Field Studies of Organic Agriculture of the Small Scale Farmers in Japan

Phattharaporn Pakdeechanuan [1]

Introduction

Food is the basic necessity of human existence and survival. Agriculture, primarily responsible for the production of food, has worked out a host of ways to meet the growing demand for food brought about by a continuously increasing population . Chemical fertilizers and other agricultural chemicals were developed as a means of increasing agricultural production to meet the growing demand for food. The biggest advantage of using large quantities of chemical fertilizer, agricultural chemicals and the like line in the fact that the farmers can reduce labor cost and at the same time, maximize the use of the land with the highest yields with in a short period of time. Many farmers have been utilizing these agricultural chemicals as a mean to increase the efficiency of the farm production. Although their farm productions depend on the use of fertilizers, herbicides, pesticides and other chemicals, it seems that the use of these chemicals is undeniably fraught with chemical wastes. Agricultural chemicals have given rise to a variety of harmful effects to the environment. (Ota, 1998; Kumazawa, 1998)

Agriculture that relies on chemical fertilizers and refuses to utilize other organic matters will lead to the excess amount of chemical residuals. In the case of truck farming, in particular, large amount of chemical fertilizer can leach and pollute the surface and ground water (Kumazawa,1998), besides they can also affect the activities of microorganism. (MOFGA, 2005)

Agricultural chemicals can both control the outbreak of crop diseases and the multiplication of harmful insects. However, these harmful insects and diseases have become more resistance to these chemicals and leads to the increase of using chemical with higher dose for controlling crop diseases and harmful insects. Therefore, there is more contamination in environment and consume higher expenses.

In case of insecticides, they can kill a wide range of insects including natural enemies of the harmful insects.

---

[1] Agricultural Science Program, Faculty of Agricultural Technology, Songkhla Rajabhat University, Muang Songkhla, 90000 Thailand (email: pphattha@hotmail.com)

As a result, stronger agriculture chemicals are developed and use ,thus constantly stimulating fears of residual agricultural chemicals in the natural environment.

Since the uses of agricultural chemicals and chemical fertilizers have been undesirable and brought damages to the environment. In recent years, some farmers have begun to realize the side effects of using agricultural chemicals. Hence, they have reevaluated the prevent methods of farming and found out that organic agriculture is one of those selected methods. Organic farmers adopt practices to conserve resources, enhance biodiversity, and maintain the ecosystem for sustainable production.

What is organic agriculture?

Organic agriculture is based on minimizing the use of external inputs, avoiding the use of synthetic fertilizers and pesticides. Organic agriculture cannot ensure that product are completely free of residues, due to general environmental pollution. However, methods are used to minimize pollution of air, soil, and water. In addition, organic agriculture is an ecological production management system which promotes and enhances ecosystem health, including biological cycles and soil biological activity. The primary goal of organic agriculture is to optimize the health and productivity of interdependent communities of soil life, plants animals and people. However, organic agriculture is not limited to certified organic farms and products but includes all productive agricultural systems that use natural processes, rather than external inputs, to enhance agricultural productivity. (IFOAM, 2005; OFRF,2005; Scialabba and Hattam, 2002)

The key characteristics of organic farming include : (Lampkin and Padel, 1994)

1. protecting the long –term fertilizer of soils by maintaining organic matter levels, fostering soil biological activity and careful mechanical invention.
2. providing crop nutrients indirectly by using relatively insoluble nutrient sources which are made available to the plant by the action of soil microorganisms.
3. nitrogen self-sufficiency through the use of legumes and biological nitrogen fixation, as well as effective recycling of organic materials including crop residues and livestock wastes.
4. weed, disease and pest control relying primarily on crop rotations, natural predators, diversity, organic manuring, resistant varieties.
5. careful attention to the impact of the farming system on the wider environment and the conservation of wildlife and natural habitats.

Organic Agriculture in Japan

Agricultural chemicals and chemical fertilizers had begun to be used extensively in Japan from around 1950S, just a few years after the end of World War II. Though today, the use of agricultural chemicals and chemical fertilizers is spreading rapidly, particularly in Asia. Japan, which at one time stood out for its use of agricultural chemicals and chemical fertilizer, should have plenty of opportunities to put its bitter experience to good use in favor of environmentally harmonious agriculture. (Kumazawa,1998)

The trend towards to reduce the use of agricultural chemicals and chemical fertilizers in Japan has originated in the organic vegetable boom of the sixties and seventies. The boom was triggered by a group of nature-conscious consumers who called for agricultural products that were cultivated without those chemicals. The advocates won the support of many ordinary consumers, leading eventually to appearance of retailers selling ordinary vegetables at prices usually higher than the market price, which claimed that they were grown without the use of agricultural chemicals. (Ota, 1998). The farmers have tried various methods of organic farming in order to increase the value of agricultural production while they can harmonize agriculture with the environment. However, farm households practicing organic farming are still a minority, but recently interests in their method are growing. Some organic farmers in Japan adopt the organic agriculture practice because of following reasons

1.Human health; the farmers, their families, farm workers, and the consumer.

2.Environmental condition; the need to maintain water quality, air quality and the diversity of plant, and wildlife.

This report presents a result of field studies on organic agriculture of the small scale farmers in Japan(Three Japanese farmers, Yamawaki Yoshiwaki, Shinoda Noriko and Kobayashi Tadashi). They were interviewed and the information and opinion obtained are as follow,

1.Motive to pursue the organic agriculture.

2.Practice of organic agriculture.

3.Problem and difficulties of the organic farming.

Interview with Mr. Yamawaki Yoshiwaki **Date** March,25,1999

"In the past ,we used to use a lot of agricultural chemicals in my farm and when I found out that they also caused a lot of problems to the environment. Then I began to be interested in organic agriculture, but I didn't take it so seriously until I have children. I don't want my children

to consume agricultural products with chemicals and since then I have become a real organic farmer," says Yamawaki Yoshiwaki, who grows carrots and other vegetables in Kagoshima prefecture.

Yamawaki explains about his practice of organic farming. " I don't destroy weeds but I rely on insect predators, which inhabit in weeds ,because they attack the harmful insects of carrot plants. As a result, I don't have to use herbicides and insecticides.(Figure 1) After I have harvested carrot products, then I till these weeds in to soil. And I think this practice may improve soil structure. Besides, I use manure and compost to enrich the soil fertility and I buy cattle excrement and urine from neighboring livestock farmers."

Fig. 1. No weeding, using a natural enemy of harmful insects onto carrot (*Daucus carota*) plant.

" For the first 2-3 years, after I have adopted the organic agriculture system that the low production yield was a main problem but at present the production yield has improved and there are enough products for family consumption and we can sell some products to the organic product market " says , Yamawaki.

Interview with Mrs. Shinoda Noriko **Date** May,22,1999.

Shinoda Noriko, a farmer in Kyoto Prefecture, who had converted from conventional to organic farming for 2 years, talked about her motive to pursue the organic agriculture. "I realized

the leaching of agricultural chemicals contaminated the primary source of drinking water and residual agricultural chemicals in food which caused some illness to human. I think the organic practices utilized in my farm and the organic agricultural production will maintain and improve my children's health in the future,"

Shinoda explained about her practice of organic farming. "I still don't know about the other methods of organic farming. After I stopped using herbicides, insecticides and chemical fertilizers to treat the plants, I only gather dry leaves and dry grass from mountain to mulching the soil."

Shinoda mentioned about the problems which she had experienced, " The quantity of crop is still low, and only enough for family consumption." This may result from a long term use of chemicals, the toxic of fertilizer has killed soil microorganism , hardened the top soil and turned it into dead soil, in addition she still has no other way to nourish her plants after the absent of fertilizers.

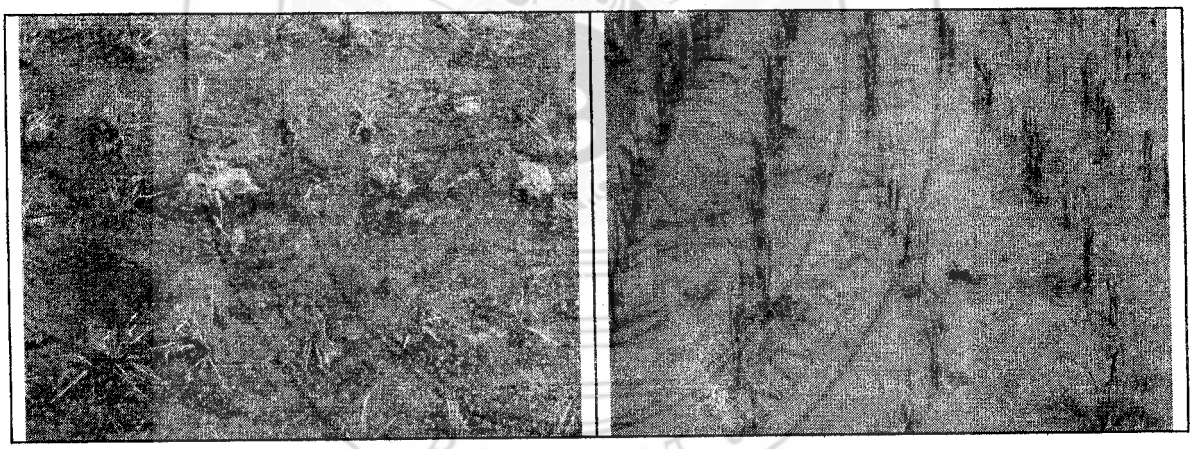

Fig. 2. A comparison between the paddy field which chemical was used (Left) and paddy field which no chemical used (Right).

"However, though the practice of organic agriculture has given me a small quantity of crop, I would still continue to do it because I have seen that after I stopped using chemicals, the water in my paddy fields has become clean and clear unlike those of neighboring paddy fields which still keep using agricultural chemicals" said, Shinoda. (Figure 2) Now Shinoda is still facing a lot problems from the change of practice but she doesn't give up " I want to improve my method and learn more about other practices," She said .

Interview with Mr.Kobayashi Tadashi **Date** May,29,1999.

Kobayashi Tadashi of Tokushima Prefecture awares that agricultural chemicals are harmful to the environment and human health. Kobayashi has begun practicing organic agriculture for 28 years in his farm. He said, "Farm workers and consumers are poisoned by agricultural chemicals, and farm workers suffer the highest rates of occupational illness from chemical agriculture practices, for food products grown by using chemical may cause some illness and cancer. Therefore I think the organic farming is a way to maintain farm productivity without the use of agricultural chemicals and protect farm workers' health."

Fig. 3. (Left) Spreading of susuki (*Miscanthus sinensis*) straw over tomato (*Lycopersicum esculentum*) shoots. (Right) Mr. Kobayashi was explaining about his own process of making of making compost.

" To develop good quality soil is more important than to increase quantity of agricultural products" said, Kobayashi. He has been replenishing soil with organic mulches, manure and compost since 1971. At the same time, these organic substances supports his agricultural products. "I improve and maintain soil fertility and soil organic matters through the use of straw mulching, manure and compost (Figure 3). I use compost to enrich the soil and grow vegetables. It can be noticed that each year the topsoil is getting darker and softer. Organic mulches are important securer and they can maintain the soil surface and control weeds . Also, organic mulches provide food for soil microorganism and earth worms, eventually break down and release their nutrients to plants," Kobayashi explained.

Discussion

It is well known that a simple definition of an organic farming is free from harmful agricultural chemicals on the field. In fact, organic practices are more than that. As mentioned in this report, the practices and the activities on each organic farm are very wide, depending on the interest and expertise in each farm. For example, Kubayashi Tadashi controls weed through increased cultivation, organic mulches and crop rotation, while Yamawaki Yashiwaki does not destroy weeds because he relies on insect predators, which inhabit in weeds and attack the harmful insects. Although, the interviews in this report present only a small part of organic agriculture in Japan, the practices and activities of each organic farm, especially the case of Kubayashi Tadashi, has shown the impressive results of organic farming that can produce the agricultural yield and also maintain and improve soil fertility. Moreover, it can reduce pollution that may result from agriculture practices.

Nevertheless, in some cases, organic farming may be more costly than conventional farming, as it requires more forward thinking and long range planning. Normally, the results of organic farming are not as quick as those of using agricultural chemicals. Therefore, the success of organic farming requires understanding in harmful effects of chemical agriculture practices towards the environment and human health. It also takes more time to learn about the education and training of organic farming techniques and practices. Personally, the governmental organizations should concern about the import and the use of some agricultural chemicals in country. At the same time, there should be the expansion of the organic product markets to serve the increasing demand of organic product consumption. Also there should be the organizations supporting organic farming research and information systems to promote the practices, and disseminate research results to organic farmers interested in adopting organic production systems.

Finally, if the number of farm households practicing organic farming has increased and been able to produce sufficient and high quality of organic food, we can be certain that we will have uncontaminated food and at the same time, harmonize agriculture with environment.

Acknowledgments

It would not have been possible to complete this report without the help of Mrs. Yaeko Watanabe and her husband, for their support and accompanying me to visit organic farm in Japan, I really appreciate their kindness. I am also deeply grateful to Miss.Darunee Promthaveesit for her valuable advice, and help in the translation of the Japanese interviews. Finally, I would like to

express my gratitude to Dr.Haruo Konoshima, Professor of Shiga University, for his help to obtain Japanese connections and support the information for my study.

References

IFOAM. 2005. What is organic agriculture? International Federation of Organic Agriculture Movements. Available:http://www.ecoweb.dk/ifoam/generel.htm. (May 12, 2005)

Kumazawa, K. 1998. Above all, farming must be environmentally friendly. Pacific Friend a window on Japan. 6:26-27.

Lampkin, N.H. and S. Padel. 1994. The Economics of Organic Farming an International Perspective. Department of Agricultural Sciences, University of Wales, Aberystwyth, UK.

MOFGA. 2005. Why certified Organic food is better food. Maine Organic Farmers and Gardeners Association. Available: http://www.mofga.org/food.html (June 20, 2005)

OFRF. 2005.What is organic farming? Organic Farming Research Foundation. Available:http://www.ofrf.org/about_organic/index.html.(May 12, 2005)

Ota, M. 1998. Environmentally harmonious agriculture. Pacific Friend a window on Japan.6:18-25.

Scialabba, N. El. and C. Hattam. 2002. Organic agriculture, environment and food security. Environment and Natural Resources Service Sustainable Development Department, Food and Agriculture Organization of The United Nations, Rome.