Document 3

Organic Shizukuishi contributions to OWC 2017 and General Assembly of IFOAM-Organics International

[1] Paper accepted for presentation at Pre-conference Organic Food Systems 3.0 session

Ryoichi Komiya, Katsuaki Takahashi, Satoshi Fukumoto & Setsuko Douzen, "Promotion of Food System 3.0 in Organic Shizukuishi PGS Group" (See Appendix 1)

[2] Paper accepted for presentation at Marketing and Quality Assurance Track

Ryoichi Komiya, Takiko Komiya, "The PGS and Small Agribusiness" (See Appendix 2)

[3] Motions to GA accepted for motion bazar (See Appendix 3)

Motion 80: Highlight Un-ethical Behaving of Multinational Agroindustrial Corporations

Motion 81: Communicate Advantages of Organic Farming over Conventional

[4] Recommendation of Mr. Katsuaki Takahashi to the ORGANIC FARMING INNOVATION AWARD 2017

Title of the his innovative organic farming innovation: "Innovative Initiative of organic agriculture- Practical symbiosis of forestry and organic agriculture –" (See Appendix 4)

Appendix 1

Promotion of Food System 3.0 in Organic Shizukuishi PGS Group

Ryoichi Komiya*, Katsuaki Takahashi**, Satoshi Fukumoto***, Setsuko Douzen****

Organic Shizukuishi PGS, Iwate Prefecture, Japan

*:komiya@navy.plala.or.jp, **:createfarm08@gmail.com, ***:sousaku@xa2.so-net.ne.jp
****:nishine.hoiku@gmail.com

Abstract

Japan is far behind other countries in the implementation of organic agriculture. Even though we have had the IFOAM sister organic growing standard, JAS [Japanese Agriculture Standard for Organic Plants] since 2000, the population of JAS certified producers have not increased because of its high application cost and troublesome documentation. To try to improve this situation, we introduced PGS in Organic Shizukuishi since 2015. This paper describes our activities in cultivating an organic society based on the philosophy of Organic 3.0 of IFOAM.

Introduction

Organic Shizukuishi was formed in February 2015 with seven consumers and seven producers. The description of the Organic Shizukuishi is as follows.

"Organic Shizukuishi is in the town of, Iwate Prefecture Japan. Our organization connects organic farmers and consumers with the intention of creating an organic society. The organic society's target is to attain more human friendly agricultural products and handicrafts for daily life and natural arts. Therefore, we are aiming for the Organic 3.0 direction of IFOAM Organics International. And we are planning to develop strong ties amongst people. This helps promote a healthy and trustworthy human life in this community". Our present major activities are trying to get IFOAM-recognized PGS, to produce organic vegetables and fruit as well as to carry out sales activities of our products at a wide variety of outlets. At the same time, we have been educating nursery school children, development of innovative organic farming such as symbiosis of forestry and organic agriculture and campaign of the move promotion from big cities to the rural areas.

Our projects

Efforts to acquire IFOAM-recognized PGS: We started recognized PGS activities in 2015. Our first Self Evaluation Form (SEF) was sent to IFOAM in September 2016 after our field inspections by our PGS group members. However, the decision made by IFOAM PGS Committee in November 2016 was negative because we are green and not so well organized as experienced PGS group. The major reasons were; (i) the need to increase more stakeholders including scholars, retailers, agricultural extension people because our current members consist only of consumers and producers, (ii) our future PGS group potential expansion including prospective management should clearly be stated. We are still a small PGS group in this country. However, we are determined to get IFOAM PGS recognition. Therefore, it is our responsibility to get it first and spread basic PGS features and philosophy in Japan. This year after harvest we will try to submit the SEF to IFOAM PGS committee.

Organic vegetable and fruit produce efforts: All our members have been following our PGS documents when it comes to producing vegetables and fruit. They are; [1] PGS Operation Principles, [2] PGS Organic Plant Growing Principles, [3] PGS Application Form, [4] PGS Field Inspection Form, [5] PGS Grower's Pledge, [6] PGS Member Certificate and [7] Use of the IFOAM PGS Logo and the Organic Shizukuishi Logo. The details of these documents are listed in our website (https://organicshizukuishi.jimdo.com/). Only four producers passed the field inspection and got the Organic Shizukuishi PGS member certificate in September 2016. This year at least two producers will join to our group.

Sales activities of our produce at a wide variety of outlets: Our PGS members have their own sales channels near their farms such as farmers' markets, department stores, bakeries, souvenir shops and city community center. We have also common sales place in a local supermarket. Difficulties in managing sales at the local supermarket arise from the assortment of the organic producers. Therefore, we must try to increase organic producers in our PGS group to stabilize supplies to the local supermarket. A principal factor to all small organic producers are the distribution of goods because freshness is key for vegetables and fruit. Therefore, all these sales outlets are located within 10 km radius from their farms.

Food education for children: Two of our PGS group members have conducted food education at nursery school in the town of Shizukuishi. Current problems affecting boys and girls in Japan are; [1] Some of them have already been affected by lifestyle diseases such as diabetes, obesity, high blood pressure, [2] They do not know the real tastes of foods, [3] They are sometimes eating on their own because their parents are too busy to have dinner with them, [4] They eat snacks between meals. To solve these problems, Organic Shizukuishi PGS members have been providing practical education of organic vegetables especially beans at the nursery school patch. At the nursery school, they have taught children how to grow beans in the patch from the planting to the harvesting. After the harvest, children together with their parents and child minders, enjoy cooking beans and eating them. Through the activities, children gradually understand how the vegetables are grown, harvested, and cooked.

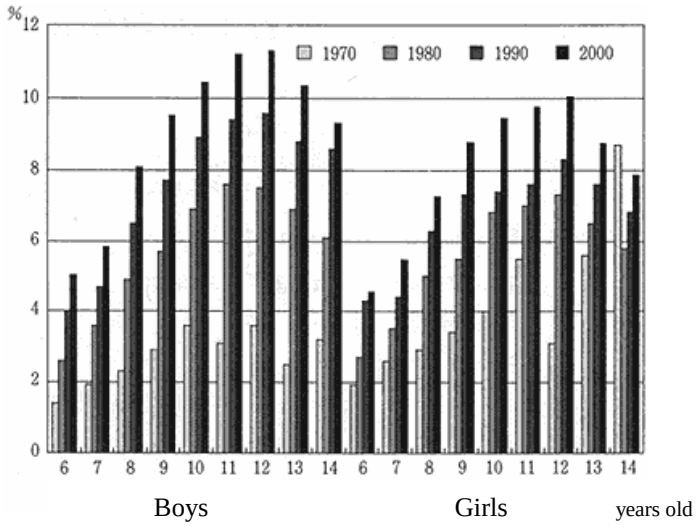
Development of innovative organic farming: A member of Organic Shizukuishi, Mr. Katsuaki Takahashi has been active in the realistic symbiosis of forestry and organic agriculture since 2008. In Japanese cities and towns, there are lot of Underdeveloped Woodlands Near Populated Areas (UWNPAs). These areas are about 8 million hectares. However, the areas have not been well managed and have naturally been destructed. Besides, these areas are good dens of vermin such as deer, bores, hares and raccoons. Some of them are harmful to the residents near the UWNPAs. To manage the UWNAs, he has used the life cycles of forestry and those of the organic agriculture. The representative life cycle of forestry can be described as; i. plowing, ii. planting, iii. weeding, iv. pruning, v. thinning, vi. clear cutting.

No income can be derived from the period between plowing and thinning, so the forestry conservation fund can't be guaranteed to the forestry producers. This is one of the difficulties of managing the UWNAs in this country. In contrast, the life cycle of organic agriculture is illustrated as; i. planting, ii. growing management, iii. harvesting. The cycle is repeated annually.

To compensate the lack of fund at the initial stages of growing forestry, the application of the organic agriculture is recommended. He has introduced the idea of symbiosis of forestry and organic agriculture to create funds.

Some statistics to know Japanese food problems

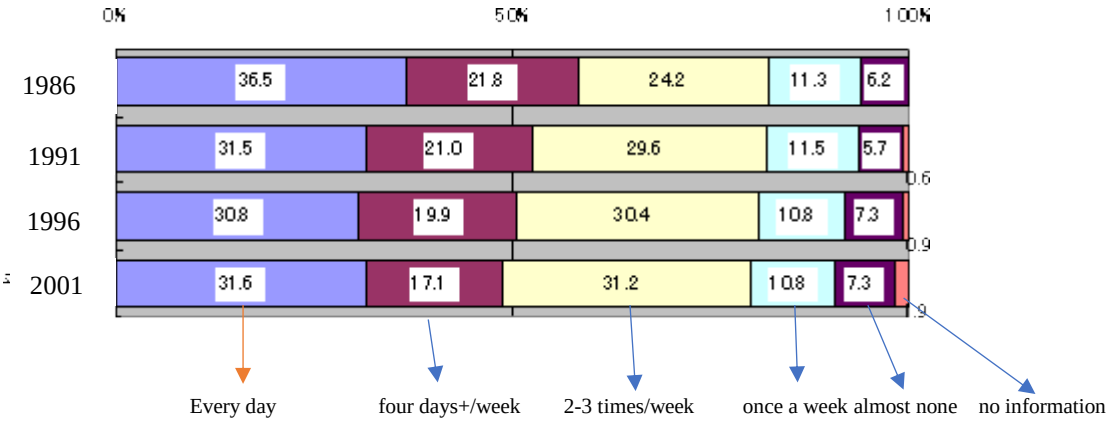
- *Obese children (Data from Ministry of education, culture, sports, science and technology)*



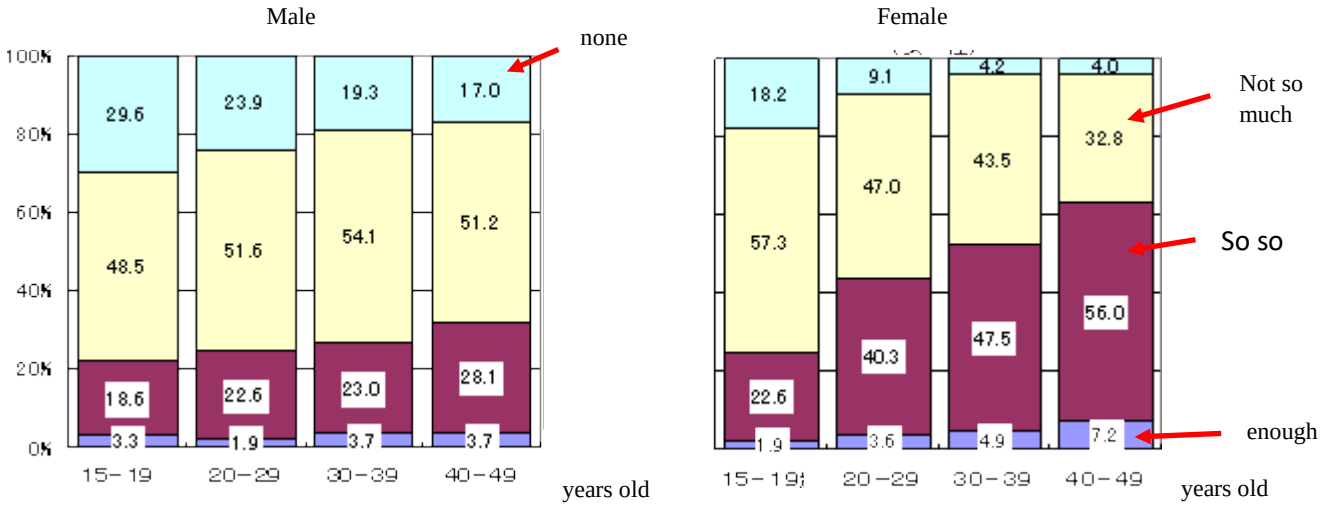
- *No breakfast eating children [Data from The Japanese Society of Child Health, 2000]*

ages	1	2	3	4	5－6
Eating every day	89.3	85.0	83.6	87.8	89.6
Not eating once or twice a week	6.3	10.5	10.3	7.2	6.9
Not eating three or four times a week	0.4	1.0	1.5	0.6	0.7
Eating only once or twice a week	1.6	2.0	2.0	2.2	1.6
others	2.3	1.3	2.1	1.9	1.0
No data	0.1	0.2	0.6	0.2	0.2

- *Dinner eating habits together with all family members*



- *Knowledge of appropriate food selections and cooking [Data from Ministry of Health, Labor and Welfares 1999]*



From these figures, we understand the following issues of Japanese food and meal habits. Children's problems are obesity, mainly from dinner eating habits. The obesity is the results of children's negative lifestyles such as irregular eating and snacking. Snacks tend to contain a lot of high saturated fatty acids which are not appropriate in maintaining a healthy life. They increase the risk of heart diseases, diabetes, strokes and cancers for all age groups. The habit of having dinner with all family members is a prerequisite to a healthy eating discipline in children and it is also an important aspect of enhancing communication with each other. However, according to the graph above the habit is slowly going down because parents are busy with their works and even children are occupied their time to go to the preparatory school in the evening after school to pass the entrance examinations of good schools. Lack of knowledges in food selection and cooking is due to the hectic daily lifestyle of family members in this country. The spread of the convenience foods makes matters worse. Japan is ranked third in the consumption of instant noodles. Other wide variety of convenience foods have been developed and put on the market such as soups, vegetables and teas. These seem to be the staple diet of busy people in this country. Many debates transpired over the issue of too much salt is contained in instant noodles and convenience foods prevent growth of teeth and chins in infants.

They say there are pros and cons in the non-eating breakfast. Its advantages are prevention of diabetes, arteriosclerosis and cognitive impairment. Disadvantages are less concentration and restlessness especially in children.

What, then, should we aspire to achieve from our organic 3.0 viewpoints? We have summarized our basic ideas to address these food problems.

Our intended organic 3.0 life at Organic Shizukuishi and tackling with Food System 3.0

We have been discussing the organic society in our group. Incidentally, the idea is quite like IFOAM proposed Organic 3.0.

Our target life style can be referred to as the organic agriculture based food and arts supply to get enable the public to easily access our produce by online sales and at the outlets. We are unable do it from the beginning so our initial initiative is to be an IFOAM recognized PGS to gain consumers' trust first. This year (2017) we will try our best efforts to continue our organic agriculture with all producers of Organic Shizukuishi to meet the requirements of IFOAM PGS Committee's philosophy and sell our produce to local consumers to build consumers' trust. Some of our members have small processing factory to process vegetables into jams, pickles, bean salad, soaked oil tomatoes, dried tomatoes sauce. Ingredients are also used for bread making and others.

We currently have a number of repeat customers. We believe that it is a prerequisite to stabilize our own financial situations in the Organic 3.0.

We have also tried to educate children on how to grow beans, harvesting, cooking and eating at the nursery school in Shizukuishi town. See some of the photos below. We firmly believe that this sort of activity could help children know to grow vegetables. Because in urban cities, some children tell us that vegetables are harvested in the supermarkets. Therefore, is a joy in children when they learn how the food is grown, from seeding to harvesting of beans and at the end of the day, they enjoy eating it with their child minders, parents and farmers from organic Shizukuishi. This event is highly influential on children, child minders, parents and farmers. Children get an idea how beans can be grown from seeds to big plants, parents taste the natural flavor of organic beans and children minders would understand the importance of continuation of this type of education. We believe that this should be the first step in the Food system 3.0.

We wish that these basic activities will solve the current food and meal issues in Japan.

Mr. Fukumoto teaching how to plant

Mr.Takahashi talking about vegetables

Pouring water on bean seedlings

Commemorative photo

Beans leaves sprouting

Recording the process of bean growing

Sorting beans after harvest

Preparing lunch

Enjoy eating lunch together

Appendix 2

The PGS and Small Organic Agribusiness

Ryoichi Komiya, Takiko Komiya

Key words: JAS, IFOAM PGS, Organic Shizukuishi, Organic product value chain

Abstract

In Japan, we have had the IFOAM sister organic products' growing standard, JAS [Japanese Agriculture Standard for Organic Plants]. However, the population of JAS certified producers have not increased because of its application cost and demanding documentation. To improve this situation, we have started introducing Participatory Guarantee System (PGS) in Organic Shizukuishi. We are in contact with IFOAM PGS team to build and establish our PGS since last year. This paper describes our activities to try to develop our PGS and get IFOAM PGS recognition as a first step to form an organic group in this country. Authors' value chain of organic farm is also discussed.

Introduction

We belong to a small Participatory Guarantee System (PGS) in Japan called the Organic Shizukuishi. The Organic Shizukuishi was formed in February, 2015 with seven consumers and seven producers. In September, 2015 we became a member of IFOAM. Since then, we have developed seven important documents. They are; [1] PGS Operation Principles, [2] PGS Organic Plant Growing Principles, [3] PGS Application Form, [4] PGS Field Inspection Form, [5] PGS Grower's Pledge, [6] PGS Member Certificate and [7] Use of the IFOAM PGS Logo and the Organic Shizukuishi Logo. The details of these documents are listed in our website (see the first Reference).

Now, four farmers have been recognized as organic producers after our field inspection by the PGS inspection team in July, 2016.

In this paper, we discuss the necessity of PGS to Japan to increase organic plant producers and to facilitate small agribusiness for organic foods and the importance of obtaining IFOAM PGS recognition.

Why the IFOAM RECOGNIZED PGS INITIATIVE in Japan?

In Japan, we have had the IFOAM sister organic products growing standard, JAS. Implementation of the Standard has been effective since 2000. However only 4,000 farmers have been certified by JAS. The cultivated acreage of the JAS certified organic farms is 9,000 ha, which represents only 0.2% of the total cultivated acreage [total cultivated acreage: 4,610,000ha] as shown in Tables I and II. To understand the background of the low JAS certified acreage percentage, let us see the non-JAS-certified organic producers' views in Table III. From Table III, it is understood that the critical reasons for organic producers not applying for a JAS certificate are coming from the high cost of certification and laborious documentations. The Organic Shizukuishi has understood that the PGS can solve the problems.

Ihatove Farm, Iwate Prefecture, Japan
e-mail: Komiya@navy.plala.or.jp

Table I Organic/Conventional farm acreage in Japan (2009)

Organic farm acreage	Total cultivated acreage including the conventional farming
JAS certified: 9,000 ha (0.2%) Non-JAS certified: 7,000 ha (0.15%)	4,610,000 ha

Table II World Organic Farm Acreage Comparison (IFOAM 2013)

Country	Organic farm acreage ratio over the entire farm acreage	Country	Organic farm acreage ratio over the entire farm acreage
Italy	10.3 %	Korea	1.1 %
Germany	6.4 %	China	0.4 %
France	3.9 %	Japan	0.2 % (JAS certified cultivated acreage)

Table III Non-JAS Certified Organic Producers' Views of JAS

Views of JAS certificate		Producers' answers* to the withdrawing from or not to apply to JAS	
Withdrawn from JAS	7 %	High certification cost	93
Intending to get JAS certificate	11 %	Troublesome application documents	90
Applied now	1 %	Already have customers	47
Not to apply	74 %	No certificate is required	46
others	6 %	No points	39
No replies	1 %	Small acreage	33
		Already have customers' trust	31
		Lack in trust in JAS	28
		Too old to apply	17
		Others	98

*: Multiple answers allowed up to three (Total number of answers: 522)

Actions taken by Organic Shizukuishi to be an IFOAM RECOGNIZED PGS INITIATIVE

First, we studied the IFOAM PGS model to understand the differences between PGS and JAS (third party certificate) as summarized in Table IV. From the table, JAS application and inspection fees are three times higher than those of our PGS. And besides, the number of document pages of JAS is 2.3 times more than PGS. More importantly we have learned the key elements and key features of PGS at our Organic Shizukuishi. Then, we created our documentation which enables our PGS to be compared internationally by exchanging knowledge with the IFOAM people in Bonn, via e-mails. Finally, at the beginning of the year of 2016 we put together our PGS specific principle documentations in [1] and [2] above. In document [1] "PGS Operation Principles", following items are covered: (a) Members, Annual fees, Organization operation, (b) Procedures to get PGS certificate and (c) Compliance.

Table IV Comparison between the JAS and the Organic Shizukuishi PGS

Items to be compared		JAS	Organic Shizukuishi PGS
Certifying organization		Third party organization registered by the Ministry of Agriculture, Forestry and Fishery	Organic Shizukuishi Office (see the second Reference)
Producer(s) to be certified		Per individual farm	Per PGS Group [four organic producers are included]
Plant growing standard		Japanese Agriculture Standard for Organic Plants [JAS]	JAS and Organic Shizukuishi PGS plant growing principles
Expenses (yen)	Total amount to be paid/producer	220,000 (first year) From the second year, 50,000 yen less	7,500
Number of pages of document		Application form: 23 + appendix (if required) Field inspection form:16	Application form: 11 Field inspection form:6

In document [2] "PGS Organic Plant Growing Principle", the following items have been described clearly:
(a) JAS, (b) Soil Management, (c) Plant Management, (d) Water Management, (e) Management of ecosystem, (f) Pest and Disease Management, (g) Pollution and contaminant control, (h) Harvesting and packaging, (i) Cleaning, disinfecting and sanitation, (j) Social equity and justice, (k) Documentation and records. In June, 2016, five of our producers submitted the PGS application by filling the application form [3] to the Organic Shizukuishi Office and the producers submitted the PGS Grower's Pledge at the same time. In July, the first Organic Shizukuishi field inspection was carried out by using the PGS Field Inspection form [4]. The inspection was conducted by our inspection team of Organic Shizukuishi. When the producers fulfill the PGS Organic Plant Growing Principles and passed the Field Inspection, they were awarded with an Organic Shizukuishi PGS Membership Certificate. Consequent to the inspection, four out (4) of five (5) producers received the certificate. We submitted the Participatory Guarantee Systems Self Evaluation Form in September, 2016 to the IFOAM PGS team.
The plant growing standards of Organic Shizukuishi PGS require growers to maintain higher levels of control and assurance of organic production than those of JAS. Therefore, even the small producers can join our PGS and safe organic plant growing can be guaranteed. Currently there are no IFOAM recognized PGS groups in Japan yet. The IFOAM recognition is important to support the credibility and recognition of our PGS. We will take a leading role in the promotion of PGS in Japan once we gain it. Because consumer demands for organic produce are growing. In addition, the Tokyo Olympic and Paralympic Games will be held in 2020 and during the games at least 20-30 % of the foods to be provided to the athletes and the officials should be organic. This admirable practice started with the London Olympic and Paralympic games in 2012. This must be continued to as great an extent as possible even in the Tokyo Olympic and Paralympic Games.
This is also an important driving force to boost organic producers in this country.

Our family efforts to follow the organic initiatives

Our farm has been growing organic vegetables and fruits since 2008. In 2015 my wife started processing the vegetables and fruits into jams, pickles and others. These ingredients have been used in cakes, breads and other foodstuff. We have sold these foodstuffs at our daughter's bakery shop nearby. We have got many commendations and comments on these products directly from customers illustrated by the blue dotted line in Figure 1. These are very valuable feedback for us because every day this encourages us to further develop our produce and product processing.

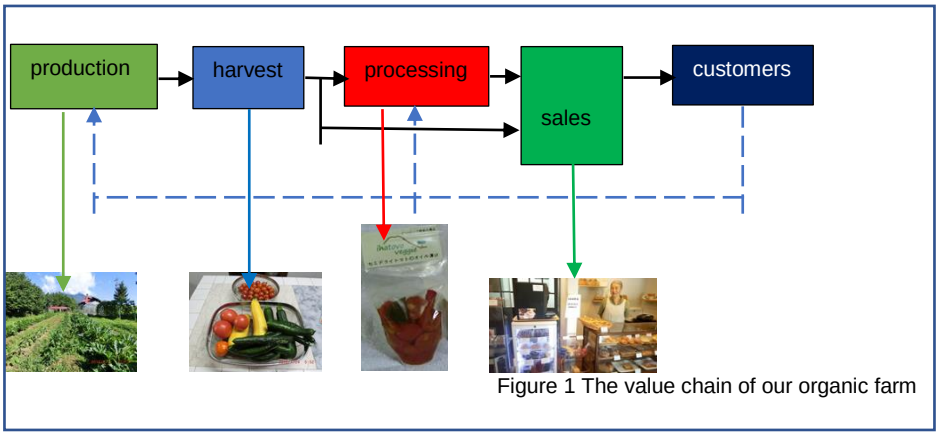


Figure 1 The value chain of our organic farm

Organic Products Value Chain

The value chain from our organic farm to customers including processing plants are illustrated in Figure 1.The black lines indicate flows from the producer to customers. We have a small processing plant on our premises. After the harvest, the products go to the processing plant or are delivered directly to the point of sale. We have established the value chain successfully, so that all we must do is to gather and analyze customers' feedback and reflect their view in our new farming plan, creation of attractive and healthy cakes, bread ingredients and other foodstuff. We can operate our own organic agribusiness initiatives quickly to meet various requirements of local customers because we are small and near to customers.

Discussion

The Organic Shizukuishi has started trying to get recognized as a PGS by IFOAM. After succeeding to gain the recognition, we will make our best effort to support more organic plant producers to get involved in PGS. We believe these actions will contribute to booting organic farmers and relevant agribusiness in this country.

References

Organic Shizukuishi website: http://organicshizukuishi.jimdo.com/

IFOAM Membership E-Directory, 2016 (Organic Shizukuishi is listed on page 74)

Appendix 3

[Extracted from pages 43 and 44 in IFOAM-Organics International IN ACTIPON General Assembly 2017]

MOTION M80: Highlight Un-ethical Behaving of Multinational Agroindustrial Corporations

Motion: IFOAM – Organics International should highlight ill effects of unethically behaving multinational agroindustrial corporations such as Monsanto by collaborating with various international organizations Rationale: The behavior of Monsanto and alike multinationals has had extremely negative impacts on farmers, especially organic farmers all over the world. To realize the organic 3.0 philosophy all over world, the strong leadership of IFOAM – Organics International is prerequisite. It is necessary to collaborate with other international organizations, hand in hand, i.e. the United Nations, World Health Organization, World Trade Organization, International Court of Justice and many more. The excessive behavior of e.g. Monsanto should be prevented by doing all that is humanly possible.

This year in March 2017, the Japanese government decided to abolish the Seeds Law. This means all farmers are obliged to purchase seeds from seed companies, because if they produce seeds themselves there will be a possibility of being sued by Monsanto. This prevents organic farmers from getting their own seeds after the harvest. In Japan, this is serious when it comes to increasing the number of organic farmers. We are trying to be an IFOAM recognized PGS, but this information can easily be obtained by Monsanto from the online database of IFOAM – Organics International. They will sue us as they have done in the past when we use seeds of our own for producing vegetables

and fruits. The Japanese situation above could also be applicable globally.

Organic Shizukuishi, Iwate Prefecture, Japan

Recommendation from the World Board: The WB recommends voting YES.

Motion 81 Communication Advantages of Organic Farming over Conventional

Motion: IFOAM – Organics International should gather documentation and communicate it in order to confirm the advantages of organic farming over conventional. Rationale: It is necessary to investigate recent international research and development activities on the advantages of the organic production and upload the results to the website e.g. of IFOAM – Organics International.

Major investigation topics could be:

(1) Effectiveness of the produce on human health

(2) Healthy soil maintenance and save our earth drives

(3) CO2 reducing activities that contribute to the Paris Agreement

(4) Taste of the produce

(5) Growing rate of crops

(6) Quantity of crop harvests

(7) Cost advantages

(8) Farmer satisfaction

(9) Economic sustainability

(10)True cost of produces

In Japan at any universities or even at national agricultural institutes, they have not carried out enough scientific studies on organic farming. Because their major research topics have been focused upon the breed improvements to produce tastier and more weather resistive rice, vegetables and fruits in the conventional agriculture. One of the trickiest situations is coming from the unsavory ties been political, bureaucratic and business circles in terms of fertilizers, agricultural chemicals and insecticides. The issues are internationally applicable so it would be necessary to investigate the latest scientific reports and papers internationally to compare conventional and organic agriculture exhaustively. Without doing this investigation, we cannot prove figure for Intensification in Organic 3.0 and we cannot persuade consumers about the advantages of organic produces.

Organic Shizukuishi, Iwate Prefecture, Japan

Recommendation from the World Board: The World Board recommends voting YES on this motion.

Appendix 4

Title: Innovative Initiative of organic agriculture- Practical symbiosis of forestry and organic agriculture -

In Japanese cities and towns, there are lot of Underdeveloped Woodlands Near Populated Areas (UWNPAs). These areas are about 8 million hectares [1]. However, the areas have not been well managed so that their natures have been destructed. Besides, these areas are good dens of vermin such as deer, bores, hares and raccoons. Some of them are harmful for the residents near from the UWNPAs to spend safe and secure life. Mr. Katsuaki Takahashi has been practicing Innovative Initiative of organic agriculture that is the realistic symbiosis of forestry and organic agriculture since 2008. His project and expected contributions are summarized below.

1) Innovativeness

To manage the UWNAs, he has used the life cycles of forestry and those of the organic agriculture. The representative life cycle of forestry can be described as; i. plowing, ii. planting, iii. weed clearing, iv. pruning, v. thinning, vi. clear cutting.

The period from plowing to thinning, no income can be expected for forestry producers so that the forestry conservation fund can't be guaranteed. This is one of the difficulties to manage the UWNAs in this country. On the contrary, the life cycles of organic agriculture are illustrated as; i. planting, ii. growing management, iii. Harvesting. The cycle is repeated yearly.

To compensate the lack of fund at the initial stages of growing forestry, the application of the organic agriculture can be recommended. He has introduced the idea of symbiosis of forestry and organic agriculture to create fund [2].

(1) The symbiosis of forestry and organic agriculture project

(a) Tested agricultural crops

(i) Red bean plant: Plant roots have the root nodule bacteria so that it creates the nitrogenous fertilizer to the soil

(ii) Lactarius hatsudake Nobuj. Tanaka (to be abridged as hatsudake mushroom): to be grown in the forestry especially along with the Japanese red pine trees.

(b) Forestry

Composed of Japanese red pine trees (28 % of entire UMNPAs) [3]

(2) Project results

(i) Benefits from the symbiosis

- from Japanese red pine trees to hatsudake mushrooms: Prevention of unwanted bacteria in the mush room

- from Hatsudake mushrooms to Japanese red pine trees: Supply of amino acid to the pine trees

- from red bean plants to organic cultivating lands: root nodule bacteria supply the organic nitrogenous

fertilizer to cultivating lands

Therefore, the symbiosis of forestry and organic agriculture provides good growing effects on the forests and organic vegetables. At the same time the symbiosis will contribute to natural environment preservation for UWNPAs.

Trees and agricultural crops	Grounds	Sales
Total number of Japanese red pine trees: 30	6 out of 30 trees produced hatsudake mushrooms	Tree sales will be in future *No income for the time being*
Number of hatsudake mush rooms picked up:27 pieces	4.5 pieces/tree	27 x 50 yen (per piece) =1,350yen
Red beans harvested: 2,200 g	14 plastic packs weight of one pack: 150 g	14 packs x 176 yen (per pack) = 2,464yen
Total		3,814 yen

(ii) Annual sales of the project

See table 1.

Table 1 Annual sales of the project coming from the hatsudake mushrooms and red beans

(3) The project simulation

His project has been conducted in the limited areas in his own field. He has extended his idea to more practical size of 1,000 m^2 cultivated land in the UWNPA.

(a) Simulation results

Trees and agricultural crops	Grounds	Sales
Total number of Japanese red pine trees: 250	20% trees will produce hatsudake mush rooms	Tree sales will be in future
Total number of hatsudake mush rooms to be picked up:225 pieces	4.5 pieces x producing trees 250 x 0.2	225 x 50 yen (per piece) =11,250yen
Total number of red beans plants in the 1,000m^2 cultivated land: 2,000	Rate of growing: 0.62 Expected growing plants: 0.62 x 2,000 Expected beans per plant: 48 g Total harvested bean in weight 0.62 x 2,000 x 48= 59,520 g 396 plastic packs Weight of one pack: 150 g	396 packs x 176 yen (per pack) = 69,696yen
Total		80,946 yen

(i) Expected annual sales

See table 2.

Table 2 Expected annual sales coming from Hatsudake mushrooms and red beans 1,000 m^2 cultivated land

(ii) Possible employment

By the expected annual sales in table 2, it is possible to employ 8 labor forces (4 for forestry, 4 for organic agriculture) for the management of the UWNPA if the man-day cost/hour: 1,250 yen, labor hour/day 8 hours.

2) Relevance

(a) Expansion of employment opportunities for the elderly people

By 2020, Japanese population over 65 years old will dominate 29 % [4]. This trend is similar in major European countries. However, job opportunities to these retired old people are limited. Therefore, the proposed job opportunities of the symbiosis of forestry and organic agriculture would be appropriate and comfortable job for these people.

(b) Increase of organic producers in this country

Currently in Japan, only 0.35 % organic farm acreage over total cultivated acreage [5], therefore this newly created jobs will contribute to increase organic producers.

(c) Water resource protection

The initiative will contribute the water resource protection because it never uses chemical fertilizers to grow trees and vegetables.

3) Applicability

(a) Management of Underdeveloped Woodlands Near Populated Areas

To preserve rich natural environments of UWNPA in a profitable way is highly required from society. The proposed initiative by Mr. Takahashi is definitely providing one of the solutions for this matter.

(b) Long range field soil conservation

The initiative can fertile fields by organic fertilizer such as weeds under red pine trees and root nodule bacteria of red bean plants. This is to contribute to continue conserving natural and good field soil.

4) Impact potential

(a) Employment of the silver aged people to care underdeveloped woodlands near populated areas.

(b) Prevention of the water pollution.

References

[1][3] https://www.env.go.jp/nature/satoyama/chukan.html

[2] http://www.fao.org/docrep/l5470e/l5470e04.htm

[4] http://www.populationpyramid.net/japan/2017/

[5] http://www.daichi-m.co.jp/foodreport/3619/

Photos used

Mr. Takahashi in his farm

Red bean plants and Japanese red pine trees

Hatsudake mushrooms

Packed redbeans