Problems, Obstacles, and Approaches to Implement Organic Agriculture Policy: Case Study of Growing Organic Rice at Baan Dong Bang, Nong Bo, Ubon Ratchathani

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Abstract

The research is aimed to investigating the problems and barriers of implementing organic farming policy to the related government offices and to propose the suggestion to these government offices to adjust their approaches to promoting organic agriculture in the province. The qualitative methods of this research included a literature review, focus groups, and in-depth interviews to investigate conventional and organic rice farmers, their problems and obstacles. The interviews also included the problems and obstacles of the provincial agricultural officers and head of Nongbo Subdistrict Administrative Organization to implement organic farming promotion policy in Ban Dong Bang, Mueang District, Mu 8-9, Ubon Ratchathani province. Key informants comprised of conventional and organic rice farmers, provincial agricultural officers, and head of Nongbo Subdistrict Administrative Organization (SAO). The data was gathered, analyzed, triangulated, and returned to the groups of informants for additional comments. Afterward, problems, obstacles, and suggestions were addressed to Ubon Ratchathani Provincial Agriculture and Cooperatives Office.

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The research revealed that non-organic farms had four main problems: water, capital, weeds, and labor. The predominant problems of organic rice farms consisted of four essential elements: water, capital, resources of production materials, and marketing. For policy implementation, there were six problems and obstructions i.e. limitations of organic agriculture technology; lack of assistance to farmers during organic conversion; constraint of numbers of organic inspectors; Multiples standards of organic agriculture; mindset of the agricultural officers and farmers derived from conventional agriculture; and insufficient budget of Nongbo SAO.

Keywords: Organic Agriculture Policy; Government Program on Organic Rice

ปัญหา อุปสรรค และข้อเสนอการนำนโยบายเกษตรอินทรีย์ไปปฏิบัติ: กรณีศึกษาการปลูกข้าวอินทรีย์พื้นที่บ้านดงบัง ต.หนองบ่อ จ.อุบลราชธานี

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บทคัดย่อ

บทความนี้เป็นส่วนหนึ่งของงานวิจัยเชิงคุณภาพโดยมีวัตถุประสงค์ในการนำเสนอ ปัญหาและอุปสรรคของการนำนโยบายการส่งเสริมข้าวอินทรีย์ไปปฏิบัติในภาคการเกษตร และนำเสนอผลการศึกษาและข้อเสนอแนะให้กับหน่วยงานภาครัฐที่รับผิดชอบในการนำนโยบายไปปฏิบัติ เพื่อใช้ในการปรับกลยุทธ์ของแผนยุทธศาสตร์การพัฒนาจังหวัดอุบลราชธานี ข้อมูลในการศึกษาได้มาจากการสนทนากลุ่ม และการสัมภาษณ์เชิงลึกเกษตรกรทั้งที่ปลูกและไม่ปลูกข้าวอินทรีย์ เจ้าหน้าที่สำนักงานเกษตรจังหวัดอุบลราชธานี และนายกองค์การบริหารส่วนตำบลหนองบ่อ อำเภอเมืองจังหวัดอุบลราชธานี รวมถึงการทบทวนวรรณกรรม เอกสารและงานวิจัยที่เกี่ยวข้อง การวิเคราะห์ข้อมูลใช้การจำแนกและการจัดกลุ่มข้อมูลให้เป็นระบบ การวิเคราะห์ข้อมูลโดยอรรถาธิบาย การตรวจสอบข้อมูลแบบสามเส้า และการวิเคราะห์ข้อมูลที่เป็นเอกสาร

ผลการศึกษา พบว่า กลุ่มเกษตรกรที่ไม่ปลูกข้าวอินทรีย์มีสาเหตุมาจากปัญหา 4 ประการ คือ ปัญหาเรื่องน้ำ ปัญหาเรื่องเงินทุน ปัญหาเรื่องวัชพืช และปัญหาแรงงาน ส่วนกลุ่มที่ปลูกข้าวอินทรีย์ประสบปัญหาหลักในการปลูกข้าวอินทรีย์ 4 ประการ คือ ปัญหาเรื่องน้ำ ปัญหาเรื่องเงินทุน ปัญหาปัจจัยการผลิต และปัญหาเรื่องการตลาด ในประเด็นของการนำนโยบายไปปฏิบัติในระดับพื้นที่พบปัญหาอุปสรรค คือ ปัญหาข้อจำกัดด้านเทคโนโลยีทางการเกษตร ปัญหาข้อจำกัดด้านจำนวนผู้ตรวจรับรองเกษตรอินทรีย์ การขาดการสนับสนุนและช่วยเหลือเกษตรกรในช่วงระยะปรับเปลี่ยนไปทำเกษตรอินทรีย์ ปัญหาการมีมาตรฐานเกษตรอินทรีย์ที่หลากหลาย และปัญหาด้านความเชื่อ

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และทัศนคติของเกษตรกรและเจ้าหน้าที่ภาครัฐต่อการทำเกษตรอินทรีย์ และการขาดงบประมาณสนับสนุนด้านเกษตรอินทรีย์ในส่วนขององค์การบริหารส่วนตำบลหนองบ่อ อย่างไรก็ตาม จากปัญหาที่ถูกเสนอโดยเกษตรกรทั้ง 2 กลุ่ม เกษตรกรมองว่าปัญหาสำคัญที่ภาครัฐควรให้ความช่วยเหลืออย่างเร่งด่วน ก็คือ ปัญหาเรื่องการจัดการน้ำและการสนับสนุนด้านเงินทุน

คำสำคัญ: เกษตรอินทรีย์ ปัญหาและอุปสรรคการนำนโยบายเกษตรอินทรีย์ไปปฏิบัติ นโยบายเกษตรอินทรีย์จังหวัดอุบลราชธานี

Overview of Organic Agriculture

The origin of organic agriculture can be traced back to 1,000 year-ago when plantation and livestock relied on natural resources and ecology (Francis and Wart, 2009, p. 3). It can be said that agriculture has become the way of humanity's life since then. Pests and diseases could cause a large scale loss in crop products and it could lead to mass starvation. The first recorded application of inorganic substance such as pesticide is around 4,500 years ago by the Sumerians and about 3200 years ago by the Chinese (International Union of Pure and Applied Chemistry, 2010, p. 1).

"The Green Revolution" of the 1960s was a major breakthrough in agriculture, resulting in an increase in food crop productivity growth for the population. As a result, hybrid seeds, fertilizers and pesticides were created, and various high-yield crops such as cassava, beans, wheat and rice were developed with pest resistance, and fast-growing plant to promote intensive agriculture (The Environmental Literacy Council, 2015) Since the Green Revolution, agricultural output in yields per hectare has increased significantly. However, despite its massive output, many have noted that the Green Revolution resulted in the exposure of toxic pesticides to humans and other non-target organisms, loss of genetic diversity, and decrease of rice field sustainability (Lee 2018, p. 1-2).

The initial rise in organic farming commenced in the early twentieth century in Europe and the United States and its movement was provoked by the problems of chemical agriculture such as erosion, soil depletion and decrease of crop varieties and rural poverty and public awareness of environmental threat from pesticides (Kuepper, 2010, p. 2). The founding of the International Federation of Organic Agriculture Movements (IFOAM) in 1972 was the landmark of contributing and advocating organic agriculture. Moreover, in the European Union, small farmers were stimulated to convert to organic farming by policy instruments (FAO, n.d., p. 3)

What is Organic Agriculture

According to Food and Agriculture Organization of the United Nations (FAO), organic farming refers to,

"... a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system." (Food and Agriculture Organization of the United Nations, 1999)

Codex Alimentarius Commission (as cited in United Nation, 2014, p. 1) defined organic farming that is holistic produce management which promotes health of agricultural ecological system including biological diversity, biological cycle, and biological reaction.

In April, 1995, National Organic Standards Board –NOSB (2018, p. 1) referred to organic farming as ecological produce management promoting and boosting biological diversity, biological cycle, and biological reaction of soil to restore, maintain, and foster ecological linkage by applying the least outside factors of production. Organic products means the materials used and activities applied to nurture the balance of natural ecology and the overall farming system. Organic farming does not guarantee the products will be absolutely free from contaminants. Rather, organic produce will contain less chemical residues from air, soil, and water. In addition, transporters, processors, and merchants have to perform according to organic standards to maintain the integrity of organic agricultural products.

Brief Situation of Organic Agriculture in Thailand

The "Green Revolution" in the 1960s has not replaced all traditional farms in Thailand. Organic farming techniques became popular during the 1980s, often through non-governmental organizations (NGOs) which played an important role in introducing organic agriculture to Thailand. The knowledge and experience of organic farming was shared through the Alternative Agriculture Network (AAN), a national network founded by farmers and local NGOs that advocated for

sustainable agriculture, to other NGOs and farmer leaders (Win, 2016, p. 1).

Organic conversion arrangements and organic farming technologies were developed by NGOs under AAN to promote sustainable farming practices. In addition, a fair-trade program for domestic and foreign markets was introduced by some NGOs to small-scale manufacturers and marginalized agriculturists. Later on in the mid 1990s a national organic certification body was created. Many organic projects have been initiated by a dominant private sector which foresaw the business opportunities in organic market (Thai Organic Trade Association, 2011, p. 1)

In terms of policy, organic agriculture was adopted on the national agenda since 2005 (Chinvarasopak, 2015, p. 107). The organic agriculture policy was included in the Twelfth National Economic and Social Development Plan (2017-2021) (Loichuen, 2016). It can be said that presently organic farming *has* become a major *policy* to illustrate ongoing implementation of the first and the second national Strategic Plan for Organic Agriculture Development from 2008 till 2021. Data from the National Organic Agriculture Committee (2017, p. 38-39) stated organic farmland in Thailand from 2011-2015 amounted to 0.218, 0.204, 0.211, 0.236, and 0.285[1] respectively.

Policy Related to Organic Agriculture

Government policy promoting organic farming during the period of doing the research was Twelfth National Economic and Social Development Plan (2017-2021) and National Strategic Plan for Organic Agriculture Development (2017-2021). Five million rais of sustainable agriculture was set as a goal under Prime Minister Prayuth Chan-O-Cha. The target was to convert conventional farming to sustainable agriculture such as natural agriculture, organic agriculture, integrated farming, new theory *agriculture*, agroforestry, and Buddhist agriculture. According to the National Strategic Plan for Organic Agriculture Development (2017-2021), there are four main strategies:

[1] Unit: Million Rai

(1) strategy for promoting research to establish and diffuse a body of knowledge on organic farming innovations, such as plant species and factors of production (413 million baht of budget);

(2) strategy for developing organic farming products and services such as producing factors of production, promoting the production of organic fertilizer, promoting planting organic rice and organic husbandry (863 million baht of budget);

(3) strategy of developing the marketing of products and services and organic agriculture certification i.e. developing standards and systems of organic farming certification to raise the standard of organic agricultural products (106 million baht of budget);

(4) strategy of increasing the adoption of organic agriculture (15 million baht of budget).

In accordance with this strategy, farmers are divided into three groups according to where markets and channels to marketing promotion is provided for them. Group 1 includes farmers who are non-organic farmers without the background and knowledge of organic farming. Factors of production and basic knowledge of organic farming are provided to them. Group 2 includes farmers with a background and knowledge of organic farming, and who are ready to continue building their knowledge. Group 3 includes farmers with certified organic farming certification. (Ministry of Agriculture and Cooperatives, 2018, p. 1; Daily News, 2017, p. 1)

Policy Window is Open

In Ubon Ratchathani province, there are approximately four million rai of rice fields (Ubon Ratchathani Provincial Agriculture and Cooperatives Office, 2017) but the number of organic farming area in 2018 was only around 52,393 rai or about 0.53% (Ubon Ratchathani Provincial Agriculture and Cooperatives Office, 2018, p. 5). According to the Ubon Ratchathani Provincial Agriculture and Cooperatives officer (2017), during 2015-2018, the funding allocated for organic agriculture for Ubon Ratchathani province came principally from three principal budgets: budget of

Ubon Ratchathani development, budget of Department of Agriculture Extension, and development budget of province group in the lower part of the northeastern region. The budget of Ubon Ratchathani development amounted 8,725,000 baht each year in 2015 and 2016. The budget of Department of Agriculture Extension in 2016; 2017; and 2018 amounted to 210,000 baht; 1,016,000 baht; and 90,000 baht respectively. The development budget from province group in the lower part of the northeastern region amounted to 62,903,000 baht in 2017 (1,600,000 baht of organic rice promotion; 31,451,500 baht of organic vegetable promotion; and 31,451,500 baht of organic herb promotion) (Lapol, 2018). In 2014 Ubon Ratchathani provincial governor Wanchai Sutthiworachai announced the provincial agenda "Ubon Ratchathani, City of Organic Agriculture" with the goal of increasing the organic farming area by 1 per cent by 2021 (National Health Assembly, 2017, p. 7 and 9) The budget information mentioned above presents several interesting questions: why was the organic farming area of Ubon Ratchathani province in 2018 is only about 0.53% of total rice field and why were farmers in Ubon Ratchathani seemingly not interested in converting from chemical rice farming to organic rice farming despite political and policy opportunities to do so (Setthasurawit, 2015, p. 311)? There were already organic agricultural policies at the national and local level, and a large proportion of area budgets was allocated towards promoting organic agriculture in the province. Likewise, there was at the time strong domestic and international demand for these types of products and higher prices for organic products.

This qualitative research aimed to investigate the barrier of implementing organic farming policy to the related government offices and to propose the suggestion to these government offices to adjust their approaches to promoting organic agriculture in the province.The methods of this research included literature review, focus groups, and in-depth interviews to investigate conventional and organic rice farmers, their problems and obstacles. The interviews also included the problems and obstacles of the provincial agricultural officers to implement organic farming promotion policy in Ban Dong Bang, Mueang District, Mu 8-9, Ubon Ratchathani province. Key informants comprised of conventional (15 persons)

and organic rice farmers (15 persons), provincial agricultural officers (3 persons), and an officer from Nongbo Subdistrict Administrative Organization (1 person). The organic and non-organic rice farmers were excellent local resources and informed us of the problems and obstacles of organic agriculture that they encountered. Provincial agricultural officers and Head of sub-district administrative organization highlighted further challenges and obstacles of promoting organic agriculture in Ubon Ratchathani province. The data was gathered, analyzed, triangulated, and returned to the groups of informants for additional comments. Afterward, problems, obstacles, and suggestions were addressed to Ubon Ratchathani Provincial Agriculture and Cooperatives Office.

Problems and Obstacles of Organic Agriculture of Ban Dong Bang, Ubon Ratchathani

The problems, obstacles, and suggestions of the research could be classified into 4 main groups according to key information gathered informants: (1) non-organic rice farmers at Ban Dong Bang; (2) organic rice farmers at Ban Dong Bang; (3) Ubon Ratchathani Provincial Agriculture and Cooperatives officers; and (4) Nongbo Subdistrict Administrative Organization officers.

(1) Non-organic rice farmers at Ban Dong Bang

From in-depth interviewing and conducting the focus group, the problems and obstacles of non-organic rice farmers consisted of three dominant aspects: (1) upland rice field *water scarcity* and flooded-low land rice fields; (2) lack of economic capital to invest towards organic conversion; and (3) lack of labor and time to care for the rice crop.

The physical landscape of Ban Dong Bang has distinctive characteristics including upland and lowland areas. Water was one of the several problems affecting organic agriculture in this area inasmuch as there were both problems of water scarcity in highland rice fields and the risk of flooding in low land rice fields. There is no agricultural irrigation system at the highland rice fields and farmers

primarily rely on rainwater. Low land rice fields were flooded during some rainy seasons, preventing a rice crop and farmers could cultivate rice solely a few months each year when water levels subsided. The farmers said irrigation system needed to be expanded and better water management from Lam Se Bai River is needed by Royal Irrigation Department and Department of Water Resource to support both highland rice field farmers who are converting to organic farming, and non-organic farmers.

Nevertheless, at low land rice fields, the farmers were still concerned that their fields would not be suitable for organic farming since most of the rice fields in this village were chemical agriculture and according to item 2.8.2 of Organic Agriculture Certification Thailand organic standard (ACT) standard, it could cost the farmer a large amount of money to convert to organic farming.

> "When there is high risk of chemical or heavy metal contamination, both from external factors and historical use of chemicals or inputs in the farm, the producer shall permit ACT to sample water, soil or products for verifying a contamination *at the expense of the producer."* (Italic letter by author)

Economic capital toward organic conversion consisted of two aspects: cost of enhancement of the rice field buffer and cost of water supply. The enhancement of the buffer was important in this village on account of most of conventional agriculture in the area. Hence the farmers who needed to covert to organic farming would enhance their rice field buffers at least one meter width to prevent chemical pollutant, according to item 2.8.1 of ACT,

> "When organic field could be contaminated with chemicals from adjoining conventional field and any sources of pollution and contamination, the producer shall set up buffer area to prevent chemical contamination. The buffer area shall have at least 1 meter width." (Organic Agriculture Certification Thailand, p. 23)

Another problem and obstacle was the cost of the agricultural water supply and water system. As mentioned above irrigation systems did not cover all the rice fields at Ban Dong Ban and in the farmers' perspectives, it was not worth it to pump the water from far-reaching water delivery systems to their rice fields. Hence, the farmers who need to transform into organic agriculture would have the cost of groundwater well drilling and electricity for water pumping to farm for organic farming which demands more water for flooding for weed and insect management instead of herbicide and pesticide application or hand weeding. The farmers whose farms are nearby the irrigation system still would have cost of water pumping from the irrigation source to their rice fields. With respect to the problem of economic capital toward organic conversion, an organic agriculture fund should be raised by related offices i.e. Ministry of Agriculture and Cooperatives, Bank for Agriculture and Agricultural Cooperatives, and Ubon Ratchathani Provincial Agriculture and Cooperatives Office to allocate grants and interest-free loans to farmers who want to start growing organic produce.

Last but not least, this problem was labor and time shortage for rice care which related to agricultural water supply. In case of limited water resource, the farmers said, "Rice plant could not grow as well as weeds and labor was needed for hand weeding". In addition, if we compare, organic farming required much more involvement in farming and labor-intensive tilling and the cultivating. The farmers said that comparatively in the same rice field land, the amount of organic fertilizers applied in the farm was more than chemical fertilizers and it meant the extent of labors and time were greater for organic farming . This issue was connected to farmers' economic circumstance that they had other permanent jobs besides farming; resulting in a lack of time devoted to their rice fields. They believed that the rice plants could grow rapidly with chemical fertilizers and they did not have to waste their time hand weeding and needed less labor and time as mentioned before. In farmers' view organic fertilizer could not be as effective and efficient as chemical fertilizers in the same amount. New technology such as labor-saving agricultural technology should be researched and developed, and effective, economical, and convenient organic pesticides and herbicides formulation or

technology should be invented by Department of Agriculture, Agricultural Technology and Sustainable Agriculture Policy Division, Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives, and Ubon Ratchathani Provincial Agriculture and Cooperatives Office. New technology, innovation, and knowledge must be disseminated to organic and non-organic farmers

The summary of problems, obstacles, and suggestions of non-organic farmers were presented below.

Informants	Problems and Obstacles	Suggestions	Responsible Office
Non-organic rice farmers	1. Upland rice field *water scarcity* and flooded-low land rice fields	Agricultural water management and agricultural irrigation system expansion by managing water from Lam Se Bai river which is the branch of Mun river	- Royal Irrigation Department - Department of Water Resource
	2. Lack of economic capital to invest towards organic conversion 2.1 Cost of enhancement of rice field buffer	Organic agriculture fund raising fund raising by the government to allocate grants and interest-free loans to farmers who want to start growing organic produce.	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office - Bank for Agriculture and Agricultural Cooperatives
	2.2 Cost of Agricultural Water Supply and Water System	Organic agriculture fund raising by the government to allocate grants and interest-free loans to farmers who want to start growing organic produce.	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office - Bank for Agriculture and Agricultural Cooperatives

Informants	Problems and Obstacles	Suggestions	Responsible Office
	3. Labor and time shortage for rice care 3.1 Time-consuming weed and insect elimination	Development of effective, economical, and convenient organic pesticides and herbicides formulation or technology and dissemination of them to non-organic farmers	- Department of Agriculture - Agricultural Technology and Sustainable Agriculture Policy Division, - Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office
	3.2 Time-consuming soil maintenance and nourishment	Development of effective, economical, and convenient organic fertilizer formulation or technology and dissemination of them to non-organic farmers	- Department of Agriculture - Agricultural Technology and Sustainable Agriculture Policy Division - Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office

(2) Organic rice farmers at Ban Dong Bang

The problems and obstacles that organic rice farmers encountered include three main dimensions: (1) in- conversion organic products; (2) inadequate source of resources for organic production; and (3) need of organic agriculture capital.

During the conversion phase from chemical agriculture to organic agriculture, the rice farmers found the problem when their rice prices could not be sold at the same price as certified organic rice; even though they had economic and social capital toward organic conversion. Eventually, they had to sell their products at the price of chemical rice products to mills on the grounds that the rice products could not be stocked and held till the rice price rose because of their daily expenses and debts. The farmers need the government office to solve this problem. Financial compensation and aids or supplementary payment during conversion should be taken into account for farmers transforming their fields to organic farming. In addition, another alternative policy is that price of in-conversion organic products should be set higher than conventional rice but not as much as organic rice like the Organic Agricultural Cooperative in Ubonratchathni province did with its cooperative members. Financial compensation for losses incurred during conversion should be provided by Ministry of Agriculture and Cooperatives and Ubon Ratchathani Provincial Agriculture and Cooperatives Office.

Factors of production such as rice seed and fertilizers were another paramount material of organic agriculture. From in-depth interviewing, the farmers relayed that there was deficient information on where they could purchase organic rice seed in Ubon Ratchathani province. Hence they had to buy the seeds from Yasothon province which put them to a lot of expense. The organic seed distributed by government offices was insufficient and delivery was delayed. Raw materials used for organic fertilizer i.e. cattle and poultry excrement availability was likewise difficult to access, particularly cow and buffalo excrement because cattle ranching was rare in the village. Poultry excrement was replaced by the cattle excrement; however, according to organic standard item 2.5.8, the poultry manure or farm animal by-products was brought from farms where all animals are raised in free-ranged areas.

> "In case of using brought-in poultry manure or farm animal by-products, they shall be brought from farms which all animals are raised together in free-ranged areas. To raise animals in the limited areas may let them growing up in an unnatural environment. The producer shall inform ACT the source of the manure." (ACT, 2017, p. 19)

The farmers suggested that government offices such as the Ubon Ratchathani Rice Seed Center and Ubon Ratchathani Provincial Agriculture and Cooperatives Office should support the factors of production like providing organic rice seed and organic fertilizers in timely and efficient manner to decrease the cost of organic agriculture for them.

Another problem and obstacle for organic rice farmers was the need for economic capital similar to the support provided to non-organic, namely cost of field buffer and cost of water supply. Organic rice farmers who shifted to organic farming had to borrow money to enhance their rice field buffers and groundwater well drilling as well as pay for the cost of electricity for water pumping. These were the same problems and obstacles non-organic rice farmers faced, and this hiked up their household debts which are already elevated. To a greater extent, after improving their buffers, field buffer maintenance was demanded occasionally as buffer erosion by natural or human causes occurred. To relieve this problem, organic agriculture fund should be raised by related government agents such as Ministry of Agriculture and Cooperatives, Ubon Ratchathani Provincial Agriculture and Cooperatives Office, and Bank for Agriculture and Agricultural Cooperatives to allocate grants and interest-free loans to organic farmers to expand their operations. The problems, obstacles and suggestions of non-organic farmers were summarized below.

Informants	Problems and Obstacles	Suggestions	Responsible Office
Organic rice farmers	1. In-conversion organic products	- Financial compensation for losses incurred during conversion - Market for in-conversion organic products	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office - Ubon Ratchathani Chamber of Commerce
	2. Inadequate sources of organic production materials	- Supply the factors of production such as organic rice seeds and organic fertilizers timely from related offices to organic farmers - Educating organic farmers on the correct method to keep their own rice seed - Educating organic farmers how to make organic fertilizers correctly	- Rice Department - Ubon Ratchathani Rice Seed Center - Ubon Ratchathani Provincial Agriculture and Cooperatives Office
	3. Need of economic capital	- Organic agriculture fund raising by the government to allocate grants and interest-free loans to organic farmers to expand their operations	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office - Bank for Agriculture and Agricultural Cooperatives

(3) Ubon Ratchathani Provincial Agriculture and Cooperatives officers

In terms of government agency, Ubon Ratchathani Provincial Agriculture and Cooperatives Office was the unit which mainly promotes organic agriculture. The problems, obstacles, and suggestion of provincial agricultural officers to implement organic agriculture promotion consisted of 5 aspects: (1) Limitations of organic agriculture technology (2) lack of support of farmers during organic conversion (3) constraint of numbers of organic inspectors (4) limited supply of organic rice seed and (5) multiple standards of organic agriculture.

Ubon Ratchathani Provincial Agriculture and Cooperatives officer mentioned the problem of limitations of organic agriculture technology. The officer said there were insufficient technological invention and innovation in organic agriculture in Thailand; meanwhile, organic substances like pesticides and herbicides were not as efficient and effective as chemical ones. The officers expressed opinion, "If an organic substance as efficient and economical as chemical products were available utilizing the same coverage, for sure farmers would convert to organic farming." Department of Agriculture, Agricultural Technology and Sustainable Agriculture Policy Division, Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives, and Ubon Ratchathani Provincial Agriculture and Cooperatives Office should play important roles to develop effective, economical, and convenient organic pesticides and herbicides formulation or technology. Research and development of technology and innovation to labor-saving agricultural technology should be promoted and new knowledge and technology must be diffused to both organic and non-organic farmers.

Conversion period of crops was another considerable problem since a 3 -year transition phase was required before the crops obtained organic certification. According to ACT standard (2017) item 2.1.4 and 2.1.5, it said,

> "For organic crop production intended to export to the European Union, the conversion period for annual crops are 24 months, biennial crops 24 months and perennial crops 36 months.

(item 2.1.4).” And “If prohibited input was applied in the farm before date of application with ACT, crop to be sold as organic must be harvested after 36 months since the last use of prohibited input. (item 2.1.5).”

The officers accepted that Ubon Ratchathani Provincial Agriculture and Cooperatives office and the government do not have any policies and projects to assist the farmers and to solve this problem and the farmers had to strive to solve this problem by finding new market channels and product aggregation for sale through groups. The recommendation is that support of farmers during organic conversion should be established in terms of financial compensation for losses incurred during conversion by Ministry of Agriculture and Cooperatives and Ubon Ratchathani Provincial Agriculture and Cooperatives Office. Market for in-conversion organic products should be considered by Office of Commerical Affairs Ubon Ratchathani. Constraint of numbers of organic inspectors was referred to as crucial problems and obstacles to promote organic agricultural policy. The officer said that large numbers of farmers were waiting for organic inspection; however, there were insufficient inspectors on the account of only qualified inspectors from Department of Agriculture and Rice Department and not more than 1,000 farmers have received organic inspection annually. Ubon Ratchathani Provincial Agriculture and Cooperatives officer said District Agricultural officers were qualified as much as inspectors from Department of Agriculture and Rice Department. To increase a number of organic inspectors, district agricultural officers should be approved by the Ministry of Agriculture and Cooperatives to qualify as organic inspectors. Outsourcing to private organic inspectors should also be considered an option, and local people can be trained to become organic inspectors if they satisfy the domestic accreditation by Ubon Ratchathani Provincial Agriculture and Cooperatives Office.

Limited supply of organic rice seed created another problem and obstacle. According to ACT standard (2017) seed and plant breeding must be from organic agriculture and if organic seed is not available, seed or plant propagation must be

either from certified organic field in conversion phase or from other organic certifications. In case that the above organic seed or plant propagation is unavailable, non-organic seed or plant propagation that have not been treated by forbidden substances prohibited in organic agriculture could be applied but the treated seeds must be cleansed before sowing. This standard showed that organic seed and plant reproduction is significant to organic agriculture. Ubon Ratchathani Provincial Agriculture and Cooperatives officer mentioned rice seeds from Rice Department were under chemical process; however, the Rice Department could offer the organic rice seeds to any government offices which requested them. Hence, Ubon Ratchathani Provincial Agriculture and Cooperatives office should ask the Rice Department for quota of organic rice seeds of Ubon Ratchathani province to boost organic agriculture and to lower organic farmers'cost. Moreover, outsourcing organic rice seeds from public or private companies and educating organic farmers-saved seeds for domestic usage or sale should be considered.

With respect to organic agricultural standards of Thailand, there was a variety of organic agricultural standards, e.g., GAP (Good Agricultural Practice), Organic Thailand, and PGS (Participatory Guarantee System); nevertheless, Ubon Ratchathani Provincial Agriculture and Cooperatives officer said even if Thai agricultural products were certified organically by government offices, they still had to be inspected and certified by international organic organizations for export; for instance, International Federation of Organic Agriculture Movements (IFOAM), The National Organic Program (NOP), Canada Organic Regime (COR), and JAS (Japanese Agricultural Standard). It cost a fortune for the farmers and wasted time to get duplicate organic certifications. Internationally accepted organic agricultural standards of Thailand and national organic agricultural standards of Thailand should be developed by Ministry of Agriculture and Cooperatives for international trade of organic products and organic products in the domestic market respectively.

Moreover, Mindset of the agricultural officers and farmers derived from conventional agriculture played an important role in problems and obstacles of implementing organic farming promotion policy as well. The agricultural officers

have been advised on conventional advice for many years, they might be doubtful to adjust to organic method (IFOAM, 2017, p. 64)

Cox (2014) said that the mindset of the farmer is ultimately significant to beginning and to carrying out the practices of a sustainable agriculture. Ubon Ratchathani agricultural officer accepted that for years agricultural officers supported and promoted the farmers to use chemicals in agriculture and it took time for farmers and agricultural officers to shift the paradigm to organic agriculture. Some members of government agricultural professionals still had negative attitudes toward organic farming which affected the effectiveness and efficiency of implementing organic farming promotion policy. The problems, obstacles, and suggestions of provincial agricultural officers to implement organic agriculture promotion could be summed up in the following table.

Informants	Problems and Obstacles	Suggestions	Responsible Office
Provincial agricultural officers	1. Limitations of organic agriculture technology	- Development of effective, economical, and convenient organic pesticides and herbicides formulation or technology - Research and development of technology and innovation to labor-saving agricultural technology - Dissemination of knowledge and technology to organic and non-organic farmers	- Department of Agriculture - Agricultural Technology and Sustainable Agriculture Policy Division - Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office
	2. Lack of providing assistance to farmers during organic conversion	- Financial compensation for losses incurred during conversion - Market for in-conversion organic products	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office - Office of Commerical Affairs Ubon Ratchathani
	3. Constraint of numbers of organic inspectors	- Approval for district agricultural officers to qualify for organic inspectors - Outsourcing of private organic inspectors - Training local people to be organic inspectors	- Ministry of Agriculture and Cooperatives - Ubon Ratchathani Provincial Agriculture and Cooperatives Office

Informants	Problems and Obstacles	Suggestions	Responsible Office
	4. Limited supply of organic rice seed	- Integrated cooperation in organic farming between department of agriculture to supply organic factors of production - Outsourcing of organic rice seeds from public or private companies - Educating organic farmers-saved seeds for domestic usage or sale	- Rice Department - Ubon Ratchathani Rice Seed Center - Related department of agriculture
	5. Multiples standards of organic agriculture	Development of internationally accredited-organic standard of Thailand	- Ministry of Agriculture and Cooperatives

(4) Nongbo Subdistrict Administrative Organization officer

The head of the local government office at Nongbo Subdistrict Administrative Organization (SAO) was interviewed and he informed that Nongbo SAO has a small budget. Even if organic agriculture at Ban Dong Bang was recognized by the local government; however, because the SAO budget was limited and budget priorities usually pinpointed the infrastructure; therefore, the money was not allocated to organic farming projects. If there was a project to support agriculture, it was budgeted by the government office such as Project 9101, organic fertilizer making activity honoring HM the late King.

Future Prospects and Challenges of Organic Agriculture in Ubon Ratchathani

From the author's working experience, the prospects for organic farming in Ubon Ratchathani are becoming brighter since according to Organic Agriculture Cooperative, there are cooperative members who are organic farmers from 8 districts: Samrong, Phibunmansahan, Trakarn Phutphon, Phosai, Tansum, Muang, Na Yia, and Warinchamrap. In addition, many public and international projects have been operated to promote organic agriculture; for example, project of Empowerment Small - Scale Farmers in Climate Change Risk Reduction and Improve Food Security through Promotion Farming in Ubon Ratchathani (2013-2017) funded by European Union, project of Promoting Safety Food Production and Consumption to Establish Healthiness of Ubon Ratchathani Communities (2018-2019) funded by Thai Health Promotion Foundation.

Nevertheless, from the research results, the problem and obstacles of practicing and promoting organic agriculture were found and could be grouped into 4 categories as followed:

1. Farmer problems: mindset of the farmers derived from conventional agriculture; farmers' economic problems including cost of enhancement of rice field buffer and cost of agricultural water supply and water system: and labor and time shortage for rice care comprising time-consuming weed and insect elimination

and time-consuming soil maintenance and nourishment

2. Problems of production process: agricultural water management, agricultural irrigation system and inadequate sources of resources for organic production

3. Problems of organic agriculture certification: constraint of numbers of organic inspectors; and variety of organic agricultural standards

4. Problems of organic agriculture promotion: mindset of the agricultural officers derived from conventional agriculture; lack of policy to solve farmers' problems during organic conversion; and marketing for in-conversion organic products; limitations of organic agricultural technology; and limited supply of organic rice seeds

The findings reflected the similar problems and obstacles in seven elements from literature reviews: organic farming mindset of non-organic farmers; marketing problems; farmers' economic problems; inadequate source for resources of organic production; variety of organic agricultural standards; and limitations of organic agricultural technology

Organic farming mindset of non-organic farmers at Ban Dong Bang was similar to the findings of Yossuk and Kawichai (2017). The non-organic farmers at Ban Dong Bang became acclimated to conventional agriculture and chemical fertilizers reduced their time-spending on rice fields. Moreover, some believed that chemical fertilizers were not as hazardous as pesticides and weed killers. Moreover, this research revealed that the organic farming mindset of agriculture officers was the problem and obstacle of organic farming promotion as well as long as some officers' inclination favored chemical agriculture. As mentioned above, the agriculture officers accepted the officer's attitude toward organic farming as another obstacle to overcome.

Marketing problems were congruent with the research results of ASSOCHAM (n.d., p. 10); however, most findings were emphasized on the marketing of organic products. The marketing of in-conversion organic products was accentuated in this

research since during the period of conversion of farmers to organic agriculture they had economic and social capital outlays toward organic transition; however, their rice could not be sold at the same price as certified organic rice.

The farmers' economic problems were the finding at Ban Dong Bang as well. ASSOCHAM mentioned that the organic sector in India calls for the development of easing access to finance. The problems that farmers at Dong Bang encountered were the cost of enhancement of rice field buffer, the cost of agricultural water supply and water system. In terms of the problem of inadequate source of resources for organic production corresponded with the results of P.Sivaraj et al. (2017, p. 1272). The farmers at Ban Dong Bang demanded a source of organic rice seeds and organic fertilizers to reduce the cost of farming.

The problems of many organic agricultural standards in Thailand and limitations of organic agriculture technology was stated by Ubon Ratchathani agriculture officers which corresponded with research findings of Yodsuk and Khawichai (2017). Even if there were many problems and obstacles of conducting and converting to organic agriculture, from the last meeting to return data to the groups of informants for additional comments, the farmers came to a consensus that they needed the government agencies to provide them financial aids and to develop agricultural water management and agricultural irrigation system to promote organic farming at Ban Dong Bang as the first priority.

From the research findings at Ban Dong Bang, it can be remarked that some guidelines for public support to organic agriculture from IFOAM in September 2017 can be adopted if the central and local government helps address the challenges and obstacles identified. Four possible support measures according to IFOAM could be applied to promote organic farming (IFOAM, 2017) as follows:

(1) Support the main areas of research and expansion of organic agriculture

Both farmers and agricultural officers highlighted the limited availability of organic agriculture technology as one of the challenges they faced. According to Panyakul (2010), the primary challenge of Thai organic research is that, regardless

of whether the research came from public, private, or non-profit sectors, organic research was often divorced from the needs of farmers. He proposed that research funding agencies should prioritize research questions that are developed in consultation and colloquy with farmers. Better mechanisms for disseminating agricultural research results to farmers should be established as well.

Organic research and expansion can deal with this challenge by looking at, for example research grants for organic agriculture; budget allocation at least 10% of the total agricultural research budget to organic farming; and funding for organic research projects. Organic research is supposed to develop organic agriculture field technology and organic food, and to promote these innovations to policymakers. Research and development is meant to deal with agronomic or technical problems and also to contrive more effective policies (IFOAM, 2017, p. 49, 54, 55, 56, and 59).

(2) Support for organic input development and use

Organic farmers complained about inadequate sources of organic production materials while agricultural officers noticed the limited supply of organic rice seed. Organic input development and use can be administered in various arrangements to solve this problem. To illustrate, production facilities for organic input should be established and provides no-cost or subsidized inputs to producer, such as fertilizers, soil conditioners, and plant protection products. In addition, local working groups should be promoted to increase the domestic supply of organic feed and seed. (IFOAM, 2017, p. 65, 66, 68, and 69)

(3) Support to certification of a big group of producers

Agricultural officers raised the issue of the limited number of organic inspectors. Certification of a big group of producers with Internal Control System (ICS) can be used as an alternative to tackle the problem by subsiding or funding farmer groups to set up Internal Control Systems for group certification (IFOAM, 2017, p. 71, 72, 73, and 75) . According to IFOAM, ICS is,

> "...the part of a documented quality assurance system that allows an external certification body to delegate the periodic inspection of individual group members to an identified body or unit within the certified operator. This means that the third party certification bodies only have to inspect the well-functioning of the system, as well as to perform a few spot-check re-inspections of individual smallholders." (IFOAM 2019, p. 1)

(4) Conversion and maintenance area payments for organic production

Organic and non-organic farmers including agricultural officers also noted the lack of economic capital to invest towards organic conversion and maintenance. Conversion and maintenance area payments for organic farming should be employed to solve the problem. Since 2017 the government subsidy has been given solely on three-consecutive-year subsidy to farmers in conversion to organic agriculture (National News Bureau of Thailand, 2018, p. 1). The payments should be conditioned to farms for at least 5-10 years. The conversion payment rates will be higher than maintenance payment rates because the income loss from not being able to sell produce as organic is included. The subsidy should be covered a variety of costs, such as input purchase, harvesting, certification, and transportation costs. (IFOAM, 2017, p. 87, 89, 94, 126, and 129)

The requirement for the long-term sustainability of organic agriculture in Ubonratchani province is dependent on the integrated action plan between central, regional, and local government and related stakeholders in the province. A change in mindset of local officers on organic agriculture will help to sustainably promote organic farming in the province.

References

ASSOCHAM (n.d.). *The Indian Organic Market A New Paradigm in Agriculture*. Retrieved August, 13, 2019, from https://www.ey.com/Publication/vwLUAssets/ey-the-indian-organic-market-report-online-version-21-march-2018/$File/ey-the-indian-organic-market-report-online-version-21-march-2018.pdf

ครม.เทงบ 1.3 พันล้านพัฒนาเกษตรอินทรีย์ 185 โครงการ (*Cabinet Used 1.3 Billion Baht to Develop 185 Organic Agriculture Project*). (2017, August 22). *Daily News*. Retrieved from https://www.dailynews.co.th/politics/593528

Chinvarasopak, Pasupha. (2015). Key factors affecting the success of organic agriculture in Thai communities: Three case studies in Ubon Ratchathani and Srisaket provinces. *Thai Journal of Public Administration*, Year 13, No. 2 July-December 2015, 105-130.

Cox, T.E.B. (2014). *Integral Agriculture: Taking seriously the mindsetof the farmer, the interiority of the beings on the farm, and a metaphysics that connects them* (doctoral dissertation). Iowa State University, USA. https://lib.dr.iastate.edu/etd/14091/

Department of Internal Trade. (n.d.) กระทรวงเกษตรและสหกรณ์ เตรียมขับเคลื่อนพัฒนาแนวทางเกษตรอินทรีย์ ตามยุทธศาสตร์พัฒนาเกษตรอินทรีย์แห่งชาติ (Ministry of Agriculture and Cooperatives Advocated Organic Agriculture According to Organic Strategy Plan). Retrieved August 13, 2019, from http://www.organic.moc.go.th/th/news/กระทรวงเกษตรและสหกรณ์-เตรียมขับเคลื่อนพัฒนาแนวทางเกษตรอินทรีย์

Food and Agriculture Organization of the United Nations. (1999). *What is organic agriculture?* Retrieved September 14, 2018, from http://www.fao.org/organicag/oa-faq/oa-faq1/en/: http://www.fao.org/

Food and Agriculture Organization of the United Nations. (n.d.) *General Concepts and Issues in Organic Agriculture*. Retrieved August 14, 2019, from http://www.fao.org/3/y4137e/y4137e01.htm

Francis, Charles & Wart, V.Justin. (2009). History of Organic Farming and Certification. In Charle Francis (Editor), *Organic Farming: The Ecological System, Agronomy Monographs 54 ix-xiii* (p. 3). Madison: American Society of

Agronomy, Crop Science Society of America, Soil Science Society of America.

International Federation of Organic Agriculture Movement. (2017). *Guidelines for public support to organic agriculture*. Retrieved August 14, 2019, from https://www.ifoam.bio/sites/default/ files/policy_toolkit_main_report.pdf

International Federation of Organic Agriculture Movement. (2019). *Internal Control Systems (ICS) for Group*. Retrieved August 14, 2019, from https://www.ifoam.bio/en/internal-control-systems-ics-group-certification

International Union of Pure and Applied Chemistry. (2010, May 10). *History of Pesticide Use.* Retrieved September 2018, 13, from https://agrochemicals.iupac org/index.php? option=com_sobi2&sobi2Task=sobi2Details&catid=3&sobi2Id=31

Kuepper, G. (2010). *A Brief Overview of the History and Philosophy of Organic Agriculture.* Oklahoma, The United State of America: Kerr Centre for Sustainable Agriculture.

Lapol, A. (2018, July 29). Personal interview.

Larkin Jr., P.J. (2012). John Kingdon's "Three Streams" Theory and the Antiterrorism and Effective Death Penalty Act of 1996. *Journal of Law & Politics*, *28*(1), 25-50.

Lee, Kevin. (2018). Harmful Effects of the Green Revolution. Retrieved August 13, 2019, from https://sciencing.com/pros-cons-herbicides-4925.html

Ministry of Agriculture and Cooperatives. (2018). *กระทรวงเกษตรฯ ขับเคลื่อนการพัฒนาเกษตรอินทรีย์ปรับเปลี่ยนจากยึดหน่วยงาน เป็นยึดพื้นที่เป็นหลัก (Ministry of Agriculture and Cooperatives Shifted the Movement of Organic Agriculture Promotion from Government Office-Oriented to Area-Oriented).* Retrieved August 13, 2019, from https://www.moac.go.th/news-preview-401391791603

National Health Assembly. (2017). Ubon Ratchathani Health Assembly: Ubon Ratchathani City of Organic Agriculture Innovation of Social Movement to Advocate Participatory Health Policy. Bangkok: National Health Assembly.

National News Bureau of Thailand. (2018). กรมการข้าว มอบเงินอุดหนุนเกษตรกรในมหาสารคาม ไร่ละ 2,000 บาท ตามโครงการผลิตข้าวอินทรีย์ 1 ล้านไร่ (Rice Department Gave Subsidy 2,000 Baht/Rai to Support the Farmers in Mahasarakham According to Project of 1 Million Rai of Organic Rice Production). Retrieved August 13, 2019, from http://thainews.prd.go.th/th/news/print_news/ WNEVN 6104050010006)

Organic Agriculture Certification Thailand (ACT). (2017). *ACT Organic Standard Revision: February 2017*. Retrieved November 13, 2018, from https://actorganic-cert.or.th/download/act-organic-standards/

Panyakul, R.V. (2010). Organic Farming Research – Thailand. Retrieved August 2019, 5, from http://www.fao.org/organicag/oa-portal/orca-research/country-profiles/thailand/en/

P.Sivaraj, H.Philip, M. Chinnadurai, M.Asokhan & K.Sathyamoorthi (2017). *Constraints and Suggestions of Certified Organic Farmers in Practicing Organic Farming in Western Zone of Tamil Nadu, India*. International Journal of Current Microbiology and Applied Sciences ISSN: 2319-7706 Volume 6 Number 3: 1270-1277.

Pingali, P. L. (2012). Green Revolution: Impacts, limits, and the path ahead. *Proceeding of the National Academy of Sciences of the United States of America, Vol. 109* (No.31), 12303-12304.

Thai Organic Trade Association. (2011). *Overview of Organic Agriculture in Thailand*. Retrieved August 2019, 5, from http://www.thaiorganictrade.com/en/article/442

The Environmental Literacy Council. (2015). *Green Revolution*. Retrieved August 2019, 5, from https://enviroliteracy.org/food/food-production-supply/green-revolution/

The United Nations. (2014).Codex Alimentarius Commission to Approve International Guidelines for Organic Food.Retrieved August 1, 2019, from https://www.un.org/press/en/1999/19990628.SAG43.html

The National Organic Agriculture Committee. (2017). *The Second National Strategic Plan for Organic Agriculture Development (2013-2016).* Bangkok: Secretary of the National Organic Agriculture Committee.

Ubon Ratchathani Provincial Agriculture and Cooperatives Office. (2018). Meeting Workshop of Committee and Working Committee to Drive Sustainable Agriculture in Ubon Ratchathani. *Meeting Workshop of Committee and Working Committee to Drive Sustainable Agriculture in Ubon Ratchathani* (p. 5). Ubon Ratchathani: Ubon Ratchathani Provincial Agriculture and Cooperatives Office.

Ubon Ratchathani Provincial Agriculture and Cooperatives Office. (2016). *ข้อมูลสถิตินาข้าว* (Paddy Statistics) Retrieved April 11, 2017, from Statistic of Rice Fields: http://www.Ubon Ratchathani.doae.go.th/riceStat.html

United States Department of Agriculture. (2018).*What is organic production?* Retrieved August 1, 2019 *from https://www.nal.usda.gov/afsic/organic-productionorganic-food-information-access-tools*

Win,E. H. (2016). *Organic Agriculture in Thailand*. Retrieved August 13, 2019, from http://ap.fftc.agnet.org/ap_db.php?id=734

Yossuk, Prathani & Kawichai, Pongsakorn. (2017). Problems and Appropriate Approaches to Implementing Organic Agriculture Policy in Thailand. *Journal of Community Development and Life Quality*. 2017. *5*(1): p. 129-141.