Research article

Certification Schemes for Alternative Agriculture in Japan

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Abstract Conventional agriculture, also known as modern or industrial agriculture, which main aim is to maximize production, is currently prevalent in the world. Negative consequences of such approach include environmental impacts such as soil degradation, groundwater pollution and GHG emissions. Along with environmental problems, the use of chemical pesticides and fertilizers in conventional agriculture may cause problems to human health, both of producers and consumers. To alleviate negative impacts of conventional agriculture, the Japanese government has undertaken attempts to promote alternative agriculture. Laws, guidelines and certification schemes for promotion of alternative agriculture have been introduced in late 1990s and early 2000s. Today there are three national level certification schemes: "JAS (Japanese Agricultural Standard) Organic", "Eco-Farmer" certifications and "Specially Cultivated Products" certification. This review takes a look at the history of developing these certification schemes in Japan as well as the differences in the requirements for obtaining the certifications. The literature suggests that the role of national, regional and municipal governments vary regarding the procedure of introducing and issuing the certifications of each type. The possibility of negative economic impact on uncertified farmers practicing alternative agriculture is discussed. Authors argue that a simplified labeling system is preferred to increase customers' awareness and understanding of alternative agriculture certification schemes.

Keywords alternative agriculture, certification schemes, organic farming, eco-farmer, specially cultivated agricultural products

INTRODUCTION

The discussion on conventional versus alternative agricultural paradigm was underpinned by Beus and Dunlap in 1990. Conventional agriculture, which is also referred to as modern, industrial or intensive, is characterized by large-scale single crop production dependent on input of synthetic fertilizers and pesticides (Beus & Dunlap, 1990). Conventional agriculture, also known as modern or industrial agriculture, which main aim is to maximize production, is currently prevalent in the world. Negative consequences of such approach include environmental impacts such as soil degradation, groundwater pollution, and GHG emissions. Along with environmental problems, the use of chemical pesticides and fertilizers in conventional agriculture may cause problems to human health, both of producers and consumers. Organic farming is an example most often used as an agricultural practice opposite to conventional farming. However, a large variety of agricultural practices having a potential to alleviate negative impacts of conventional agriculture on natural environment and human health exist. This paper refers to these practices as alternative agriculture and is investigating its state in Japan.

To alleviate negative impacts of conventional agriculture, the Japanese Government has undertaken attempts to promote alternative agriculture. Laws, guidelines and certification schemes for promotion of alternative agriculture have been introduced in late 1990s and early 2000s. An umbrella term that is often used in policy discourse in Japanese is *kankyo hozengata nogyo*, which can be translated as environmentally friendly agriculture. However, the authors are using a broader term "alternative agriculture" and the initiatives introduced in this paper will be viewed as a part of it. The term 'alternative agriculture' is used here as an umbrella definition for different types of agricultural practices that put effort into limiting its impact on natural environment. In this paper, authors include "JAS Organic" certification, "Specially Cultivated Agricultural Products" certification and "Eco-farmer" certification under the common definition of alternative agriculture. Authors intentionally avoid using term "sustainable agriculture" (although this term is used in official English translation of relevant legislative acts), as the paper does not put focus on evaluating long-term sustainability of each practice and certification scheme. The focus of this paper is on the agricultural practices and products and excludes animal husbandry and livestock products.

In 2010, the tenth meeting of the Conference of the Parties (COP 10) was held in Nagoya, Aichi Prefecture, Japan. In the light of this event, the concept of biodiversity conservation became widely known among policymakers, citizens, and industry. In March of the same year, the Prime Minister Cabinet Decision approved the new "The National Biodiversity Strategy of Japan 2010". One of the recognized methods for protecting biodiversity is Payment for Ecosystem Services (PES). It is also applicable to agricultural products, and eco-labels are playing important role in communicating necessary information from producers to consumers (Watanabe, 2012).

Importance of taking environmental aspects into consideration during agricultural production was introduced in Food, Agriculture and Rural Basic Act of 1999 and later elaborated in Environmental Norms for Agricultural Activities of 2005. Later additional laws and guidelines were issued to introduce certification schemes and eco-labels to promote various types of alternative agriculture. Main legislation acts for alternative agriculture in Japan are summarized in Table 1. Currently, there are three national level certification schemes: "JAS (Japanese Agricultural Standard) Organic", "Eco-Farmer" certification and "Specially Cultivated Products" certification. Certification schemes and eco-labels are known to be an effective instrument for providing information to consumers and thus have potential to contribute to protection of environment, biodiversity and help promoting local products through marketing them (McCluskey & Loureiro, 2003). Thus, main focus of this paper is on three certification schemes introduced by Japanese government.

With the trend for urban migration and shrinking and aging of rural population, the number of population involved in farming activities in Japan is on decline, which is also influencing the degree of alternative farming penetration.

OBJECTIVE

The objective of the paper is to summarize available information on national schemes for alternative agriculture certifications, namely "JAS Organic", "Eco-Farmer" certification and "Specially Cultivated Agricultural Products" certification. Historical background, related legislation, level of penetration and level of recognition by consumers are reviewed. Obstacles towards further dispersion of each practice will be identified.

METHODOLOGY

The review of three national certification schemes for alternative agriculture is based on secondary data. Research articles, book chapters, documents issued by the government and national statistical databases served as main source of information.

Table 1 Main legislation for alternative agriculture in Japan

Year	Act/Law/Guideline
1999	Food, Agriculture and Rural Basic Act
	Law for Promoting the Introduction of Sustainable Agricultural Practices ("Eco-Farmer"certification)
2001	Specially Cultivated Agricultural Products Guideline
2005	Environmental Norms for Agricultural Activities
2006	Act on Promotion of Organic Agriculture
2011	Direct Support Measures for Alternative Agriculture

RESULTS AND DISCUSSION

Overview

The application of synthetic chemicals in agriculture has sharply increased after the Second World War and brought about benefits of less labor demand and higher yields. On the other hand, the cases of farmers' poisoning by the chemicals also became widespread (Nishigaki et. al., 2002). It was during and soon after the period of Rapid Economic Growth (1955-1973), when industrial pollution was proved to cause harm to human health (e.g. Minamata disease and Itai-Itai disease). In the result, public concerns towards the use of chemicals and environmental issues linked to its use started to grow. Although different types of alternative agriculture, such as natural farming, were developed by Mokichi Okada and Masanobu Fukuoka as early as 1930-1940s (Kristiansen et al, 2006), it was not until 1970s that a solid social movement supporting alternative agriculture was formed.

During the period of Rapid Economic Growth in Japan, a lot of environmental pollution and degradation was happening and causing harm to human health (e.g., Minamata disease, Itai-Itai disease, Yokkaichi Asthma). In this regard, the public concern over environmental issues started to grow. Social movements advocating environmentally friendly lifestyle and safe consumption also started to emerge. Green consumerism movement and the organic farming movement can be raised as examples. The organic farming movement in Japan emerged in the 1960s. Main concerns during that time were environmental degradation and health risks caused by synthetic pesticides and chemical fertilizers used in conventional agriculture (Funato, 2010). The movement was lead by the Japan Organic Agriculture Association (JOAA) that recognized the necessity of spreading awareness about food safety and eating habits among urban consumers (Minamida, 1995). In 1978, JOAA introduced the document "Ten Principles of Co-partnership", which later evolved into so-called TEIKEI (Minamida, 1995). TEIKEI is an alternative distribution system of agricultural products directly from a farmer to a consumer based on mutual understanding and trust. Another outcome of the movement was a change in policy that led to the introduction of labeling systems. Japanese Consumers' Co-operative Union (JCCU, often referred to as COOP) also played important role as a distribution channel for alternative agriculture products. The three national labeling schemes are introduced below in detail and summarized in Table 2.

"JAS Organic" Certification

The first law introducing organic agriculture labeling system was issued in 2000 and the certification scheme established is referred to as "JAS (Japanese Agricultural Standard) Organic" ("*JAS Yūk*i" in Japanese). Currently "JAS Organic" certification is divided into four types: organic plants, processed food (e.g., drinks, spices, flour etc.), feed and organic livestock products (the later is excluded from the scope of this paper for the sake of making comparison with other certification types). Prefectural governments and municipal governments are in charge of establishing promotion strategy and plan for their areas.

The requirements for receiving certification are summarized in the text of "Japanese Agricultural Standard for Organic Plants". The Standard presents a list of prohibited substances that include chemical pesticides and fertilizers. The listed substances are not allowed on the agricultural land for at least two years before sowing or planting as well as during production.

Table 2 Alternative Agriculture Labels and Certification Requirements

Certification name	Label	Certification Requirements	Certification authority
"JAS Organic"		No chemical fertilizers and pesticides No GMOs Use of compost	Authorized private certification centers (certified by land)
"Specially Cultivated Agricultural Products"	 Design can be modified by each prefecture	50% decrease in use of chemical fertilizers (by amount) and pesticides (by frequency) based on conventional level of each prefecture	Authorized private certification centers (certified by crop type)
"Eco-Farmer"	 Design can be modified by each prefecture	Submission of a 5-year plan for reduction of chemical fertilizers and pesticides use, and use of compost	Prefectural Governor (certified by crop type)

Image Sources: 1) "JAS Organic" Label – picture taken by author;
2) "Specially Cultivated Agricultural Products" Label – created by author
3) "Eco-farmer" Label – Chiba Prefecture Website. https://www.pref.chiba.lg.jp/annou/chibaeco/newlogomark.html

The Standard regulations also do not allow the use of Genetically Modified Organisms and encourage the use of compost. Moreover, necessary measures are required to prevent prohibited substances from drifting or flowing to the land. There are rules that need to be followed at all stages of production process. They include regulations regarding: cultivation sites, collection area, seeds or seedlings to be used in fields, fungus spawn, manure practice on the land, cultivation management in cultivation sites, control of noxious animals and plants in fields or cultivation sites, general management, management concerning harvest, transportation, selection, processing, cleaning, storage, packaging and other post-harvest processes.

In order to receive a certification, the producers are required to apply to private certification centers authorized by Ministry of Agriculture Forestry and Fishery (MAFF). The certification inspection is conducted by land units, without regard to the number of crops grown on the land. Thus unit of certification is a plot, not crop type, which means that one certification can cover several crop types harvested from the same plot. As of July 2016, there are fifty-six registered certifying bodies within Japan. Sixteen certification centers among them certify not only domestic producers but producers from overseas as well. After the inspection is conducted, certified producers are granted permission to use "JAS Organic" label (Tab. 2). Registration number of the certification center has to be mentioned on the label. Despite the efforts to promote "JAS Organic" certification, the number of certified households has been on the decline since 2012. Nevertheless, the size of farming area keeps on increasing steadily (Fig. 1). This implies that the size of farming area per certified household is

increasing, and that a farming household once certified as "JAS Organic" in the past can be converting additional plots into organic practices in subsequent years.

In 2016, a number of farming households certified as "JAS Organic" reached 3,660 households. At the same time, the number of the farmers practicing organic agriculture without obtaining "JAS Organic" certification is double of that, around 8,000 households (MAFF, 2016a). Uncertified produces are not allowed to place word "organic" on their products, which might negatively influence their sales.

According to the customers' survey conducted by JOAA, more than 90% are familiar with the term "organic farming". Nevertheless, 54% of respondents were not familiar with "JAS Organic" label that is placed on the products (see Tab. 2) and only 5% knew the details of "JAS Organic" certification process (JOAA, 2011).

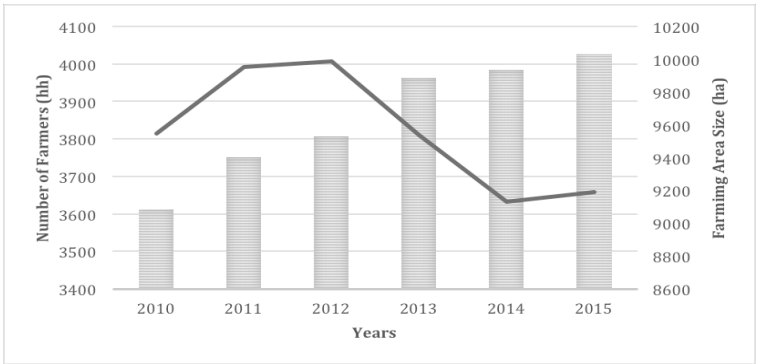

Fig. 1. Number of farming households and farming area size certified as "JAS Organic" (2010-2016) based on data published on MAFF website

"Eco-Farmer" Certification

"Eco-Farmer" certification was established in 1999 with enacting of the Law for Promoting the Introduction of Sustainable Agricultural Practices. This certification scheme is encouraging to decrease the use of chemical pesticides and synthetic fertilizers on farms and promote the use of compost. In order to receive certification, the applicant has to submit a 5-year plan for reducing chemicals input. Unlike "JAS Organic", "Eco-Farmer" certification is issued by crop type, and not by agricultural plot. The certification process is organized via prefectural government and governor approves applications.

The certification is valid for 5 years and has to be renewed after that. With the average age of farmers rising (66.4 years old in 2015) and the share of farmers over 65 years old growing (63.5%) (MAFF, 2015), it is often the case that once certified farmers do not renew the certification after 5 years since retirement is approaching.

After the certification process if successfully completed, certified farmers are allowed to place an "Eco-farmer" label (see Tab. 2) on their products. This label used to be universal for all prefectures until 2011. After that only eleven out of forty-seven prefectures have continued to use the same label, whereas the rest of prefectures have designed their own unique labels. Although it might help in promoting local brands of each prefecture, it might also have negative impact on the level of recognition of the label by consumers. According to a consumers' survey conducted in 2005, only 42% of consumers interested in purchasing alternative agricultural products replied that they are familiar (or have seen before) "Eco-Famer" label (Mibu & Okubo, 2005).

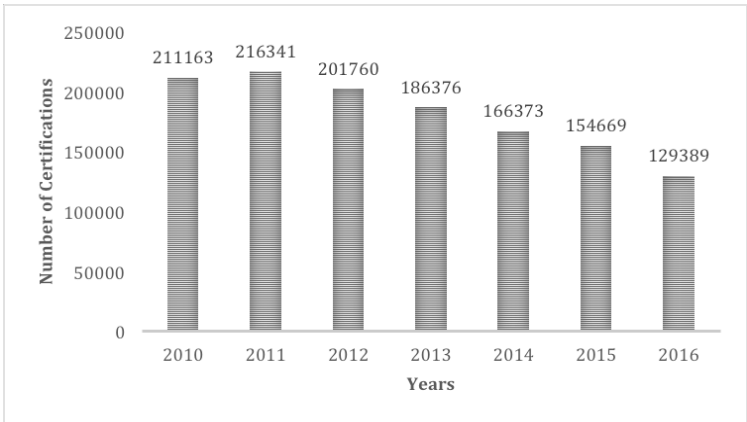

Fig. 2 Number of issued "Eco-farmer" certifications (2010-2016) based on data published on MAFF website

Although the number of "Eco-Farmer" certifications issued increased sharply from 19 cases in 1999 to 216,341 cases in 2011 when it reached its peak, it then has fallen to 154,669 cases in 2015 (MAFF, 2016b). One of the reasons is that the financial return is not balanced with the cost of transition and labor demand (MAFF, 2015). To overcome these obstacles, it was made possible for "Eco-Farmer" certified farming units to receive support in a form of Direct Payments and employ extended periods for the return of loans granted for the improvement of agricultural practices.

"Specially Cultivated Agricultural Products" Certification

In terms of requirements towards the producers, "Specially Cultivated Agricultural Products" (*Tokubetsu Saibai Nosanbutsu* in Japanese) certification scheme lies somewhere in between "JAS Organic" and "Eco-farmer" Certifications. The guideline that is establishing the rules for the proper labeling of such products was introduced in 2001 and then amended in 2003. To use this label, the producers are required to reduce the use of chemical fertilizers (by amount) and pesticides (by frequency of application) by 50% towards the conventional level of the region.

Similar to "Eco-farmer" scheme, the design of the label can be changed by each prefecture, which potentially decreases the level of its recognition by the consumers. Mibu and Okubo (2005) argue that in comparison with "JAS Organic", "Specially Cultivated Agricultural Products" labels lack credibility and thus the market price of such products is lower than those labeled "JAS Organic" (Mibu and Okubo, 2005). This is one of potential reasons why the number of certified farmers is stagnant (around 45,000 households in 2015), as the financial benefits do not fully cover the cost of transition (MAFF, 2015).

DISCUSSION

This paper looked into three national level schemes for certification of alternative agricultural products, namely "JAS Organic", "Eco-farmer" and "Specially Cultivated Agricultural Products" schemes. Although the number of certified farmers and size of certified agricultural land is monitored annually, the studies that analyze the reasons behind low penetration of alternative agriculture in Japan. A thorough study surveying certified producers about the benefits and demerits they experienced on obtaining certification, distribution and information channels they use as well as their opinion on the certification schemes will help to shed the light on potential reasons for farmers' lack of interest in obtaining the certification. At the same time, additional consumers' survey about their knowledge of

labels and willingness to purchase certified agricultural products would help in analyzing whether demand for such products exists on Japanese market.

CONCLUSION

After the introduction of alternative agriculture certification schemes in late 1990s early 2000s, the number of farming households certified under each scheme increased sharply during the first years. However, in 2011-2012 after reaching a tipping point, both the number of "Eco-Farmer" and "JAS Organic" certified farmers started to decline. The number of households certified under "Specially Cultivated Agricultural Products" scheme is also stagnant lately. High cost of transition and insufficient financial return as well as aging and shrinking of the farming population are among the factors that are hindering further dispersion of alternative agriculture certifications. The recognition level of the labels among consumers is low and simplification of current system might help in improving consumers' awareness and increasing their willingness to purchase such products. Educating consumers about food safety can also be a useful method for promoting more understanding towards alternative agricultural products. Lastly, a more inclusive certification system is recommended for alleviating negative economic impacts experienced by non-certified farmers practicing alternative agriculture, as they are currently not allowed to use term 'organic' for their products.

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