Organic Agricultural Practice of Farmers in Khueng Kham Sub-district, Muengn Distrit, Yasothon, Province, Thailand

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This study aimed to explore knowledge and understanding about organic farming, problems encountered, and needs of farmers for organic agricultural practice in Kueng Kham sub-district, Mueang district, Yasothon province. The informants in this study consisted of 320 farmers obtained by multi-stage sampling. A structured interview schedule was used for data collection. Obtained data were analyzed by suing content analyze, frequency, percentage, mean, and standard deviation. Besides, t-test was used for a comparison of difference. Findings showed that most of the informants were male, 51-60 years old, and elementary school graduates. Their main occupation was rice growing and they also did grass plots for animal feed as an extra income. They had farm hand for less than 5 rai. The informants' debt range was 10,001-50,000 baht in which they got a loan from The Bank for agriculture and Agricultural Cooperatives for their investment most. They perceived news or information through the community radio broad cast tower most. All of the informants used to gain knowledge about organic vegetable production most. Most of them had knowledge and understanding about organic farming at a high level. They sometimes followed organic agricultural practice. As a whole, the informants had knowledge and understanding about organic farming at moderate and high levels. Findings showed that there was a statistically significant difference at .05 in terms of their organic agricultural practice–plant varieties/animal breeds for the production of organic farming; land preparation and soil management; water management; weed control; and pest prevention and control. Important problems encountered were marketing; high production costs; and lack of knowledge about organic farming standards.

Keywords: organic farming, organic agricultural practice, organic farming standards, farmers

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Introduction

Food is the most important factor for man. However, a rapid increase in world population has an effect on agricultural production change very much. Particularly, the development of new faming forms which arises from the first National Social and Economic Development Plan in 1961 made the Thai society begins to be the Green Revolution age. That is, shifting from subsistent farming to commercial farming this makes farmers begin to use chemicals for increasing yields for a long period of time. Due to a limitation of production resources, most agricultural production in the country is in the form of mono-cultivation. Besides, it needs to construct the irrigational system to supply adequate water for agricultural proposes. Also, modern farm machinery is used for big-scale farming and it means increased product costs. Meanwhile, the price of agricultural yields is not high making farmers have many problems. This includes loss cost when the yield price is low, debts due to chemicals, etc. some farmers seek for new production alternatives such as integrated farming and organic farming. They employ basic concepts of organic farming to solve problems in agricultural production; that is, holistic agricultural production management. It puts the importance on the conservation of natural resources and agricultural ecology system. This is particularly on the rehabilitation of soil fertility, clean water source keeping, and the rehabilitation of bio-diversity of the form. This is because organic farming relies on the mechanism ad process of the ecology system for agricultural production (The Organic Agriculture Development Center, 2015)
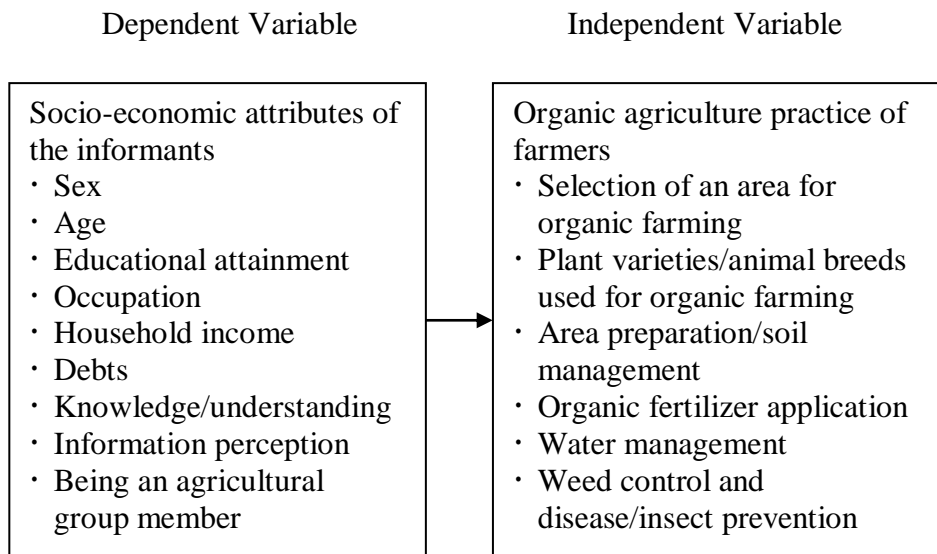
Most people in Yasothon province are engaged in agriculture which 62.46 percent are engaged in agriculture foustry, and fisheries. Besides, most farmers there grow jasmine rice (Yasothon Statistics Office, 2015). In addition, farmers in Yasothon province also face problems like those in other provinces so they seek for agricultural alternatives. This study aimed to investigate knowledge and understanding about organic farming of farmers' organic farming practice, as well as problems encountered and needs of farmers in Khwngkham sub-district Muang district, Yasothon province. It aimed to be a guideline for developing farmer earning a living.

Objectives of the Study

This study aimed to investigate knowledge and understanding about organic farming, organic farming practice, problems encountered and needs of farmers in Khuenkham sub-district, Muang distric, Yasothon province.

Conceptual Framework

   The conceptual framework in this study has been adapted from results of a study of definition of the International Federation of Organic Agriculture Movement (IFOAM). Organic agriculture puts the importance on the sustainability of soil health, eco-system, and man. In fact organic agriculture relies on the ecological process, bio-diversity, and nature cycle having a specific trait of each area. Instead of using production factors which have a negative impact, organic agriculture combines local body of knowledge, innovation, and scientific knowledge for environmental conservation and the promotion of systematic relationships as well as good quality of life of people and various concerned organisms)Green Net ,2016("Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved." Besides, the determination of standards of organic agriculture which the producer must strictly practice on organic agriculture production Organic Agriculture Certification Thailand (ACT) .All of these were used as a basis for conceptual framework setting.

Dependent Variable	Independent Variable
Socio-economic attributes of the informants · Sex · Age · Educational attainment · Occupation · Household income · Debts · Knowledge/understanding · Information perception · Being an agricultural group member	Organic agriculture practice of farmers · Selection of an area for organic farming · Plant varieties/animal breeds used for organic farming · Area preparation/soil management · Organic fertilizer application · Water management · Weed control and disease/insect prevention

Scope and Delimitation of the Study

1. Population and sample group
The populations in this study were 8,182 farmers living in Khuengkham Sub-district, Muang district Yasothon province (2,323 households) (Khuengkham Local Administrative Organization, 2015). The sample group were 320 household representatives obtained by multi-stage sampling from 13 villages (1 person/household) and the table package determining the sample group size of Krecie and Morgan (Leekitwattana, 2016, p.147).

2. Variable
2.1 Dependent variable - Socio-economic attributes of the informants: 1) Sex, 2) Age, 3) Educational attainment, 4) Occupation, 5) Household income, 6) Debts, 7) Knowledge/understanding, 8) Information perception, and 9) Being an agricultural group member

2.2 Independent variable - Organic agriculture practice of farmers in Khuengkham, sub-district, Muang district, Yasothon province: 1) Selection of an area for organic farming, 2) Plant varieties/ animal breeds used for organic farming, 3) Area preparation/soil management, 4) Organic fertilizer application, 5) Water management, and 6) Weed control and disease/insect prevention.

2.3 Content, This included 6 aspects: 1) Selection of an area for organic farming, 2) Plant varieties/animal breeds used for organic farming, 3) Area preparation/soil management, 4) Organic fertilizer application, 5) Water management, and 6) Weed control and disease/insect prevention.

Research Instruments

1. Structured interview schedule consisting of 4 parts:
   Part1 : Socio-economic attributes of the farmers
   Part2 : Knowledge and understanding about organic farming of the farmers
   Part3 : Data on organic farming practice of the farmers
   Part4 : Problems encountered and additional needs of the farmers for organic farming practice

2. The scales of measure of farmers' knowledge and understanding on organic farming practice were 3 scales with 24 questions.

Score range		Description (knowledge/understanding)
17 – 24	=	High
9 – 16	=	Moderate
1 – 8	=	Low

3. Check list interview schedule, open-ended questions on basic data of the farmers, problems, and additional needs for organic farming practice. Also, it was in the form of 3-rating scales. (Leekitwattana, 2012: p.172) as shown below:

Score	Score range	Description (organic farming practice)
3	3.00 - 2.34	Often
2	2.33 - 1.67	Sometimes
1	1.66 - 1.00	Never

4. Three scholars checked the research instruments for correctness and consistency of the items with objectives of the study. The research instruments were improved in accordance with suggestions of the scholars.

Results

Table 1. Socio-economic attributes of the informants

Item	n = 320	(%)
Sex		
Male	230	71.88
Female	90	28.13
Age		
Below 30 years	4	1.25
31 - 40 years	49	15.31
41 - 50 years	78	24.38
51 - 60 years	118	36.88
61 years and above	71	22.19
Educational attainment		
Fourth year elementary school	100	31.25
Sixth year elementary school	82	25.62
Lower scecondary school or equivalent	64	20.00
Upper scecondary school or equivalent	67	20.94
Bachelor's gegree	7	2.19
Main occupation		
Rice growing	127	39.69
Orcharding	14	4.38
Field crop growing e.g. cassava and sugar cane	64	20.00
Grassland for animal feeding	88	27.50
Livestock rearing	13	4.06
Fisheries/aquaculture	14	4.38
Farming area (Rai)		
Less than 5	171	53.44
6-10	38	11.88
11-15	13	4.06
16-20	8	2.50
21-25	47	14.69
26 and above	43	13.44
Debt burden (baht)		

Less than 10,000	66	20.63
10,001-50,000	99	30.94
50,001-100,000	70	21.88
More than 100,000	85	26.56
Loan source (Moere than 1 is allowed)		
Bank for Agriculture and Agricultural Cooperatives (BAAC)	)236(	)73.75(
Shark loan	)74(	)23.13(
Relative	)98(	)30.63(
Neighbour	)27(	)8.44(
Village fund	)199(	)62.19(
Loan Objective		
Investment	158	49.38
Household expencess	85	26.56
Children schooling	53	16.56
Other	24	7.50
Agricultural information perception		
Local newspaper	36	11.25
Neighbour	24	7.50
Village news broadcast tower	236	73.75
Government official	24	7.50
Agricultural group member		
BAAC group	236	73.75
Organic farming group	173	54.06
Farmers group	79	24.69
Farmer housewives group	71	22.19
Organicfarming perception		
Never	69	21.56
Yes)More than 1 is allowed(	251	78.44
Organic vegetable production	)320(	)100.00(
Organic rice growing	)251)	(78.44)
Organic agricultural yield processing	)160(	)50.00(
Organic mixed farming	)149(	)46.56(
Bio-fermented liquid	)134(	)41.88(
Bio-fermented fertilizer production	)102(	)31.87(
Green manure production	)93(	)29.06(
Organic farming market (Green market)	)91(	)28.44(
Organic livestock rearing	)72(	)22.50(

Table 2. Knowledge and understanding about organic farming of the informants

Score range	Description	n=320	%
24-17	High	205	64.06
16 – 9	Moderate	115	35.94
1 – 8	Low	-	-

Lowest score =12 , highest score =21 , and an average mean score = 17.53

Table 3. Organic farming practice of the informants

Item	$\overline{X}$	S.D.	Description
Selection of an area for organic farming			
· The area where it is for away from traffic congestion	2.28	.725	Sometimes
· The area where it is for away from chemical crop growing	2.06	.717	Sometimes
· The specific area for organic farming	1.24	.426	low
· Observing existing plants in the area for analyzing and production planning	1.20	.494	low
· Collecting soil and water samples for analyzing	1.12	.328	low
Total	1.58	.236	low
Plant varieties / animal breeds used for organic farming			
· Using the seeds produced by organic farming	1.20	.408	low
· Using the seed kept by non-chemical process	1.28	.449	low
· Non-GMO plants	1.00	.000	low
· Using local seeds passing thought self-variety selection	1.99	.628	Sometimes
· Using local a nature animal breeds	2.18	.622	Sometimes
Total	1.53	.229	low
Land/ area preparation and management			
· Based on appropriateness of existing and/area	1.78	.515	Sometimes
· Based on water supply system, agricultural tools, etc.	2.31	.613	Sometimes
· Growing, legumes for soil fertility	1.33	.473	low
· Soil ploughing	2.77	.449	Always
· Annual soil analysis	1.13	.331	low
Total	1.86	.264	Sometime
Application of organic fertilizers			
· Using manure	3.00	.000	Always
· Using compose	2.48	.699	Always
· Using green manure	1.42	.519	low
· Using bio-fermented liquid	1.20	.403	low
· Using natural fertilizers to replace chemical fertilizers	1.06	.242	low
Total	1.83	.162	Sometimes
Water management			
· Providing adequate water sources e.g.well, pond, irrigational system, etc.	1.92	573.	Sometimes
· Avoid using water from the community or factories	1.36	494.	low
· Water storage for organic farming	1.75	783.	Sometimes
· Regular water quality testing	1.40	491.	low
Total	1.61	.359	low
Weed control plant disease and pest prevention			
· Do not use herbicide, insecticide, pesticide, or fungicide	2.00	.726	Sometimes
· Weed control by using and pulling	2.45	.547	Always
· Using extracted substances on boiled water from herbal plants such as neem, heart-leaved moonseed, bird chilli	1.65	.540	low
· Using nature system control such as in-season production and control by nature system	1.57	.544	low
· Avoid using various stimulants such as for rapid growth	1.09	.292	low
· Do not use antibiotic in livestock	1.08	.278	low
Total	1.64	.224	low

Table 4. Organic farming practice of the informants with 6 areas

Item	$\overline{X}$	S.D.	Description
1. Selection of an area for organic farming	1.58	.236	Low
2. Plant varieties/animal breeds used for organic farming	1.53	.229	Low
3. Land/area preparation and management	1.86	.264	Sometimes
4. Application of organic fertilizer	1.83	.162	Sometimes
5. Water management	1.61	.359	Low
6. Weed control and plant disease/pest prevention	1.64	.224	Low
Total	1.68	.087	Sometimes

Table 5. The reasons shy there was a low level of organic farming practice

Item	n=320	%
1. Availability of adequate water in the community and it has never wasted	320	100.00
2. Unable to grow legumes for sail fertility since there is in-season cultivation	285	89.06
3. Do not use green manure, bio-fermented liquid, natural potassium salt, and ash because it is expensive	237	74.06
4. Using seeds available in local market because it is convenient and adequate in amounts	203	63.44
5. Do not have the expense on water/soil analyses	150	32.81
6. Serious insect disease is not found in the organic farming area	89	27.81
7. It is complicated to prepare natural extracted substances	67	20.94
8. Limitation of form land area	50	15.63
9. Limitation of seed amounts so farming is for household consumption	45	14.06

Table 6. A comparison between a level of knowledge and a level of organic farming practice of the informants

Organic farming practice	Description				t.	Sig.
	Moderate)n = 115)		High)n = 205)			
	Mean	S.D.	Mean	S.D.		
1. Selection of an area for organic farming	1.59	0.22	1.57	0.24	0.789	0.431
2. Plant varieties/ animal breeds used for organic farming	1.57	0.25	1.50	0.20	2.529	0.012[*]
3. Land/area preparation and management	1.94	0.25	1.81	0.25	4.392	0.000[*]
4. Application of organic fertilizer	1.81	0.18	1.84	0.14	-1.451	0.148
5. Water management	1.55	0.33	1.63	0.37	-2.158	0.032[*]
6. Weed control, disease/pest prevention	1.78	0.12	1.56	0.22	9.925	0.000[*]
Total	1.71	0.86	1.65	0.08	5.610	0.000[*]

[*]significance level at .05

Table 7. Problems encountered and needs for organic farming practice

Item	n=320	%
1. Lack of continuity in production due to marketing practice	290	90.63
2. Lack of production costs and need for support	256	80.00
3. Lack of knowledge about organic farming standards	248	77.50
4. Lack of knowledge about yield increasing and processing for value added	102	31.88
5. Lack of perception in terms of marketing, price and situations related to organic farming	73	22.81

Table 7 (Con.)

Item	n=320	%
6. Needs for natural extracted substances for pest prevention	65	20.31
7. Needs for the exploration of factors essential to organic farming production by concerned agencies	53	16.56
8. Lack of direct experience so there is need for educational trip and actual practices	40	12.50
9. Lack of knowledge about local seed keeping	39	12.19
10. Need for developing natural fertilizer production	35	10.94

Conclusions and Discussion

Findings showd that most of the informants 71.88)%(were male, and their age range was 60-51years 36.88)%(. The informants were elementary graduates most 31.25)%(. Less than one-half of the informants grow ricw 39.69)%) and fodders (27.50%). More than one-half of the informants 53.44)%(has less than 5 rai for farming area. Less than one-half of the informants 30.94)% (had depts for 50,000-10,001baht. Most of informants 73.75)%(got loan from the Bank for Agriculture and Agricultural Cooperatives and they perceived news or information about agriculture through the village news broagcast tower. Most of the 78.44)%(gained knowledge about organic farming such as organic vegetable production, organic rice production, organic yield processing, etc. Most of the informants had knowledge and understanding about orgarnic farming at a high level and the rest 64.06)%(was found at a moderate level 35.94)%(. This might be because they had learned and paplied of their practiced on organic farming.

As a hole, the informants sometimes practiced organic farming $)\overline{x}=(1.68$. Based on its details, it was found that they sometimes practised in terms of land preparation and soid management $)\overline{x}=(1.86$ and application of oganic fertilizer $)\overline{x}=(1.83$. The following practices were found at a low level: weed control and prevention of diseases/insects$)\overline{x}=(1.64$; water management$)\overline{x}=(1.64$; selection of an area for organic $)\overline{x}=(1.58$; and Plant varieties / animal breeds used for organic farming $)\overline{x}=(1.53$. They had a low of organic farming practice because there was natural clean and adequate water source in the community. They could not grow legumes because there was in season cultivation. The informants might not have a guideline for organic farming. The progress in agricultural technology such as agricultural tools, prevention of weeds and inseccts by using herbicides and insecticids, and a modern plant growing system might make the respondents are not interested in organic farming.

Results of the study showed that, as a whole, a level of knowledge had a statistically significant relationship with organic farming practice at .05. It also

had a statistically significant relationship with this in terms of plant varieties/animal breeds used in organic farming, land preparation and soil management, water management, weed control and prevention of diseases/insects. This might be because those practising organic farming must be knowledgeable and understand farming methods. Their knowledge can be applied to farming so organic farmers must truly have knowledge and understanding.

Suggestions

Knowledge and understanding about organic farming is significant with organic farming practices.

1. Thoroughly survey so as to be data for the development of organic farming.

2. Promotion of organics yields processing.

3. It is essential to make farmers understand about it so appropriate communication is necessary.

4. Construction of an awareness of health, environment, and nature

5. Finding a construction of organic market so as to be popular be networking on knowledge/learning exchange.

Acknowledgement

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