

Factors Affecting Organic Rice Production Adoption of Farmers in Northern Thailand

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ABSTRACT

Recent health concerns have resulted in the increased demand for organic foods in both develop and developing countries. This situation was believed to give farmers an opportunity to receive bigger profits by using organic methods. The aim of this paper is to reflect on the main factors that influence farmers in northern Thailand to begin producing organically grown rice. The surveys and in-depth interviews reveal that, the number of farmers who have adopted organic rice-growing methods is small, but has been rapidly increasing since 2008. The results from this study show that influence of training can be found to be an important decision-making factor for northern Thai farmers who decide to adopt organic rice-growing methods. Farmers who switch to organic farming join organic agricultural networks in order to have stronger market security and receive further training. It was also found that factors that influenced the farmers' decisions to apply organic agricultural methods are their concerns for their own health, followed by the success of neighboring organic farms, excellent export opportunities and continued support from their agricultural network, respectively. Economic factors were also in play such as access to high quality organic rice seed, the low costs of production, guaranteed higher buying prices than non-organic rice and access to buyers through agricultural networks. In addition, having control over the land and water supply were also cited as physical and biological influencing factors.

Key words: Organic rice, Adoption, Network

INTRODUCTION

In recent years, the effects of health concern, and environmental and climate change on agricultural production have been reflected in farmers' practice. The consumer concerns about food safety have led to an increase in demand for organic food products (Murphy, 2006; Schifferstein and Oude Ophuis, 1998). The global production of organic food also show substantial growth, thus, global market for organic products has been growing steadily not only in Europe and North America but in Asian countries as well (Baker; 2004, Gifford and Bernard, 2005; Setboonsarng et al., 2006). As rice is the staple food for a number of cultures, one noticeable change has been the increase of organic rice consumption. In Thailand, organic farming has re-emerged, beginning in 1980, due to the health and environmental effects of improper use of agrochemical production (Eischen et al., 2006). Since rice is the major organic product in Thailand, the government has created a National Agenda on converting high-quality paddy area in to producing organic rice. Organic rice demand has been an alternative for consumers and has especially been noted in Thailand, one of the world's largest rice suppliers. The Thai Farmer Bank Research Center (2007) stated that 52,181.25 rai of rice paddies were growing organic rice and had been certified using international standards in 2007. The report further states that 15,000 tons of rice had been produced in 2008, far out shadowing

1991's organic rice production of 2,000 tons. The market for organic rice has expanded 7.5 times in 16 years.

The rivers and streams of northern Thailand are well suited for organic agriculture as it remains cleaner and freer of chemicals compared to downstream in southern Thailand. As more and more people show demand for organic products, rice mills, rice whole-sellers and rice exporters have all taken notice and are now more interested in working with organically grown rice.

The demand for organic foods is expected to continue to grow especially in develop countries (Hjelmar, 2011; Tranter et al., 2009). Therefore, this should create an opportunity in the market for Thai farmers. However, in order to convince farmers to switch from conventional agriculture method which relies on intensive chemical inputs to totally organic methods, one needs to know and understand the factors that influence the farmer's decision-making process (Morgan and Murdoch, 2000). In organic production, the knowledge should be transferred to farmers since they must adjust their understandings of the production process. The study on Thailand organic products in 2006 indicated that at that time farmers' believed that there was a very small or no market for their organic products while retailers claimed that there was no or not enough supply (Eischen et al., 2006). However, the market for organic rice has been more promising since that time. Therefore, this study aims to find out factors that could influence farmers' adoption of organic rice production. This is because the process of increasing the number of farmers to grow organic rice is believed to take time and organic agriculture standards need to be explained. This process is crucial in order to introduce more organic rice at the beginning of the global supply chains.

MATERIALS AND METHODS

In this study, the primary data collected was from farmers who already grow rice organically and who sit at the beginning of the supply chain in northern Thailand. Many of these farmers were members of the agricultural group 'Rainbow Farm'. The 87 participants had rice paddies in San Sai, Mae Rim and Mae Tang districts, in Chiang Mai province, and Wang Chin district in Phrae province. The participating farmers took questionnaires and were interviewed, in-depth during April, 2011; a crucial time for farmers as they plan their production for the 2011-12 season.

Factors that encourage farmers to switch to organic farming can be found by measuring the farmers' attitudes and opinions of environmental factors, sociological factors, economic factors, biological factors and physical production factors (Fishbein and Ajzen, 1975). Understanding attitudes is the most important step in understanding and predicting people's decisions. Oskamp (1977) explains that the English word *attitude* stems from the Latin word *astus* which can be translated as *appropriate*. Allport (1935) further explains that, "An attitude is a mental or neutral state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all object and situation with which it is related". There are three processes of attitude change; compliance, identification and internalization (Collins and Ashmore, 1970).

The surveys used a five-point Likert scale which was developed in 1932 (Likert, 1932) which measures the interviewees levels of agreement. The survey questions were both negative and positive, written clearly and answerable in present tense to allow farmers to assess their current situation. The available answer categories were as follows:

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

RESULTS

The survey shows that currently there are several supply chains of organic rice in northern Thailand. Of the 87 organic rice farmers surveyed and interviewed, 55% were male and 31% were between the ages of 46 and 55. Sixty-one percent received primary education or lower, 29% had graduated the secondary level while 10% had graduated from a university.

After conducting the in-depth interviews with the farmers, it was found that growing rice organically had been introduced in northern Thailand for about 20 years, previously in 1991. At that time, however, only two farmers or less than two percent were known to apply organic methods and there was little addition to their numbers until 2009 when the number increased to 13 and then jumped to 45 in 2011 (Figure 1). Most of these farmers began using organic methods after attending training sessions that began in 2009 and therefore have 1 or 2 years experience in organic rice farming. In addition one also found that even though the number of farmers who adopt or switch to production of organic rice in northern Thailand has been increasing rapidly in the past few years, there were some farmers who had tried to grow rice organically for a certain period of time and later switch back to non-organic production.

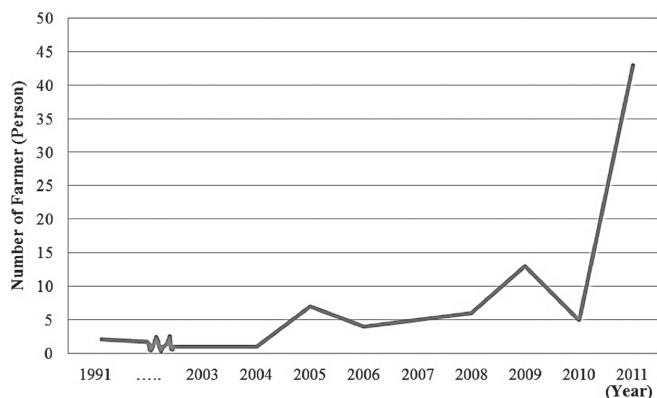


Figure 1. Training expansion of organic rice production (survey conducted in April, 2011)

The majority of the participants commented that “learning by doing” is very important in their decision-making processes. The most relevant source of this is the training sessions with 51% of the participating farmers indicating that training sessions influenced them to begin implementing organic rice-growing methods. 33% stated they were self-motivated and weren’t influenced by other learning resources and, similarly, 28% stated they learned and experimented with organic methods on their own. A much fewer percent of participants cite news journals, newspapers and radio programs as influencing their decision to go organic (Table 1).

Table 1. Learning resources that influenced farmers to grow organic rice (survey conducted in April, 2011).

Influencing learning resource	Number of farmers	Percent
Training conducted by agricultural network	20	51
Self-motivated	13	33
Self-taught	11	28
News journals	5	13
Newspapers	3	8
Radio programs	3	8

When researching the influencing factors that affected the farmers' decision to begin producing organic rice using the Likert scale, five factors were considered.

Social factors

When looking at the list of social factors, the participants showed a mean of 4.7, or strongly agree, that their concern for their own health was a deciding factor to switch to organic rice-growing with a standard deviation of 0.8. Witnessing other organic farmers' success and ability to yield crops and the encouragement from family members also ranked highly with means of 4.2 and 4.1, respectively, or agree. Other highly-ranked factors included the encouragement from an organization, government officials and other farmers. The participants also saw growing organic rice as a good export opportunity with a mean of 4.1 (Table 2).

Table 2. Social factors that influenced farmers to grow organic rice (survey conducted in April, 2011).

Factor	Mean	S.D.	Likert scale rating
Concern for own health	4.7	0.8	Strongly agree
Saw neighboring organic farmers' success	4.2	0.8	Agree
Encouragement from family members	4.1	0.8	Agree
Encouragement from an NGO, related organization	4.1	0.9	Agree
Saw a good export opportunity	4.1	1.1	Agree
Encouragement from government official	4.1	0.9	Agree
Encouragement from other farmers	3.7	1.0	Agree

Economic factors

Economic factors were shown to have steady and strong influences on the participating farmers, as well. The low cost of producing organically grown rice and the agricultural groups' guaranteed buying price of organic rice, which is higher than the government's buying price for rice, both showed to convince the participants to begin growing rice organically with means of 4.4 and 4.4, respectively, or agree. The opportunity to always be able to sell their organic rice to the agricultural groups and the ability to jump over the middle-man and sell directly to consumers were also listed by the participants. Owning their own land is also important as it may take years to free agricultural land of chemicals used by a previous tenant. By owning their own land, the farmers could ensure the rice would truly be grown without the residue of leftover agricultural chemicals (Table 3).

Table 3. Economic factors that influenced farmers to grow organic rice (survey conducted in April, 2011).

Factor	Mean	S.D.	Likert scale rating
Low cost of production	4.4	0.9	Agree
Guaranteed buying price	4.4	0.9	Agree
Buying guarantee from agricultural group	4.3	0.9	Agree
Can sell directly to consumers	4.3	0.9	Agree
Owens their own land	3.9	1.0	Agree

Physical factors

Participants also considered physical factors when making their decision to grow rice organically. They had to evaluate their agricultural area to see if it could meet organic agricultural standards which influenced their decision with a mean of 3.9, or agree, with a standard deviation of

0.9. Organic rice-growers must also have control over the agricultural area's water sources to ensure it is free of chemicals. Participants found this factor as neither agree or disagree with a mean of 3.5 and a standard deviation of 1.1. According to these results, social and economic factors were much more influential to the participants' decision-making processes (Table 4).

Table 4. Physical factors that influenced farmers to grow organic rice (survey conducted in April, 2011).

Factor	Mean	S.D.	Likert scale rating
Appropriate land condition that meet organic agricultural standards for production	3.9	0.9	Agree
Have their own water resources	3.5	1.1	Neither agree or disagree

Biological factors

The biological factor that the participating farmers found most influential was the access to quality rice seeds. If a farmer can plant high-quality rice seeds, it is more likely a high-quality crop will be result. Participants strongly agree with this factor with a mean of 4.3 and standard deviation of 0.6. Other important biological factors include the ease of organic agricultural methods and that organic agriculture successfully dealt with disease and insects (Table 5).

Table 5. Biological factors that influenced farmers to grow organic rice (survey conducted in April, 2011).

Factor	Mean	S.D.	Likert scale rating
High quality of seeds	4.3	0.6	Strongly agree
Ease of organic agricultural methods	4.0	0.7	Agree
Less disease and insects	3.9	0.7	Agree

Production factors

Lastly, the influence of factors that affect production ranked as high with the participants. As organic agriculture requires the farmer to monitor the rice throughout all of its stages, from germination to harvest, to ensure it was free from chemicals, being able to purchase rice seeds instead of seedlings influenced the participants' decision with a mean of 4.2. Participants also cited the high yield of organic rice per each rai of land and the reasonable price of organic rice seeds as an influence with means of 4.1 and 3.7, respectively. Loans made available from the agricultural group for interested farmers were also found to be influences with a mean of 3.5 (Table 6).

Table 6. Production factors that influenced farmers to grow organic rice (survey conducted in April, 2011).

Factor	Mean	S.D.	Likert scale rating
Access to seeds	4.2	0.8	Agree
High yield per rai	4.1	0.7	Agree
Reasonable price of seeds	3.7	0.9	Agree
Loans available from agricultural group	3.5	1.1	Neither agree or disagree

DISCUSSION AND CONCLUSION

The results of this study show that the number of farmers who adopt or switch to production of organic rice in northern Thailand has been increasing rapidly in the past few years. However, there were some farmers who had tried to grow rice organically for a certain period of time and later switch back to non-organic production. In order to secure the success of market growth of organic

rice it is necessary to have steady and secure production growth as well. The aim of this study was to know and understand the factors that influence farmers' adoption of organic rice production. The findings of this study can be use in the planning process to help increase production. They show that training strongly influences decision-making of northern Thai farmers who decided to adopt organic rice-growing methods. The most influential decision factors were training sessions hosted by agricultural groups and to see the success of other organic farmers. Social factors, such as the concern for their health, and economic factors such as a guaranteed access to the market, were also ranked as high influencers. The quality of the available seeds, the access to those seeds and control over the land and water supply were cited as physical and biological influencing factors. In order to expand the organic rice program in northern Thailand, farmers should be encouraged to participate in training sessions that can teach them how to apply organic agricultural methods and other trade tips, such as how to find quality seeds. Building a strong production and marketing network throughout the supply chain also could increase in a sustainable way the future of organic rice in Thailand.

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