 1: Modification period which takes one year from the date the farmers subscribed as members of the organic vegetable growing program.

Phase 2: Period in which a full range of organic vegetables is included, which starts from year 2 onward, for farmers who previously used agricultural chemicals and who can now immediately make use of the soil prepared for more than two years, or utilize new areas in the wilderness distributed to the farmers.

Method

The present study thus decided to use Logit model in the following equation form:

$$y_i = X_i\beta + \mu_i \quad (4.1)$$

In practice, y_i in equation (4.1) are unobservable. What we can observe, however, is whether farmers adopt or participate in organic vegetable production systems project. Thus, dummy variable can be useful for the analysis by defining y_i , the dependent variable as follows:

If $y_i = 1$ meaning that farmers adopted organic vegetable production systems project.

If $y_i = 0$ meaning that farmers did not adopt organic vegetable production systems project.

The following likelihood function,

$$\text{Prob}(y_1=1, y_2=1, \dots, y_n=1) = \prod_{y_i=0} [1 - F(X_i, \beta)] \prod_{y_i=1} F(X_i, \beta) \quad (4.2)$$

Can be re-written in a compact form as follows:

$$L = \prod_{y_i=0}^n [1 - F(X_i, \beta)]^{1-y_i} [F(X_i, \beta)]^{y_i} \quad (4.3)$$

Where

$$F(X_i, \beta) = \frac{1}{1 + e^{-X_i\beta}}$$

L is the probability that farmers will adopt the project to grow vegetables in organic agricultural systems.

Meanwhile, other independent variables which may influence the farmers' decision to adopt the practice of vegetable farming in organic systems and are included in the present investigation are:

X_1 is gender dummy, where

$X_1 = 1$ if farmer is male,

$X_1 = 0$ if otherwise.

X_2 is age variable (year).

X_3 is education dummy, where

$X_3 = 1$ if farmer has secondary schooling education,

$X_3 = 0$ if otherwise.

X_4 is marital status dummy, where

$X_4 = 1$ if farmer is single,

$X_4 = 0$ if otherwise.

X_5 is number of family member's variable (person).

X_6 is number of household labors variable (person).

X_7 is ethnicity dummy, where

$X_7 = 1$ if farmer is Hmong,

$X_7 = 0$ if otherwise.

X_8 is total household income variable (baht/year).

X_9 is the dummy defining whether household has supplementary income, where

$X_9 = 1$ if farmer has income from secondary occupation,

$X_9 = 0$ if otherwise.

X_{10} is vegetable farming area dummy, where

$X_{10} = 1$ if farmer has vegetable growing area not more than two rai,

$X_{10} = 0$ if otherwise.

X_{11} is crop diversity dummy, where

$X_{11} = 1$ if farmer grows no more than two kinds of vegetable per year,

$X_{11} = 0$ if otherwise.

X_{12} is the dummy defining whether farmer takes part in other agricultural projects under the support of the Royal Project Foundation besides the organic vegetable production project, where

$X_{12} = 1$ if farmer participates in other projects,

$X_{12} = 0$ if otherwise.

X_{13} is the dummy defining whether farmer has participated in meeting/training sessions related to the organic vegetable production project, where

$X_{13} = 1$ if farmer used to participate in meeting/training sessions concerning the organic vegetable production project,

$X_{13} = 0$ if otherwise.

X_{14} is the variable indicating the frequency of farmer's attending meeting/training sessions concerning the organic vegetable production project (time).

X_{15} is the dummy defining whether farmer has understood the principles of organic farming before he started growing organic vegetables, where

$X_{15} = 1$ if farmer has understood the principles of organic farming before he started growing organic vegetables,

$X_{15} = 0$ if otherwise.

X_{16} is the dummy defining whether farmer is aware of the beneficial effects of adopting organic farming principles on his occupational development and other aspects, where

$X_{16} = 1$ if farmer had known the beneficial aspects of growing organic vegetables and thus he joined this project,

$X_{16} = 0$ if otherwise.

X_{17} is the dummy for farmer's trust in organic farming extension workers of the Royal Project Foundation, where

$X_{17} = 1$ if farmer has the trust in organic farming extension workers of the Royal Project Foundation,

$X_{17} = 0$ if otherwise.

X_{18} is the dummy defining whether farmer knows what agencies are responsible for organic vegetable production project, where

$X_{18} = 1$ if farmer knows various Royal Project Development Centers are the responsible and implementin gencies for the organic vegetable production project,

$X_{18} = 0$ if otherwise.

X_{19} is publicity about organic vegetable production project dummy, where

$X_{19} = 1$ if farmer considers the publicity about organic vegetable production project is widespread in coverage,

$X_{19} = 0$ if otherwise.

X_{20} is the dummy defining whether farmer knows the objectives of organic vegetable production project Where,

$X_{20} = 1$ if farmer knows the objectives of organic vegetable production project are to assure the vegetables to have quality and high food safety for consumers as well as good for the farmers including the environment,

$X_{20} = 0$ if otherwise.

X_{21} is the dummy for farmer's consideration for extension workers, where

$X_{21} = 1$ if farmer has consideration for extension workers of the Royal Project Foundation thus he participates in the organic vegetable production project,

$X_{21} = 0$ if otherwise.

X_{22} is the farmer's willingness dummy, where

$X_{22} = 1$ if farmer has joined the organic vegetable production project at his own will,

$X_{22} = 0$ if otherwise.

X_{23} is the persuasion from village leader dummy, where

$X_{23} = 1$ if there was village leader persuading the farmer to join the organic vegetable production project,

$X_{23} = 0$ if otherwise.

X_{24} is the dummy defining whether there was extension workers in organic vegetable production project inviting the farmer to take part in the project, where

$X_{24} = 1$ if there was so,

$X_{24} = 0$ if otherwise.

X_{25} is the dummy defining whether farmer receives regular news and information from officers of the Royal Project Foundation, where

$X_{25} = 1$ if farmer joins the organic vegetable production project because he has received regular news and information from officers of the Royal Project Foundation,

$X_{25} = 0$ if otherwise.

X_{26} is the dummy defining whether farmer got information about organic vegetables from his children who learned from school, where

$X_{26} = 1$ if farmer joined the organic vegetable production project because he had got this knowledge from his children who had learned from school,

$X_{26} = 0$ if otherwise.

X_{27} is the dummy defining whether farmer regularly watches documentaries about organic vegetables on television, where

$X_{27} = 1$ if farmer has regularly watched documentaries about organic vegetables on television thus he decided to join the organic vegetable production project,

$X_{27} = 0$ if otherwise.

X_{28} is the dummy whether price of organic vegetables has influence on farmer's decision to join the organic vegetable production project, where

$X_{28} = 1$ if farmer joined the organic vegetable production project for the reason of price of organic vegetables,

$X_{28} = 0$ if otherwise.

X_{29} is the dummy for growing organic vegetables to save production cost, where

$X_{29} = 1$ if farmer reckoned that growing organic vegetables could save his production cost, thus he joined the organic vegetable production project,

$X_{29} = 0$ if otherwise.

X_{30} is the annual soil analysis dummy, where

$X_{30} = 1$ if farmer has received soil analysis services every year and thus he joined the organic vegetable production project,

$X_{30} = 0$ if otherwise.

X_{31} is the dummy defining whether farmer knows that organic vegetable growing plots must be isolated from farming areas receiving agrochemical inputs, where

$X_{31} = 1$ if farmer knew that organic vegetable growing plots must be isolated from farming areas where agrochemicals were applied and thus he joined the organic vegetable production project,

$X_{31} = 0$ if otherwise.

Results and Discussion

The study was conducted to examine the factors affecting the adoption of organic farming system in vegetable growing by farmers working in the Royal Project areas, and to examine using a Logit model (Table 2) the problems, obstacles, and suggestions of the farmers regarding the production of vegetables using the organic farming system [5]. Purposive sampling was used to select 600 samples covering 15 Royal Project development centers. The results showed that 304 samples (50.66%) participated in the project of vegetable growing according to the organic farming system. The researcher would like to propose the discussion results based on the research objectives, which are as follows.

(1) The study found that the willingness of the farmers was significantly the most important factor in making a decision to participate in the project of vegetable growing using the organic farming system. If they were willing to participate in the project, their opportunity to participate in the project would rise by 50.61%, which was the highest among the significant factors. In other words, whether the project of vegetable growing according to the organic farming system will be successful, as well as participated in by more farmers, or not depends on the amount of attention the project owner pays on encouraging farmers to voluntarily or willingly join the project.

(2) The study found that attendance or training for growing organic vegetables was the factor significantly affecting the adoption of the project of vegetable growing using the organic farming system, next to the willingness of farmers. In other words, participating in the meeting or training, which helps them to know the advantages and understand how to grow vegetables according to the organic farming system, resulted in an increase in the opportunity of the farmers to participate in the project by 50.06%. Thus, it is evident that whether the project of vegetable growing using the organic farming system will be successful, and participated in by more farmers, or not, will depend on the intensity of the project owner's focus on the training and knowledge, and the highlighting of the advantages of the project. At the same time, the farmers should be encouraged enough for them to become eager to join the project.

(3) The study found that the ethnic farmers, non-Hmong, were more likely to adopt or participate in the project of vegetable growing using the organic farming system (46.82%). In other words, farmers from other tribes recognized the importance of participating in the project more than the Hmong. As a result, in order to successfully promote the project, the authorities must give priority to ethnic farmers by promoting the project to farmers of other tribes.

(4) The study found that the Royal Project officers being considerate was another factor resulting in the adoption of the project of vegetable growing according to the organic farming system in the Royal Project areas. If farmers felt that the officers were considerate and understanding, the tendency of the participation in the project would rise by 43.53%. In other words, supporting officers or project owners should constantly endeavor to be good role models so that farmers would feel that they are considerate, and the %age of participation in the project would increase.

(5) It was found that growing organic vegetables reduced the production cost and was one of the factors affecting the adoption of the project. If farmers understood that growing organic vegetables could reduce production cost, the tendency that they would participate in the project would rise by 36.51%. As a result, the officers or the project owners must train farmers, and point out the benefits of growing organic vegetables to make the farmers see for themselves that it could really reduce the production cost. This would increase the eagerness of the farmers to participate in the project, and the project would become successful.

(6) The study found that knowing the principles of organic vegetable growing was beneficial for professional development as well as in other areas, and that this was one of the factors affecting the adoption of the project. If farmers knew that growing organic vegetables was good for the development of agriculture as well as other for aspects, such as the health safety of the farmers and consumers consuming safe vegetables, the probability of farmers participating in the project would rise by 33.73%. As a result, the officers or the project owners must train the farmers and point out the benefits of growing organic vegetables as being good for professional development as well as in other areas. This helps more farmers to have the enthusiasm to participate in the project of vegetable growing according to the organic farming system.

(7) The results showed that the knowledge that organic vegetable plots must be separated from other crops using chemicals was a factor significantly affecting the adoption of the project of vegetable growing using the organic farming system among farmers in the Royal Project areas. If they knew the fact, the tendency that they would participate in the project would rise by 31.80%. Therefore, the officers or project owners must train the farmers and point out the limitations of this method in that the farmers should be made to realize that it is imperative that organic vegetables must be separated from other crops that use chemicals. When the farmers understand the rules well, the chances that they would participate in the project would surely increase.

(8) The results showed that an annual soil analysis conducted for the farmers was one of the factors affecting the project. If their soil were tested every year, the tendency that they would participate in the project would rise by 28.87%. The officers or the project owners should monitor, support, and encourage farmers to test the soil quality every year. This would help increase the likelihood of the farmers' participation in the project, which, in turn, would make the project successful.

(9) The study found that female farmers are more likely to adopt

Production System	Operational Guideline
1. Type of Plant	- Suitable for soil quality and climate.
	- Non GMO plants.
	- Focuses on short-lived temperate crops.
	- No natural enemies, or less disease, or insect disturbances.
	- Use integrated cropping systems, intercropping, multiple cropping, and crop rotation.
2. Growing System	- Prevent soil erosion by building steps and growing vetiver grass.
	- Analyze soil properties and quality on an annual basis.
3. Soil Improvement	- Improve the soil according to the advice of the government by using farm manure, compost, and green manure in order to produce at least three to four percent at all times.
	- Adjust pH with dolomite to 5.0–6.5.
4. Disease and Pest Control	- Grow legumes to fallow and improve the soil.
	- Add nutrients to the plants with water and nutrients derived from vegetable scraps, as necessary and as permitted by the regulations.
	- Add to plant immunity by improving the soil and the root system for healthiness and high effectiveness.
	- Use biological extracts from herbs and natural vegetation on highland.
	- Use microorganisms such as Tricoderma, Paecilomyces, Bt, and Bs to control pests.
5. Harvesting, Packing, and Transportation	- Use natural insect enemies to control pests.
	- Check the quality before harvesting by using GC test kits.
	- Separate containers from regular vegetable production systems.
	- Produce through precooling systems in factories where the system has already been installed.
6. Standard Certification	- Check chemical contamination in the plot soil, water used, and sediment in the water.
	- Check chemical contamination in the products (even those using no pesticides) at every handling.
	- Establish a certification system of the production system based on international standards and Thailand's organic standards of the Ministry of Agriculture and Cooperation issued by the government agencies.
7. Farmer Participation	- Choose groups of farmers who have a culture of production based on natural systems, such as the Karen, Palaung farmers, or who are concerned for their own safety when using pesticides.
	- Adjust the technology to the traditional culture of each individual or groups by using participatory development approach.
	- Establish a system of lending and borrowing money through the Bank of Agriculture and Cooperatives, or establish a cooperative group.
	- Establish groups of farmers to deal with plant management, production planning, and preparation for production factors together.

Table 1: Production System and Operational Guideline.

vegetable growing according to the organic farming system than their male counterparts. This is consistent with several studies confirming that women find it easier than men to accept changes. The probability of female farmers participating in vegetable growing using the organic farming system was greater by 25.02%. For this reason, project owners must give priority to female farmers because this would increase the %age of vegetable growing according to the organic farming system.

(10) The study found that persuasion from the organic vegetable growing officers was a factor affecting the chances of adoption of the project. If the farmers were persuaded by the officers, the probability that they would participate in the project would rise by 22.20%. As a result, the project owners must survey the area, give advice to the farmers regularly, and persuade them to join the project. This would help increase the farmers' opportunities to grow vegetables by making use of the organic system.

(11) The study found that the income of the household was another factor significantly affecting the chances of adoption of the project of vegetable growing using the organic farming system among the farmers in the Royal Project areas. If the farmers had any extra income for their families, the likelihood that they would participate in the project would rise by 22.7%. The officers or the project owners would need to focus on the farmers' extra income or promote extra income besides the main job, and persuade them to join the project in order to help increase their chances of participating in the project because the farmers, with their extra income, would be able to rest assured of their income at a certain level, and so, effectively, they would not be taking a risk by accepting projects that are new.

(12) The study found that the number of vegetables was another factor affecting the chances of adoption of the project. If the farmers grew no more than two types of vegetables per year, the probability that they would participate in the project would rise by 18.68. Therefore, the project owners should focus on farmers growing no more than two types of vegetable per year, and persuade them to join the project. This would increase the farmers' opportunities for participating in vegetable growing in the project. Those who grow fewer types of vegetables are more determined and confident in the process and always ready to adapt to changes, and this makes it easier for them to accept new projects [6].

(13) The study found that the number of attendees at the meeting or training for organic vegetable growing was an important factor affecting the chances of adoption of the project. If the farmers joined the meeting or training more often, the likelihood of the farmers' inclination toward participating in the project would rise by 14.48%. The project owners must focus on the frequency of organizing the meetings or trainings for the farmers so that they can understand the process better, and can put the acquired knowledge into action. After the training, they should be persuaded to join the project, and this would increase the probability of the farmers' participation in the project of vegetable growing according to the organic system.

(14) The study found that the size of the planting area of the vegetable farmers was another factor affecting the project. Farmers having more than 2 *rai* were more likely to adopt vegetable growing according to the organic farming system than those with farmland less than 2 *rai*. The chance that they would participate in the project would

Variable	Coefficient	Standard Error	t - ratio	Significant
Constant	-2.00064596	0.503965	-3.970***	0.0001
X ₁	-0.25026386	0.126914	-1.972**	0.0486
X ₂	0.00020308	0.004796	0.042	0.9662
X ₃	0.1557904	0.170272	0.915	0.3602
X ₄	0.08865476	0.18299	0.484	0.628
X ₅	-0.00981938	0.041068	-0.239	0.811
X ₆	0.03466058	0.052359	0.662	0.508
X ₇	-0.46825155	0.079602	-5.882***	0
X ₈	-0.00000002	0.000001	-0.036	0.9716
X ₉	0.22073197	0.096525	2.287**	0.0222
X ₁₀	-0.09625193	0.022625	-4.254***	0
X ₁₁	0.18689429	0.111774	1.672*	0.0945
X ₁₂	-0.12692444	0.098584	-1.287	0.1979
X ₁₃	0.5006133	0.088438	5.661***	0
X ₁₄	0.1448802	0.045528	3.182***	0.0015
X ₁₅	-0.18297082	0.138275	-1.323	0.1858
X ₁₆	0.3373545	0.107606	3.135***	0.0017
X ₁₇	0.15618073	0.234462	0.666	0.5053
X ₁₈	-0.30594657	0.211659	-1.445	0.1483
X ₁₉	-0.05249917	0.143197	-0.367	0.7139
X ₂₀	0.00399337	0.320734	0.012	0.9901
X ₂₁	0.43533698	0.19563	2.225**	0.0261
X ₂₂	0.50618437	0.085008	5.955***	0
X ₂₃	-0.17339937	0.107711	-1.61	0.1074
X ₂₄	0.22207741	0.122976	1.806*	0.0709
X ₂₅	-0.0578839	0.120999	-0.478	0.6324
X ₂₆	0.14971418	0.252336	0.593	0.553
X ₂₇	-0.01084004	0.173655	-0.062	0.9502
X ₂₈	-0.05239188	0.154804	-0.338	0.735
X ₂₉	0.36518993	0.121326	3.010***	0.0026
X ₃₀	0.28876802	0.0974	2.965***	0.003
X ₃₁	0.31806404	0.128841	2.469**	0.0136

Source: The calculation.

Note: ***Level of statistical significance 0.01; **level of statistical significance 0.05; *level of statistical significance 0.10.

Table 2: Estimation Results of Coefficients by Marginal Effect.

increase by only 9.62%, which is not high. The officers or project owners must pay attention to the size of the area, which means they should support those who have more than 2 rai of farmland. This would allow farmers to have more opportunities to participate in the project.

However, in order to make the project of vegetable growing

according to the organic farming system at the Royal Project areas successful, and attract more farmers, the officers or project owners and those associated with the policy of promoting the project to farmers in the Royal Project areas must focus on motivating the farmers to willingly participate in the project. In the meantime, priority should be given to meetings or trainings in order to fully provide the knowledge and the understanding about the various projects to the farmers. Also, the extension officers or project owners must take care to behave as role models in giving recommendations and regularly supporting the farmers, as well as selecting groups of farmers who meet the qualifications in this study. This would result in the success of the project, and more farmers would eventually adopt the project.

Proposed policy

In the light of the findings obtained in the study of the factors affecting the adoption of vegetable growing using the organic farming system by farmers in the Royal Project areas, the researcher would like to propose opinions and suggestions that should be useful for policy setting in order to successfully promote the project of vegetable growing according to the organic farming system in the Royal Project areas. Besides, the government can also use these below-mentioned guidelines to encourage farmers to grow organic vegetables:

(1) The Royal Project Foundation, or the concerned departments of the Thai government, should motivate farmers to voluntarily adopt the program without any enforcement or pressure.

(2) The Royal Project Foundation and the concerned departments of the government should organize a training program on the project of vegetable growing according to the organic farming system by emphasizing the principles of the project regarding the preparation, procedure, conditions, and limitations. They should also indicate the advantages and disadvantages of growing vegetables in the organic system, to the farmers, their families, consumers, and the environment, as well as demonstrate the benefits that farmers can get from shifting to growing vegetables using the organic system.

(3) The government should have a policy to constantly evaluate the project in order to know the real problems of the farmers, and to solve the problems that have happened so that the project procedure would be more effective. At the same time, the concerned officers should frequently meet the farmers.

(4) The relevant departments of the government should motivate the farmers in various ways, such as by providing vegetable growing necessities at lower prices, seeds and necessary equipment, to reduce production costs and increase farmers' incomes.

(5) If the officers cannot take care of the farmers thoroughly, the government should entrust the relevant authorities with the responsibility of providing care or hire more officers to do so; the government can even consider creating a network among the farmers so that they can share and learn from each other.

(6) The Royal Project Foundation or the related departments of the government should expand the market for organic products which may increase in the future.

(7) The government should have a clear pricing policy by setting the price for organic vegetables, which is higher than that of other vegetables in the regular system (GAP), to be higher than the current price.

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