

INNOVATIVE CASES OF ORGANIC AGRICULTURE IN ASIA



Edited By

Shaikh Tanveer Hossain, Wahyudi David, Jennifer Chang and Li Feng

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Greetings from the President of IFOAM Asia

In the *Organic 3.0 Strategy*¹ of IFOAM-Organics International, the “Culture of Innovation” listed as the first in the strategy. Organic agriculture is also defined as “a combination of tradition, innovation and science”. It is apparent that organic agriculture is not just a simple return to traditional agriculture. Implementing innovations into the whole processes of organic 3.0 is critical to the real progress, success, and sustainability of organic agriculture.

The promotion of organic agriculture in Asia is the main task of IFOAM Asia. Since its establishment in 2012, IFOAM Asia has worked actively with Asian local governments in hosting regional events, capacity-building programs and on establishing designated Centers crucial to our work. Among them is the Asia Organic Agriculture Technology, Research & Development Xichong Center.

Under a 10-year cooperation agreement between Xichong County and IFOAM Asia, the “Xichong International Organic Innovation Summit” is to be held every two years while the Asia Organic Agriculture Technology, Research & Development Xichong Center is responsible for collection, dissemination and publication of innovations in organic agriculture.

To this end, the Xichong Organic Innovation Committee has been formed consisting of 9 experts from different Asian countries or regions. After the great efforts made by the experts of the committee as well as the assistance of the IFOAM Asia head office staff, the first collection of the innovation technologies and cases have been compiled for publication and dissemination.

¹ <https://www.ifoam.bio/why-organic/organic-landmarks/organic-30-truly-sustainable>

I would like to express my appreciation to all the experts in the Innovation Committee, the editorial staff and Xichong County in making this work possible during the serious COVID-19 pandemic.

I believe and sincerely hope that the innovative and best practical technologies, experience, and application methods could be useful references to organic stakeholders not only in Asia but also in the world.

A handwritten signature in black ink, appearing to be 'Zejiang Zhou', written in a cursive style.

ZHOU, Zejiang

President, IFOAM Asia

June 24, 2020

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PRODUCTION



Can Pests be Controlled by Rice and Water Bamboo System?

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Introduction

In the autumn two years ago, I went to an organic farm in Jiaxing city, Zhejiang Province. The rice had just been harvested, and only the straw was left in the field. However, a kind of green plant was very conspicuous and caught my attention. It was a common aquatic vegetable in southern China– the water bamboo. The owner of the farm said that they had planted water bamboo to control the pests affecting the rice plants. The solution had been offered by a university professor and proved effective in the pest control of the rice plants. In the recent years, no plant protection product had been applied and no serious rice pests occurred.

Unique Approach

At present, the production mode of rice and water bamboo system is not common, and I undertook some research which revealed the following data.

The scientific name of the water bamboo is *Zizania latifolia* and is a gramineous plant. According to the *Flora of China*, the water bamboo was called *Diaohu Rice*, and had been considered as one of the "six cereals" in ancient China. Later, the *Zizania latifolia* became infected with fungus, and could not blossom and bear

seeds. The stem of the plant also became swollen. However, the people found the stem very delicious and it became a common vegetable.

Pests like *Chilo suppressalis*, rice planthopper, etc infect the rice plants and cause damage to the flowers, ears, or sheaths of rice. The *Zizania latifolia* has larger individual, thicker and tender leaves, and may be more attractive to rice pests. Scientists have found that in rice growing period, *anagrus optabilis* and spiders moved to rice field, and during the rice harvesting and fallow period, they moved back to water bamboo field, so the population of natural enemies was effectively protected.



Note of the photos - The arrow refers to water bamboo field.

Impact

The organic farm can save about 1500 RMB / ha for not purchasing plant protection products every year. The planting area ratio of rice and water bamboo is about 10:1. The yield of rice and water bamboo can reach 6 tons / ha and 18 tons/ ha every year respectively.

Pests can be effectively controlled in the rice-water bamboo system. The natural enemies are protected. Production costs are saved and economic income is guaranteed. This model is more environment-friendly and worthy of further promotion.

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Farm: Sanxiangqiao Organic Vegetable Production Unit, Jiaxing City Jiaxin Vegetable Farming Development Group Co., Ltd.

Case Country: Bangladesh



Organic Sack Gardening for Small-scale Farm Households

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Introduction

Sack gardening is a simple, low-cost, technology for those with extremely limited or no space for vegetable production. It allows the disadvantaged and people living in unfavourable ecosystems (such as char or basin areas) to grow vegetables, providing greater diversity and nutrition to their diets. It also improves food security and can increase household incomes.

Sack gardening does not require much land. A square meter is sufficient, depending on household requirements and preferences. If enough nutritious vegetables are grown, the needs of a family can be met, while saving hard-earned cash and shopping time. The sacks can also be relocated, allowing families with no permanent residence to cultivate vegetables.

Unique Approach

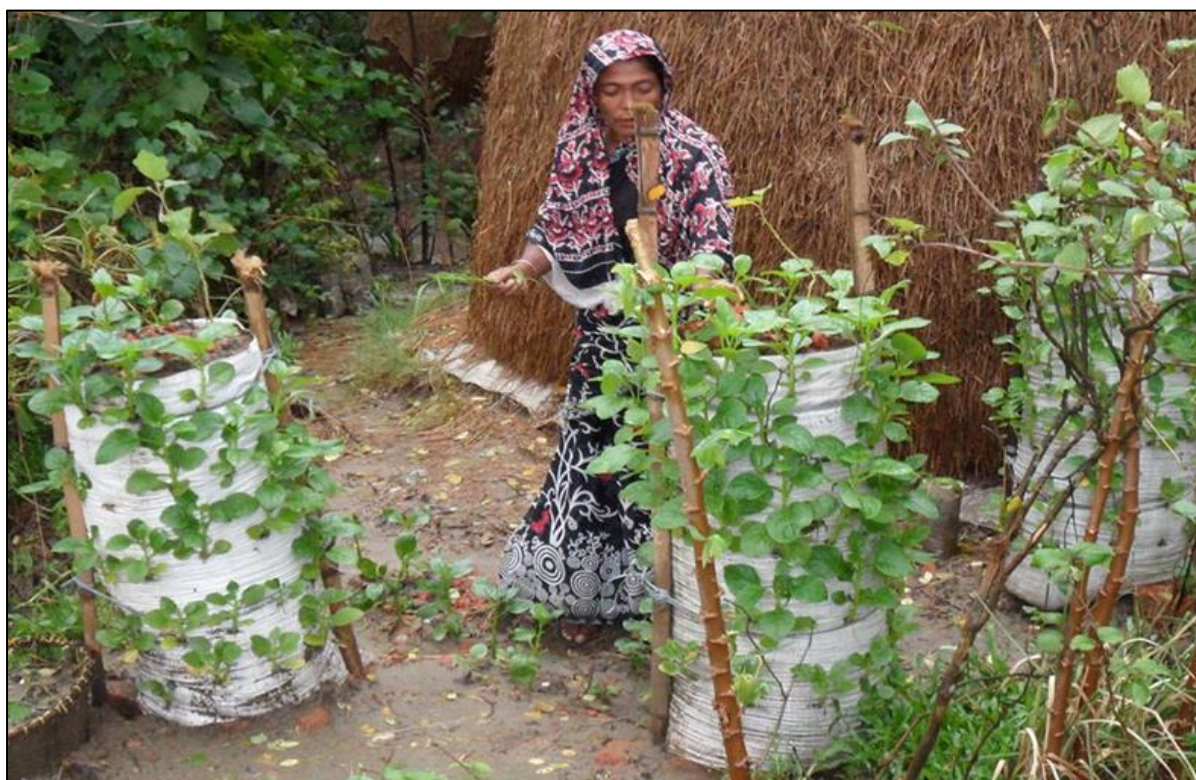
The sack gardening method was successfully adopted by Solidarities International, a France-based NGO, in urban slum areas in Kenya. It was introduced in Bangladesh in 2010, where it attracted widespread media attention and the method has been accepted by farmers and city dwellers.

The benefits of sack gardening are numerous. Monocropping or mixed vegetables can be produced. Depending on the climate and crop, each sack can produce continuously for seven to nine months. The grower's initiative is the main capital, and this is a simple, low-cost method that is easily mastered. The technique has a positive impact on food security, nutrition, climate change, women's participation in feeding their families, and sustainable development. It can improve community food production systems by creating year-round gardens. Vegetables from the sacks ensure the availability of vitamins and minerals essential for the proper functioning of the immune system and for the full physical, intellectual, and cognitive development of people.

Impact

1. General - Helping people and the Planet

Households benefit from better nutrition and potential supplementary income when the surplus produce is sold or bartered. Women are particularly empowered, as they generally organize and tend urban gardens. Communities can adapt to changes resulting from increasing populations and climate change.



Since the sacks can be transferred from one location to another, this is convenient for areas with increasing numbers of climate refugees.

Recycling urban organic trash and water comprises a form of permaculture that reduces waste and resource use within cities. Utilizing space and recycling resources in cities result in alleviating pressure on dwindling farmlands.



2. Spill over effect

Sack gardening has been successful in Bangladesh, Uganda, and Kenya. The technique was disseminated via producer-to-producer visits, publicity materials, and mass media. The practice also spread spontaneously within neighbourhoods as people saw the many rewards.

3. Economic benefits

On average, a Bangladeshi household could increase its weekly income by five dollars (US\$5.00) by selling surplus vegetables and reducing the amount spent on purchasing them from the market.

This method can be applied and replicated around the world as urban agriculture has great potential. If managed correctly, sack gardens can provide food for families throughout the year. Shared or communal gardens could be established on high-rise apartment building rooftops. Properly designed sack gardens can be entirely self-sufficient by harvesting rainwater, using solar power, and applying manure or kitchen waste as organic fertilizer. Once set up, sack gardens require minimal efforts for maintenance. Furthermore, they are a great way to teach people on the essentials and benefits of urban, organic gardening as well as good nutrition.

Growing vegetables in bags or sacks is an effective alternative to households growing their own vegetables for a rich and diverse diet without the need of sufficient land.

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Case Country: Bangladesh



Innovative Zero Energy Cold Chamber for Small-scale Farm Households

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Introduction

A low cost 'Zero Energy Cool Chamber (ZECC)' has been developed for storing fruits and vegetables by using the method of passive evaporative mechanism. Due to the lack of transportation facilities, shortage of energy supply and a lack of investment on storage combined with a lower price of vegetables during the harvesting season, farmers in the rural areas often sell their products to the middleman or in the local market at low prices.

Often these farmers are unable to get the returns on their invested money of cultivating vegetables or fruits. This situation has led to a higher percentage of poverty level in the farming community. Therefore, there is an urgent demand for low cost storage systems such as zero energy storage system which does not require electricity for operating to store the agricultural produce.

The main disadvantage of fruits and vegetables is their vulnerability against high temperature and so consumer preference on freshness, colour, size, and shape cannot be effectively met. The postharvest losses of fruits and vegetables are

nearly 25% due to inadequate postharvest handling practices and non-availability of storage facilities.

There is a necessity to prevent the waste of fresh fruits and vegetables during storage by adopting newer storage techniques. For this purpose, an eco-friendly new storage system called “Zero energy cool chamber (ZECC)” has been developed and extended to the farmers’ fields from the viewpoints of low cost and energy-saving.

Unique Approach

In this storage system, liquid water molecules of the brick wall cooler turn into gas under the influence of outside air through a process that uses energy to change the physical state. Heat moves from the higher temperature of air and brick walls, to a lower temperature of the moistened sand and zeolite mixture due to convection and conduction, respectively.



During this conversion process, the surrounding temperature decreases. This cooling temperature by the effect of evaporation, cooled the inside temperature of the ZECC below the dry-bulb temperature. This is due to a combined effect of underground temperature, the moist inside wall and watering. As a result, the inside air temperature of the ZECC becomes cooler.



Impact

Bangladesh is not a country for conventional cold storage. Considering its poverty condition and frequent power shutdown, the expansion of permanent conventional storage is not a sustainable choice. An appropriate low-cost sustainable storage solution within the rural farmer's financial ability is to construct ZECC which is both operational friendly and environmentally sound. The construction of the ZECC can contribute to changing the rural, agriculture-based society, and could be an effective approach to develop household-based low-cost fruits and vegetables storage in this country.

The farming community has given a positive response to the use of ZECC in Bangladesh. From a gender perspective, this study also improved the social position of women. Therefore, the ZECC technology is very suitable for promotion in Bangladesh and in other countries with similar circumstances.

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Case Country: China



Case Analysis of Organic Vegetables of Beicaiyuan Farm, Beijing Suburb

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Introduction

The Beicaiyuan Farm (<http://www.beicaiyuan.com/>) is located in the Xiaofengying village of Kangzhuang Town, Yanqing District in the Beijing suburbs, about 120km from the downtown of Beijing. Based on the good natural eco-environment and the increasingly optimized business environment in Yanqing District, the Beicaiyuan farm from the years 2013 to 2019 has developed into a national organic planting comprehensive standardization demonstration park. It has now created a good agricultural brand under its own name of "Beicaiyuan".

Beicaiyuan has established production bases in many cities with a total area of more than 170 hectares. More than eighty kinds of organic vegetables have been planted throughout the year. The annual output is as high as 2000 tons, ensuring the annual supply of "Beicaiyuan" brand of organic vegetables.

Unique Approach

Through cooperation with some research institutes, the Beicaiyuan cooperative adopts the national leading and world-wide advanced natural enemy control method for "pest control" showing a strong pertinence to pests and not causing any pollution.

The main technical indicators of organic vegetable production, such as temperature, humidity, pests, and other technical parameters, are automatically collected in 24 hours with IOT (Internet of Things).



Figure 1 Agricultural intelligent collector and monitoring equipment

In 2019, the Beicaiyuan farm implemented the "Seven Unifications" management mode in their farm management which includes the following:

- supply of high-quality seedlings,
- green prevention and control for pest and disease,
- mechanized operation,
- scientific management of water and fertilizer,
- marketing of graded clean vegetables,
- creation of high-quality brands
- and recycling and utilization of waste.

The Beicaiyuan farm focused on modern agriculture development and being the implementation site of the intelligent agricultural park project in Yanqing District, it has built an intelligent and digitalized, scientific and industrial management platform of a smart agricultural park.

Impact

Through the Internet of Things, Beicaiyuan has integrated the production and distribution centers, the logistics system and marketing network, realizing the all-round management of "business flow, logistics, information flow and capital flow". The application proportion of Internet of Things information has been increased to 60% in the whole management of the farm while the labour force has been reduced by at least 20%, and the use amount of irrigation water by more than 20%. The application amount of biological pesticides has been reduced by more than 30%, and the rate of excellent qualified products has reached more than 90%.

With the control effect reaching more than 80%, and the use of chemical pesticides was reduced by more than 50% in the radiation area; the green and ecological control measures for pests of horticultural plants (vegetables, fruits and flowers) in Yanqing area have been implemented smoothly with the reduction in the application amount of pesticides and the zero growth of chemical pesticide application has been ensured.

Case Country: Japan



Role of Dried Jellyfish as an Innovative Means of Organic Agriculture

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Introduction

During the recent years, the abundance of jellyfish has increased in oceans, causing severe damage and problems to the fishery and coastal facilities. The jellyfish are also found at the banks of the sea and have polluted the environment and hampered the ecosystem. Due to short life span, the longest surviving species survive only two to six months. As a result, a huge amount of dead jellyfish has been detected at the shore of the Sea of Japan and the Japan inland seas, other coastal areas in Asian countries.

The jellyfish material is contributing to eco-friendly agricultural farming, and is a good example of 3R- "Reduce, Reuse and Recycle"- the three principles which help to cut down on the amount of waste thrown away and help to conserve natural resources, landfill space and energy. The technology has been effective

in further addressing sustainable agriculture in terms of socially acceptability, environment-friendliness and economically viability.

It was observed that the rice yield with the application of jellyfish chips was approximately 90% compared to that of conventionally grown rice. Weeds were significantly suppressed as well, suggesting that jellyfish chips can be an effective substitute for chemical fertilizers and herbicides.



Unique Approach

The processing of edible pileus of the jellyfish is quite expensive owing to the hygienic standards requirements of processing. However, the oral arm, which occupies about 60% of the whole jellyfish, has also been found to have similar efficacy as the pileus, on the growth of the rice plant.

With the application of jellyfish to the paddy fields, the production process becomes simple, and cost-effective. The simplest method of preparing jellyfish chips is to dry the collected jellyfish on the beach and then shredding into smaller pieces.

It was also confirmed that salt adhering to jellyfish chips (about 50% on a weight basis) have hardly any influence on the yield of paddy rice. If the whole body of the jellyfish is applied to the paddy fields, the production process becomes simple, thus reducing the cost.

Impact

1. It was observed from several studies that the jellyfish chips effectively control the rice weeds, contributing as fertilizer and yielding a very much comparable rice yield over chemical (conventional) treated rice.
2. The novelty of using jellyfish has never been experienced in agriculture for weed control and nutrient management in view of organic rice production.
3. The use of jellyfish chips to agriculture can bring great benefit not only to farmers aiming for organic cultivation of paddy rice in Asia regarding weed management and nutrient enhancement but also to fishermen who supply jellyfish. The innovations have high impacts on the improvement of rice production through new organic methods, with positive impacts on the fishing industry and innovative organic agribusiness.

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Case Country: Bangladesh



Barrier Crops to Reduce Virus Diseases in Organic Potato Fields

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Introduction

Potato is one of the most important crops grown in Bangladesh ranking third next to rice and wheat. The annual potato production in Bangladesh is more than 10 million tonnes against the national requirement of about 6-7 million tonnes. The government of Bangladesh has adopted its organic policy and the potato has been chosen as one of the crops to be grown following organic practices. As per the organic rules, the seed potatoes must be organic with better qualities particularly free from viral diseases.

However, viral diseases transmitted by aphids are the major problem for the organic seed potato production as they account for approximately 50% of the 600 known viruses with an invertebrate vector.

The current control strategies for aphids regularly rely upon pesticide application in the conventional method. In contrary to this method, a few cultural methods including barrier plants are used to minimize viral infection in organic potato farming. Barrier plants may act as real natural sinks for non-persistent aphids-transmitted viruses and accordingly, this study was conducted to assess the reduction of aphids as well as efficiency to protect virus infection in organic potato seed production.

Unique Approach

The study was conducted at 'Organic Block' under the experimental field of Tuber Crops Research Centre, in Gazipur, Bangladesh during the last two consecutive years of 2018 to 2019 and 2019 to 2020. Organic practices have been being followed in this block since 2014. After harvesting the crops in each specific year, the land was planted with green manure like *Sesbania* sp. and they were fully decomposed before the commencing of the next season. The experimental plot located in the high land had sandy clay loam soil.

The study was conducted with two different plots of 1 (one) hectare of land each. The treated plot was surrounded by barrier crops while the other was a control plot (no barrier crops). However, other organic practices like soil fertility management and pest management practices in addition to intercultural operations were similar for both plots.

Three different types of crops namely sunflower, wheat and soya bean were used as barrier plants in three different rows from outside to inwards, respectively. The crop border method is based on two facts:

- 1) aphids, attracted to contrasts between green (crop) and dark (soil), usually land on field margins and start feeding,
- 2) aphids that arrive carrying a non-persistent virus on their mouthparts will land on the crop border and start feeding to lose their capacity to transmit non-persistent virus to the main crop.

The width of sunflower row was about 2 (two) feet while the row for wheat and soya bean, each was about one foot and thus, the total width of barrier crops was about (4) four feet. These barrier crops were planted surrounding the main plot before two weeks of potato plantation. Potato was planted in same date in the treated and controlled plots. The data on number of aphids in unit plot as well as number of Potato Virus Y (PVY%) was recorded at sixty-five (65) days of planting in both plots.

Impact

A marked variation was observed in the number of aphids, in the incidence of PVY and finally, in the yield of quality seed potato between the crop-bordered plot (barrier crop) and bare-ground bordered (control) plot. There was a significant reduction in the number of aphids per square meter in the plot with barrier crops.

The average number of aphids per square meter in the barrier crop plot was found at 33.1 and 42.7 in the years 2018 to 2019 and in the years 2019 to 2020, respectively, while this figure was at 51.9 and 67.4, respectively for the plot without barrier crops (control plot).



Fig. 1 Vegetative growth of organic potato with Barrier crops

Similarly, the incidence of PVY was significantly reduced in the barrier crop plot. The average PVY incidence on potatoes grown in the barrier crop plot was at 2.1% and at 3.2% in the years 2018 to 2019 and in the years 2019 to 2020, respectively which was significantly lower than PVY incidence on potatoes grown in bare-ground border plot (7.8% and 11.2%, respectively). Barrier crops such as sunflowers also performed well as virus-sinks because of their flower colour attracts lady bird beetles that feed on the virus vector-aphids.

Although, the total seed potato yield (21.7 t/ha) in barrier crop plot was higher than control, it was identical with the control plot. However, the quality of organic potato seed was found better in barrier crop plot due to less presence of aphids and finally reduction of PVY incidence.



Fig 2. Harvesting stage of organic potato surrounded by barrier crops

Case Country: China



Hongyuan Organic Yak Dairy Production

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Introduction

Hongyuan Yak Dairy Co. Ltd. Has been recognized as a national key leading enterprise of agricultural industrialization and an enterprise of national poverty alleviation. After more than 60 years of development and construction, it has grown into a strong enterprise. At the present, the company covers an area of 275 mu (18.33 hectares), and has developed into one of the largest yak dairy factories in China with international advanced equipment, advanced technology, advanced management and annual production capacity of more than 80000 tons. Its leading product "Hongyuan Yak Milk Powder" series sell well in more than ten provinces and cities, including Beijing, Shanghai, Guangdong, etc., and the sales in the provinces cover more than 80% of the regions.

Unique Approach

The yaks in the production base are mainly bred naturally with generally, two births in three years - one birth a year or one birth in two years for some yaks. From March to October, the yaks are free to forage in the natural grassland (summer grassland). All kinds of fresh forage are available for the yaks from November to February of the following year. The cattle will be moved to the winter grassland (the planned rotational grazing area, which was not used for grazing in the summer) for grazing. No compound feed or other artificial planted feed will be fed to the cattle throughout the breeding cycle.



The Maiwa yaks have a long history of breeding in Hongyuan pasturing area. They have strong resistance to disease and rarely suffer from disease when the forage is sufficient. There has been no large-scale disease occurrence among the yak grazing on the local grassland. When some yaks contract a disease, they are usually treated with herbal medicine after being introduced into the isolation area. Before and after milking, the milking utensils and yak nipples should be washed with clear water and sterilized with 75% alcohol or 0.5% salt water.

Impact

In the process of promoting industrial development, the Hongyuan Yak Dairy always adheres to the scientific development concept based on the premise of ecological resources and species protection. Based on these principles, the enterprise has steadily promoted the yak industrialization project to protect the local ecological environment to the greatest extent.

The enterprise has vigorously developed grassland ecological animal husbandry and industrial management and truly realized the "five changes" - from predatory management to sustainable development; from raw material production to intensive processing; from quantity to high quality; from high-yield to high-efficiency; and from traditional extensive management to standardized production. And all these developments have finally led to the protection and growth of the ecology, grass industry, animal husbandry, and to the processing industry and production. All these efforts would provide the society with nutrition, safety and 100% pure yak dairy products without any additives.

Sources

Company web: <http://www.hy1956.com/>

Case Country: China



Guangzhaoren Tea Garden: Planting Trees, Keeping Grass and Raising Chickens

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Introduction

The farm is located in Shajian Town, Hua'an County, Zhangzhou City, Fujian Province, covering an area of 2350 mu (156.67 hectares), with an altitude of 300 to 800 meters.

Since the artificial reclamation of land in 2003, the following have been planted:

- 1000 mu (66.67 hectares) of organic Tieguanyin,
- 500 mu (33.33 hectares) of oil tea trees,
- 300,000 first-class national protected trees such as *Dalbergia odorifera*, *Phoebe*, *Manglietia*, *Taxus*, aloes, etc.,
- 200 mu (13.33 hectares) of Chinese herbal medicines with the same origin of medicine and food such as lilies and five finger peaches
- 100 mu (66.67 hectares) of Pitaya and Passion fruit.

In addition, the farm has opened up more than 100 mu (66.67 hectares) of an organic vegetable garden to plant seasonal vegetables, which not only provide food for the guests who come to the farm to learn from experience, but also provide fresh and healthy organic vegetables for the local Xiamen customers.

Unique Approach

Guangzhaoren follows the principle of ecological balance to realize the three-dimensional planting of organic tea and rare trees. After more than ten years of experimenting, a set of matured development models has been explored.

In the organic tea garden, the unique way of interplanting *Dalbergia odorifera*, aloes and other herbs has been adopted. Trees such as *Dalbergia odorifera* and aloes can deter pests, while the falling flowers and leaves can be absorbed by tea trees as fertilizer, which not only has good economic benefits and environmental protection value, but also gives the tea a unique health care function.

Thirty-five to forty-five trees are planted per mu (0.067 hectares) with the distance between each tree to be five to six meters to achieve the symbiosis of tea and trees. In addition to the tea garden, more than three hundred thousand trees from thirty species of national precious trees such as *Manglietia*, *Phoebe*, etc, have been planted. These trees not only protect the ecological environment, but also provides a haven for birds and wild animals.

No herbicide is used in the tea garden, because in addition to manually de-densifying the garden by pulling out some tea trees and leaving on the ground as fertilizer, grass is also left behind in the garden for insects to feed on. This is a harmonious symbiosis with the tea trees. Furthermore, there are about two thousand chicken and ducks in the tea garden, providing valuable fertilizer and acting as a means of pest control.

At the present, the new mode of "organic + health care + study tour + conference + leisure and sightseeing" is implemented as part of the human-oriented organic farm. Through holding workshops, people from all over the world can learn about organic agriculture, tea culture, preventive medicine and dietotherapy.

Impact

The enterprise has realized the characteristic agriculture of planting, processing, and trade (including export). Local villagers have been hired and trained to work in organic farms for a long time. Villagers have not only learned and developed the awareness and habits of organic farming, but also started to avoid using pesticide and chemical fertilizer on their own farms especially in growing vegetables.

The organic practices and demonstration of Guangzhaoren also encouraged to the ecological transformation of many agricultural enterprises at home and abroad.



Hand weeding



Artificial terraced fields



Tea garden irrigated by mountain spring water



Tea hand picking



Catching insects using chickens



Interplanting of Aloe and Dalbergia

MARKETING

Case Country: Bangladesh



Organic Tea Ecosystem: Local and International Impacts

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Introduction

The Kazi and Kazi Tea Estate (KKTE) is a pioneer of organic tea plantation in Bangladesh. It is the first internationally certified organic tea plantation in Bangladesh by USDA, NOP, LACON and has received other certifications for sustainable agriculture practice from B Corporation and Rainforest Alliance.

The location of KKTE is on the farthest northeastern part of Bangladesh in the *Panchagarh* district with 1,679 hectares of land under organic tea cultivation which is around 86% of total allocated land by the Bangladesh Tea Board in that district (Figure 1)^{2*}.

A feasibility study conducted by the Bangladesh Tea Board in 1999 revealed that 16,000 hectares of land is suitable for the cultivation of tea, considering the soil

^{2*} Figure 1: Tea estates location in Bangladesh. A focus is given on northeastern part especially on *Panchagarh* district in Bangladesh

quality, elevation and rainfall parameter) in the farthest northeastern part of Bangladesh (Figure 1, only 50 km south of *Darjeeling* India. KKTE took the opportunity to start plantation in 2000 after getting barren land from the Bangladesh Tea Board.

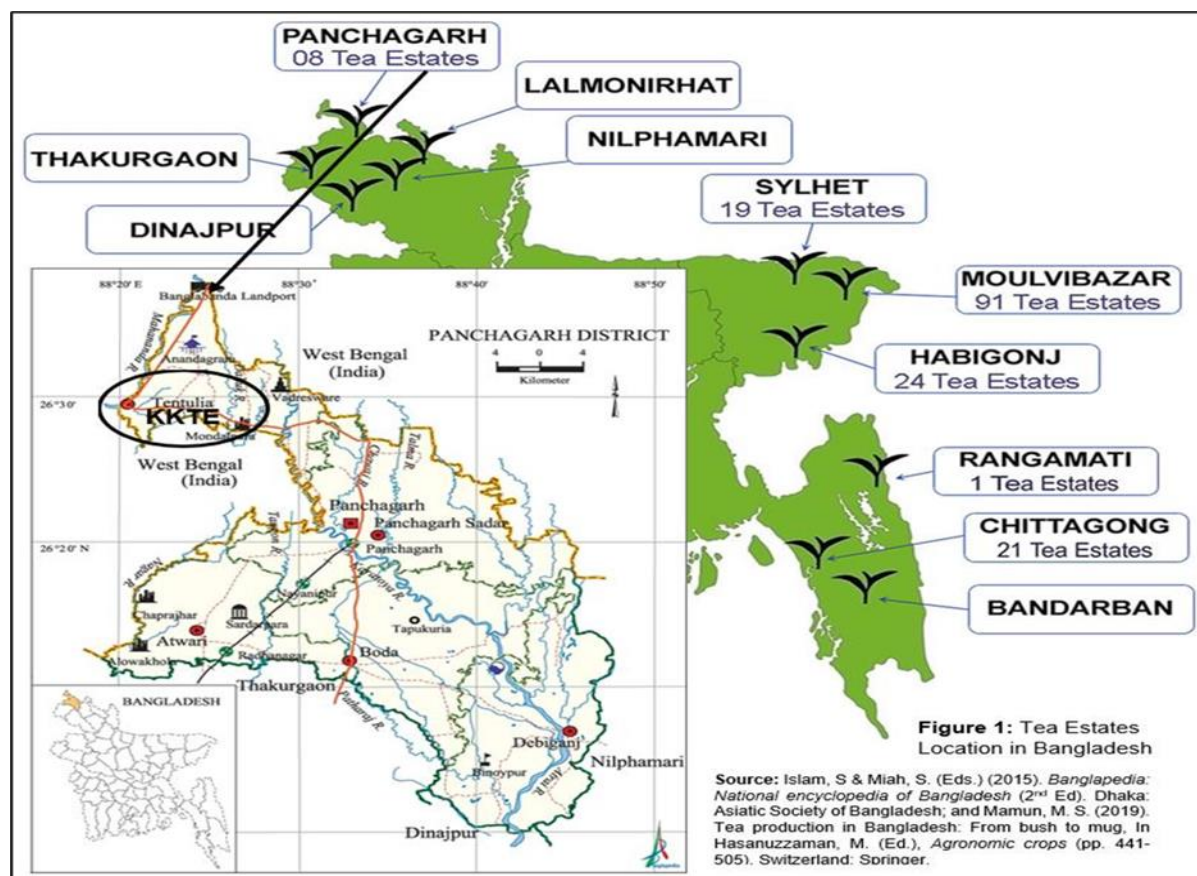


Figure 1. Tea Estates Location in Bangladesh

KKTE uses only natural resources to control agricultural pests and weeds like neem (*azadirachta indica*), and earthworms and cow dung-based fertilizers which is the key in organic farming processes. As the tea plantation required shade trees, KKTE had planted innumerable herbal trees to protect insects. The plantation area is enriched by rainwater and the biodiversity is maintained by using bio-fertilizers. In addition, vegetable cultivation and cattle raising are undertaken organically on the plantation.

KKTE organizes this organic eco-system with community participative approach where women play a vital role. This cooperative system builds inter-linkage between KKTE and the cooperative ensuring the constant supply of organic fertilizers and upholding the sustainability of the community.

KKTE, like other tea plantations in Bangladesh, is undertaken by women workers. Around two thousand three hundred women workers are involved in the green leaf plucking and the production process.

Tea production greatly depends on seasonality, weather condition, and the number of months for annual plucking activity. The average daily wage for the plucking of green leaves is around USD 5.89 to 7.07 per labour day, which is higher compared to the average wage of USD 1.42 to 3.8 per labour day of semi and skilled workers in Bangladesh. Moreover, in the KKTE organic eco-system, women have other income generating sources in the co-op mechanism by rearing cattle and selling the milk.

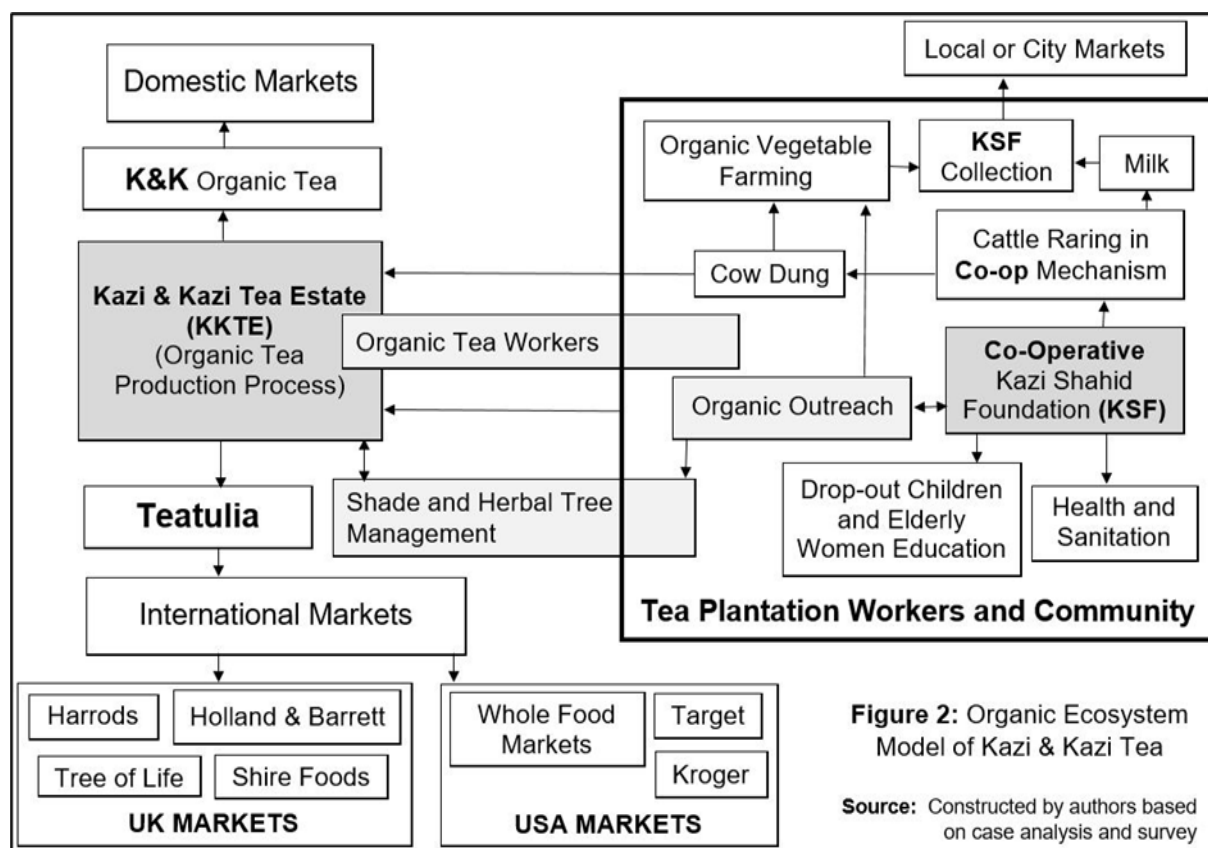


Figure 2. Organic Ecosystem Model of Kazi & Kazi Tea (KKTE)

Unique Approach

KKTE believes in a sustainable ecosystem with the participation of the community using a cooperative approach. This model emphasizes on natural environment protection as well as economic and social sustainability with women empowerment.

In the co-op mechanism, the members may be workers or non-workers of the tea estate but may obtain financial sustainability by taking 'loan' of a milking cow and the milk can be sold through Kazi Shahid Foundation (KSF) to markets. The cow dung goes back to KKTE and the organic vegetable gardens. This is a 'barter' form of payback system which takes away the pressure from the cash payment mechanism. Moreover, KSF emphasizes on education for school drop-out children and elderly women; and provide sanitation and health facilities for their communities (Figure 1). This is a win-win mechanism which encourages the betterment of the community and enhances organizational sustainability. Due to its premium quality, K&K organic tea sells at 27% higher price than other brands in the domestic market.



Moreover, KKTE tea has already taken shelf-space in international markets (e.g. Harrods, Holland & Barrett, Whole Food Market, Kroger) in the UK and USA under the brand name of 'Teatulia'. They are the pioneers in introducing 'Organic Tea Soda' in canned form under the brand name 'Teatulia' in international markets.

Impact

The north-eastern part of Bangladesh, especially *Pachangarh*, is considered as one of the poverty prone zones in Bangladesh where economic sustainability is a major concern for the community. Women empowerment, social and economic sustainability are a far cry.

KKTE after getting land from the Bangladesh Tea Board took up the challenge to set up the first organic tea plantation in a barren area in Bangladesh under a co-op mechanism that ensured social and economic sustainability among the community while maintaining an organic ecosystem in a diverse and competitive marketing environment.

KKTE produces the best quality organic tea in Bangladesh and the K&K Organic Tea comes first to the consumer mind. Furthermore, the brand 'Teatulia' has secured a successful international footing in the global markets.

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Chunbo-E-commerce Platform for Promoting Organic Consumption

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Introduction

The Chunbo platform was founded in 2015 (<http://www.ithorp.com/>) and is a secure and healthy food purchase platform, committed to providing Chinese families with professionally tested safe, healthy food.

The platform covers more than 4,000 products of sixteen categories including healthy vegetables, fresh fruits, meat, poultry and eggs, aquatic seafood, savoury cooked food, pastry and baking products. Since its founding, Chunbo has always focused on environmentally friendly, safe and healthy organic food. Through the control of the whole process from the field to the table, consumers can easily choose safe food, eat "real food" and experience a healthy life.

Unique Approach

In the production base, the company has adopted drip irrigation and other water-saving and fertilizer saving measures. It also established a breeding laboratory for natural enemies to control diseases and insect pests by biological control, increased soil fertility, improved vegetable quality and reduced environmental pollution by using such measures as straw mulching, application of organic fertilizer and biogas slurry inputs.



The use of agricultural Internet of things system and other modern management means also ensure the production of standards, efficiency, the safety and health of vegetables.

In terms of consumer interaction, Chunbo has always been committed to building a two-way trust relationship, using strict testing and quality control standards, a variety of online and offline courses, coupled with community operation means, so that consumers can buy peace of mind, and eat at ease.

As a new online fresh e-commerce platform under the retail mode, Chunbo has always been committed to promoting and popularizing the knowledge of organic food by virtue of the advantages of the Internet, so that users can truly understand the organic standards, the benefits of organic food to human health and the significance of environmental protection.

Impact

By April 2020, Chunbo has carried out more than 100 organic farm visits and experience activities. It also conducted organic planting experience activities with more than 10 large offline markets. Taking advantage of content of e-commerce, Chunbo has compiled big data on the accurate user operations.

The platform has more than 500 KOL group managers, 800 user communities, and more than 100,000 users. It is also committed to finding partners under the common concept of "peace of mind, freshness, health and delicacy" around the

world to bring more global food and organic products to the Chinese consumers' tables. In addition, in the process of live broadcasting, Chunbo makes use of the unique advantages of content e-commerce, combining with publicity and promotion with marketing, and popularizing the significance of organic agricultural products to consumers in multiple ways, so as to finally realize the food concept of "peace of mind and health" of Chunbo.

Case Country: Japan



Successful Local Shift in Marketing Organic Produce: The Case of Organic Fukushima Adachi

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Introduction

Organic Fukushima Adachi is a group of farmers consisting of 25 members in the Nihonmatsu and the Otama areas in Fukushima prefecture, Japan. The group had lost more than 90% of their sales in the third year after the accident at the nuclear power plant, located 50 km east to the area. Faced with the crisis, the group sought every measure to recover the farm economy, including the launch of a partnership with a local supermarket chain, Ichii.

Now the area had become one of the few places in Japan where consumers can easily access locally grown, fresh, and certified organic produce.

Unique Approach

1. Collaboration with local logistics and wholesale company, Dairy Service. The company's trucks collect vegetables at each farmyard, pack them immediately in their facility, and deliver them to the stores within the same day.

2. Low-risk contract with Dairy Service. Dairy Service purchases the produce from farmers, with the full transfer of property rights rather than on consignment basis and bears all the risk of the unsold stock. Farmers do not pay the cost of delivery nor handling fees.

3. JAS organic certification. Unlike many other local organic food initiatives, their approach is unique in the sense that they stick to third-party certification, thereby enabling their produce to be labelled as “organic” to be sold in supermarkets.

4. Stakeholder meeting. All those involved in the food chain get together once a year and get to know each other over a drink. This meeting has been helpful in altering the mind of buyers at the supermarket.

Impact

1. The produce of the farmers have gained popularity and the sales have grown rapidly as well as the number of stores selling the produce. Sales of the produce have recovered and reached beyond the level prior to the nuclear accident.

2. The Dairy Service’s logistics system and the low risk contract arrangement allow elderly farmers and new farmers to supply their produce with ease.

3. Other players in the local food system including conventional farmers, retailers and consumers started to become part of their network, improving the truck loading ratio and strengthening the existing partnership.



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CERTIFICATION



Organic Two-dimensional Anti-Fake Labelling and Management System

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Introduction

In the year 2011, in order to prevent the sale of fake organic products, the Certification and Accreditation Administration of the People's Republic of China (hereinafter, "CNCA") stipulated that the minimum sales packaging of organic products must be attached with organic anti-fake label, consisting of the China Organic Product Certification Mark and its unique number (17 digits organic code), the name of certification body or its logo. Consumers can query the information of organic products through the China Food and Agricultural Product Management System and access the information on the traceability of the organic products.

However, there are two shortcomings in the use of the label:

- 1) Consumers can scrape the organic code on the label only after paying for the products but not before the purchase. The organic code of 17 digits needs to be manually inputted in the online system to verify the organic integrity of the products purchased. This lowers the rate of verification as it provides an inconvenient and uncomfortable experience for the consumers.
- 2) Certification bodies also need to invest plenty of manpower to manage the quantity and specification of labels according to the product name and quantity of certificates, which is time-consuming and laborious, and prone to create

errors. Furthermore, the organization to be certified needs to submit the paper application documents in the traditional way, which is cumbersome and inefficient.

In 2012, OFDC first applied the QR code to anti-fake organic labels, successfully developing a 2D organic anti-fake traceability label, together with an online label management system. This innovation successfully solved the above-mentioned two shortcomings in the use of organic labels.

Unique Approach

1) It is the first time to apply QR code to the organic anti-fake label. In addition to the China Organic Product Certification Mark and its unique number (organic code), the name of certification body or its logo, each OFDC 2D organic anti-fake label is given a unique QR code. So prior to purchase, consumers only need to scan the QR code on the label via a smart device to quickly verify the product certification information (including the name and specification of organic product, producer, certification body, etc.), a simple and accurate method, improving the convenience of verification and providing a good experience for the consumers..

2) OFDC also developed the online management system of 2D organic anti-fake labels comprising of an online application system and online verification system that share a database for information access. The certification body uploads the certification information onto the label application system, which is used for the certified organization to apply for the label online and the certification body to manage label distribution.

The system automatically receives and verifies the number of certified products and labels, accurately controlling the number of label distribution, ensures the uniqueness of each label, and correlates the label QR code information with the organic product certification information.

Consumers can obtain the certification information of organic products by scanning the QR code on the label and entering the system. The online label management system realizes the intelligent management of the number of labels received.

With the deployment of this system, the certification body does not need to invest extensive manpower to manage the issuing of labels and is time- and cost-effective with no room for mistakes. The certified organization can easily apply for the labels online without submitting any paper application documents, which greatly improves the work efficiency. Furthermore, the system provides easy access to consumers on product information.

Impact

1) Impact among certifiers

The research, development and use of 2D organic anti-fake labelling and its management system had a profound impact on China's organic industry. At the same time, the mainstream media³ gave good follow-up reports.

In 2012, the system was rated by the China Quality Certification Magazine as one of the ten major events in China's certification and accreditation industry. This research and development into China's organic product anti-fake labelling has become a new starting point in the organic industry – the system is based on information technology, maximizing the use and management mode of China's organic product labelling. These efforts have attracted the attention and recognition of other certification bodies and were rapidly emulated and promoted by these bodies.

³ Reports appeared in the China Conformity Assessment, China Food Newspaper, China Inspection and Quarantine Times, China Environmental News, etc.

2) Impact on society

The research, development and use of 2D organic anti-fake label and its management system had a profound impact on organic consumption and production. It met the needs of the consumers for the timeliness and accuracy of verifying the information of organic products before purchase, enhanced consumers' cognition and understanding of organic products, boosted consumer confidence in purchasing organic products, cultivated their consumption habits, and loyalty to buy organic while strengthening consumers' supervision over the certification bodies.

The certification bodies are now compelled to improve the management of organic production, leading to more conformity and standardization of organic production and improvement in the effectiveness of organic certification.

3) Impact on the sector

Since 2011, China's organic industry has continued to develop rapidly. The market size of China's organic products has grown steadily at a rate of 15-20% each year. There are many factors influencing the stable growth of the industry. And the extensive use of organic labels and the system of verification are one of such factors contributing to this growth.

In 2019, China's use of organic product labels and organic codes reached 2 billion units, and the organic market size further grew and expanded. In the same year, the number of OFDC organic codes issued reached 800 million units, among which the number of 2D organic anti-fake labels issued ranked first in China, reaching 80 million units, with the number of consumer inquiries reaching 1,716,960 searches.



Organic anti-fake label used in 2011

2D anti-fake label invented by OFDC in 2012



organic 2D anti-fake label management system

Case Country: China



"Internet Plus" Remote Inspection System for Organic Certification

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Introduction

It can be said that China's stringent certification of organic products have earned the trust of the society. However, the organic product inspection and post-certification management mode stipulated in the 'Implementation Rules for Organic Product Certification' (CNCA-N-009:2014) faces certain challenges in the implementation process. For example, multiple onsite inspections within one year directly increases the cost of certification for production enterprises, consumers are not equipped with enough rights to be informed on organic certification, and regulatory authorities lack the means to assess and control the performance of the certification bodies.

Due to the increasing public demands on the quality of organic products, organic production enterprises, government regulators, certification bodies, consumers and other forces are exploring new methods and technologies for organic product inspection to address such concerns.

In 2008, the International Accreditation Forum (IAF) issued the 'Mandatory Document for the use of Computer Assisted Auditing Techniques (CAAT) for Accredited Certification of Management Systems' (IAF MD4:2008), which

provided a theoretical basis for certification bodies to adopt computer-aided auditing technology. At present, the use of Internet mobile intelligent devices has become more and more popular, and China has become a global leader in mobile applications.

In 2018, funded by Certification and Accreditation Administration of the People's Republic of China (CNCA), OFDC started the project called 'Research on Remote Organic Certification Technology based on Internet Plus'. OFDC has first developed the 'Internet plus Remote Inspection for Organic Certification' in China and has successfully implemented the project with good results.

Unique Approach

The project aimed at the promotion of organic product certification to keep pace with the development of the "Internet plus" era. In February 2017, the 20th clause outlining the 'key points of certification and accreditation work in 2017' in the CNCA document clearly encourages to "actively explore ways and means of in-depth integration of certification, accreditation, inspection and testing under Internet conditions, and encourage the development of new formats and new models such as full sample analysis, cloud testing and online monitoring".

The rapid rise of "Internet plus" technology provides a new way of thinking for the development of organic product inspection methods and technologies and promotes the deep integration of organic products certification technology and Internet plus technology.

It is the first time the "Internet plus" Remote Inspection System for Organic Certification was developed. The most distinctive feature of the "Internet plus"

organic product inspection is that the inspectors do not need to go to the organic farm or processor to carry out onsite inspection, but instead make use of the "Internet plus" technology to conduct inspection remotely from the office.

The R & D team of OFDC has developed a set of remote command systems, through which the organic producers or processors can be connected to the inspector remotely and can be dispatched to collect relevant information and evidence needed for organic product inspection, so as to achieve the same effect of onsite inspection.

The "Internet plus" organic certification inspection system is composed of the operating system and server. When implementing the "Internet plus" organic certification, the inspector and personnel of inspected party will both be authorized.

After verification by the certification body, the relevant personnel can log on to the operating system - the operation system can display the location of the inspector in real time through the GIS (Geographic Information System) technology to determine the location of the inspected party. The inspector then communicates with the inspected party through video and voice chat to issue relevant instructions and implement online inspection.

The server can recognize voice and video transmission and storage, solidify inspection evidence, and mark all inspection evidence with an unchangeable time stamp. The certification authority can retrieve the inspection evidence stored in the server through the operating system, as a supplement to the inspection report, which enhances the perceptual awareness of the certification decision-maker to the inspected party.

The system adopts encryption technology, selects powerful cloud server suppliers and commercial anti-virus software to solve the confidentiality problem and eradicate information leakage.

The R & D team of OFDC has developed corresponding supporting technologies of "Internet plus" remote inspection, including single sign-on, identity recognition, data transmission, image recognition and other mobile Internet communication technologies, so as to ensure that the data collected meet the requirements of organic product certification.

By selecting appropriate handheld terminal equipment for "Internet plus" remote inspection, the inspected party does not need to add additional systems or equipment. Handheld terminal equipment are important equipment for the "Internet plus" remote inspection. The equipment is selected by OFDC and sent to the inspected party in advance. The internal inspectors should receive training for the skilful use of the terminal equipment.



Login interface of "Internet plus" remote organic inspection system

Impact

1) Impact on the Organic Certifiers

On May 25, 2018, the OFDC R & D team held the "Internet plus Organic Certification Technology Forum" during Biofach China in Shanghai and shared the latest research results with the sector. The "Internet plus" inspection system for organic certification provides an auxiliary means for organic certification inspection, implements remote online inspection, effectively breaks the barrier of time and space, and provides a new way for communication and connection between certification bodies and certified organization while enriching the inspection methods of organic certification bodies, and improving convenience and timeliness of inspection.

2) Impact on the Society

On June 2, 2018, the OFDC R & D team also shared the "Internet plus" organic products inspection technology achievements in the "Sino-German Agricultural Enterprise Dialogue Seminar" in Pujiang, Sichuan Province, which attracted attention of organic agriculture experts and officials from Germany with full affirmation of the research results and significance of the project.

On August 2018, the GTZ company of Germany invited the OFDC R & D team to Beijing again to make a keynote speech on the "Internet plus" inspection system for organic certification technology.

In the beginning of 2020, the COVID-19 pandemic in China significantly disrupted normal daily work on certification. According to the 'Notice on the Implementation of Quality Certification during the Period of Preventing and Controlling COVID-19' distributed by the State Administration of Market Regulatory on February 4, 2020, OFDC successfully used the "Internet plus"

remote inspection system to effectively solve the impossibility of onsite inspection in case of force majeure, and effectively guaranteed the operation of the certification body while maintaining the continuity of the certificates, and ensuring the market supply of organic products.

3) Impact on the Organic Sector

In the future, the organic sector would inevitably be deeply integrated with the Internet. With good compatibility, our system can be well integrated in the blockchain technology and better docking with production, detection, supervision, and consumption.

Under the background of big data and blockchain technology development, exchange and integration of information and data would continue to enhance industry image, promote industrial development, promote peer communication, transparent industrial processes, and ultimately encourage consumer trust and lead to the healthy development of organic industry.

Case Country: Japan



PGS by Dream-chasing Active Retirees: The case of Organic Shizukuishi

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Introduction

Organic Shizukuishi is a group of farmers, consumers, and other stakeholders who take part in the Participatory Guarantee System in Shizukuishi and neighbouring cities, Iwate prefecture. They launched a PGS in 2015 and it was recognized by IFOAM-Organics International as an official PGS Initiative in 2018. The leaders of the group, Mr. Katsuaki Takahashi and Dr. Ryoichi Komiya, as well as several other core members, started organic farming after reaching retirement age and mastering professional skills. Utilizing the skills, the group engages not only in PGS, but also in various activities that contributes to revitalization of the community.

Unique Approach

1. Leadership by active retirees. The group consists mainly of new farmers who migrated from urban areas or who retired from local companies.

2. IFOAM Official Recognized PGS Initiative.

With the exceptionally high organizing and English language skills, the PGS successfully got IFOAM recognition in only 3 years after initiation - the first PGS in Japan and the eighth in the world.

3. PGS as a platform to revitalize community. PGS is considered as a platform to tackle various challenges in the local community, including the deterioration of rural landscape and depopulation.

4. Pursuit for academic degree and involvement in the global movement. In pursuit of an academic degree and greater contribution to the global movement, the group analyse their activities and write up academic papers. They believe that seeking an academic degree would boost their motivation and attract youngsters to the organic agriculture.



Logo of the Organic Shizukuishi



Peer review by open stakeholders: anyone who are interested in the organic farming can enjoy participating in the farms peer review. There is no need to be members of Organic Shizukuishi.

Impact

- The PGS successfully gained IFOAM recognition.
- According to Komiya et al., PGS has been instrumental in building trust between members of PGS and people in the community, improving farming as well as managing skills of member farmers, expanding organic farmlands, and revitalizing community.
- They restored several abandoned farms using no-till farming, organized gardening, and dietary education for pre-school children, created a local map for tourists, and hosted small wedding ceremonies using organic vegetables they grew. They believe their efforts bring about positive shift in the mind of residents, advent of new collaborators, and greater public support to their PGS activities.

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DIGITAL TECHNOLOGY

Case Country: China



IOT Leads Organic Agriculture into Intelligentization and Precision

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Introduction

The Intelligent Agriculture and Internet of Things (IOT) technology has been promoted in China by the Ministry of Agriculture since 2016. Tony Agricultural Development Co., Ltd. (aka Tony's Farm) is one of the largest companies specializing in organic farming and sales of organic vegetables, located in Shanghai and with branch offices in Beijing, Zhejiang, Chengdu etc.

Tony's Farm established organic production system certified by the Organic Food Development and Certification Center of China (OFDC) in 2007. It has undertaken the project of building the national IOT demonstration base for planting vegetables since 2016. The practice and promotion of this project is expected to transform traditional agriculture into modern urban agriculture and promote urban-rural integration.

This project aims at building up the organic intelligent farming system with entire process quality traceability by using IOT technology. Three major functional systems are constructed on Tony's Farm including water-fertilizer integrated intelligent irrigation system, intelligent monitoring system and a quality traceability system.

The IOT technology is utilized to collect farming environment information by the intelligent sensors during organic farming. Those massive data are analysed and processed by cloud computing referencing to the pre-set parameters. Based on

scientific judgments, warning messages are sent to the intelligent mobile phone automatically for operators to implement remote management in time.

Unique Approach

Based on automated sprinkler irrigation facilities and facility agricultural system, the IOT combined with Radio Frequency Identification (RFID) and QR codes are the core technology in this system. GIS technology application improves the automated procedures of monitoring and early warning.

The main equipment includes:

- Sensors which include a complete set of environment monitoring equipment (monitoring soil temperature and humidity, pH, CO₂, etc.), pest and disease monitoring equipment (insect detection lamp, spore trap), etc,
- Automatic weather stations.,
- Video monitoring equipment (video servers and PTZ cameras),
- Water-fertilizer integrated equipment and automatic drainage facilities,
- Intelligent mobile phone and computers with the operation platform,
- Intelligent agricultural machinery (plant protection robot, unmanned tractor).

The three major functional systems are as follows:

1. Water-fertilizer integrated intelligent irrigation system

According to monitored information (soil moisture, microclimate, and crop growth conditions) and water requirements for the crops, the automatic water pumps are utilized in this system to realize automatic rotation irrigation. This system can improve the efficiency of water resource and implement timing and quantitative control of irrigation and fertilization.

2. Intelligent monitoring system

The information of collection, networked transmission, visual release, graphical warning, and remote diagnosis of pests and diseases are realized by the sensors, video monitoring equipment and computers. For example, when pest is detected by the spore trap or insect detection lamp telemetry light, the operator can receive the messages in a short time after data transmission and computing in the system. It is convenient for the operators to take reasonable measures before large-scale outbreaks of pests and remotely control plant protection robots for pest control if necessary.

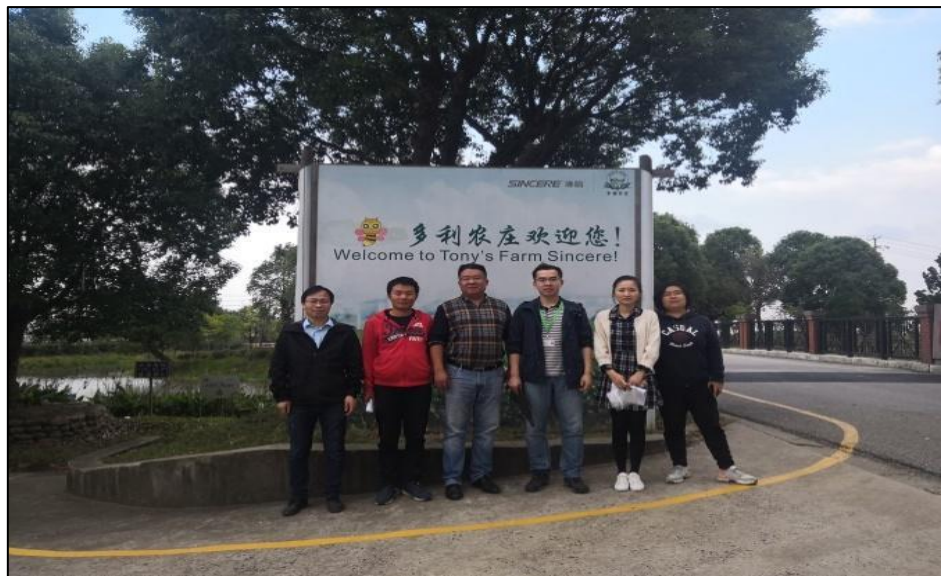


Figure 1. certification inspection on Tony's Farm



Figure 2. Intelligent nursery greenhouse



Figure 3. Tony's rural community

3. Quality traceability system

The information of production, harvesting, storage, transportation, and sales is inputted into the system through terminal devices. The QR code with above information is generated through certain coding rules when packaging. Finally, the consumers and regulators can trace the information of each segment by scanning the QR code on the products.

Impact

The production mode of the system is environment friendly. The most significant advantages of this system are saving resource (40% water saving, 20%-30% fertilization saving) and increasing production efficiency.

Traceability and accessibility of product information in this system help to increase consumers' desire to purchase and provides convenience for the consumer to protect their rights. The quality hitch or default can be detected and treated immediately to reduce losses. It also regulates the operation of farming and processing and promotes the brand of organic products.

Tony's Farm is presently planning to build a new rural community with well-equipped facilities that will extend the agricultural industrial chain, increase agricultural added value, improve agricultural production mode, and ameliorate farmers' living conditions.

Acknowledgements

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POLICY

Case Country: Philippines



Local Government Organic Policy Framework Experience on Changing the Local Agriculture Development Framework in the Philippines

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Introduction

The Dumingag Local Chief Executive (LCE) Honorable Nacienceno (Jun) Pacalioga, Jr. initiated the Local Policy of Genuine Peoples Agenda (GPA) on his first term as Mayor in 2007.

By early 2010, the municipality led by the Local Chief Executive in partnerships with the Xavier University Sustainable Agriculture Center (XU Center) of the College of Agriculture Complex formulated and implemented the process-based on the societal stakeholders of local governments, CSOs/NGOs and business groups the Genuine Peoples Agenda anchored on Sustainable Organic Agriculture Master Plan (GPA-SOAMP).

The GPA-SOAMP was adopted as the municipal-wide local organic agriculture policy development framework and invested the core of its human assets from the legislative and municipal agriculture team in terms of sustainable agriculture development capacities by sending them to international and local trainings on sustainable/organic agriculture development.

The municipality established the Dumingag Institute of Sustainable Agriculture (DISOA) as a hub of transformative organic agriculture education beyond its farmers and citizens of 35% Indigenous Peoples (IPs) and produced the new mindset of societal transformations with a new brand of leadership and governance by the new generations of local government's service-oriented development workers. They institutionalized the 44 villages/barangays organized action teams of GPA-SOAMP participatory implementation, monitoring and coaching and adopted in the 64,000 hectares the municipal-wide GPA-SOAMP support legislations/local laws of "No GEOs/GMOs, No Mining, No Logging, No Gambling, No Drugs and No Plastics" among others.

Hence, after winning the 2012 One World Award (OWA) given by IFOAM-Organics International and Rapunzel, the Dumingag experience of participatory local leadership and governance changed the mode of mainstreaming and the institutionalization of local organic agriculture in the Philippines:

The growth of organic agriculture can be seen from the CSOs/NGOs in the 1980's to the local governments-led Local Organic Agriculture Development of the Philippines and through the inception and foundations of the 2012 self-organized *League of Organic Agriculture Municipalities in the Philippines* (LOAM-Phils) to the *League of Organic Agriculture Municipalities, Cities and Provinces of the Philippines* (LOAMP-PH) in 2018.

With IFOAM Asia, the municipality hosted the 2015 South East Asia Organic Leadership Course and 5th Asian Organic Rice Conference in September and December, respectively.

Unique Approach

Dumingag municipality introduced the transformative education approach as a way of mainstreaming and institutionalization of their GPA-SOAMP to the key stakeholders from local government, civil society organizations/NGOs and business groups.

The transformative education core strategy is anchored on the in-depth understanding of the interactive connectivity of sustainable agriculture development framework and best practices on ecological soundness, economic viability, socially responsible policy, cultural sensitivity, appropriate technology, and wholistic science, and is grounded on the development of human potentials.

Hence, the GPA-SOAMP has been integrated in the societal, vertical and horizontal structures of leadership and governance in organic agriculture education that produces a new mindset of farmers, citizens and young generations of leaders relative to local organic agriculture development

Impact

On Local Policies

The significant impacts of the local policies in support of the Dumingag municipal-wide GPA-SOAMP are the following:

- Increase in the numbers of Organic Agriculture practitioners
- In-depth citizens' understanding on organic agriculture and its relevance as a life-style and life of nature
- Enhance local livelihood opportunities and the increased income of organic practitioners
- Change of farming system and production relations – from the externally controlled and exploitative enslaved agriculture system to a liberated farmers' system
- Societal transformations from poor mindset to well-off economic condition mindset coupled with the freedom from hunger, poverty and sickness
- Change on the way of life of actively involved citizens and influenced the entire socio-cultural mindset in the municipality
- The GPA-SOAMP implementation helped the installation of a disciplined society and law-abiding citizens, with almost no incidence of crime

- Enhance the management and development of the local economy and its contribution to the nation's economy
- Societal awareness on the mobilization of local societal capital as significant investments of the municipality in the economic, political and cultural aspects of development

On Sustainability

To sustain the local leadership and governance in the municipal-wide sustainable organic agriculture development program, the municipality adopted/adapted the following legal sustainability mechanisms:

- Organic Agriculture as the centerpiece program of the local government
- Centerpiece of transformative education and capacity building program of core leaders in alignment to the development of the municipality's citizens
- Formation of government agencies and core servant leaders of new systems of societal transformations
- Installation of new societal systems as guide to serve the interest of the poor and uplifted the conditions of the poor to the highest level of sustainable development
- Institutionalization of programs and policies through the passage and approval of municipal ordinances and resolutions
- Formation of Peoples Organizations (farmers, indigenous people, etc.) and providing them with transparent programs and directions for their own management and development
- Development of a new brand of young local chief executives and legislators as the new generation of leaders to sustain the core mission of local sustainable organic agriculture and rural development.

The true nature of the local leadership's intension to serve and free its citizens from poverty, hunger, and sickness, generating an unfolding continuing evolution of societal transformative education, together with theories and techniques of true service for sustainable development. Relatively, it would be much easier for the succeeding generations to exercise and sustain the societal development agenda with effective leadership and governance for local sustainable organic agriculture and rural development.



The Dumingag municipality new generations of young leaders of Local Chief Executive (LCE) and legislators headed by lady Mayor Hon. Joane P. Abejuela

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Case Country: Philippines



Conquering Hunger and Poverty in War-ravaged Kauswagan Municipality of Mindanao, Philippines

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Introduction

The Kauswagan municipality of the province of Lanao del Norte is a barometer of conflict and peace in Mindanao. It was attacked twice by Muslim rebels in 2001 and in 2008 causing heavy destruction of lives and properties. Due to the war between the Muslim rebels and Philippine government's military, there was an exodus of the people, making Kauswagan known as the ghost municipality with a poverty incidence (PI) of over 79% in 2010.

The 2010 local election created a new hope of life and development pathways to peace with its new Local Chief Executive (LCE) or Municipal Mayor Rommel C. Arnado who came from United States without any local government administration experience but with political root of his father who served for two decades as the municipal mayor from 1966 to 1986.

In partnership with the Assisi Development Foundation and the employment of functional participatory processes of key stakeholders from both Muslims and Christians citizens, Kauswagan launched its own development platform agenda of "SIKAD PA or Sustainable Integrated Kauswagan Area Development and

Peace Agenda". The SIKAD PA participatory development processes unveiled the root cause of conflict – it was not related to Christian and Muslim ideologies or poverty but the lack of FOOD in the family farms which had been created due to the absence of effective government services. Hence, under the SIKAD PA as municipal-wide policy platform, the "Arms to Farms Program" was launched to combat Hunger and Poverty.

SIKAD PA as a sustainable development platform is a convergence of local government and civil society organizations including local businesses and external national government departments/agencies from the agriculture, education, and military sectors.

The municipality invested all its might to reach and win the hearts of the Muslim and Christians family farmers. With the assistance of the Agricultural Training Institute (ATI) and Regional Department of Agriculture (DA), training was offered to the Muslim rebel commanders and combatants on organic farming techniques with supports for the development of organic family farms and local market.

The local government provided support measures to link the organic supply chain, such as production support of quality organic fertilizers, providing seeds, technical supports, linking with processing and finally purchasing all the organic products for sale at the local Organic Trading Post (OTP) and linkages to external local markets.

By 2018, the municipality's Poverty Incidence (PI) significantly dropped from 79% in 2010 to 9.1% or an average PI annual reduction of 13% and hunger has almost been eliminated. Hence, the war in Kauswagan is now a history with pathways of attaining and sustaining Peace and Development. Relatively, the municipality received both the national and international prestigious awards such as the Outstanding Organic Agriculture Achiever Award given by the National

Department of Agriculture in 2014, and the Gold Peace Prize Award of UCLG (United Cities and Local Governments) on 2016 in Bogota, Columbia and an Honorable Mention of Future Policy Award in Agroecology by the Food and Agriculture organization (FAO), given in partnership with the Future Policy Council and IFOAM-Organics International in 2018 in Rome.

Unique Approach

The municipal-wide development processes of SIKAD PA is co-created by key stakeholders of family farmers and citizens. It is a convergence of local initiative with its implementation supported by the local policy framework through a municipal ordinance or decree. Hence, the Local Government Unit (LGU) through its Local Chief Executive or Mayor leads the implementation of SIKAD PA. The unfolding key programs initiatives of SIKAD PA are relatively supported by specific local ordinances and the activities and budgets are officially integrated into the Annual Investment Plan (AIP) of the municipality and the SIKAD PA is seen as a local translation of Organic 3.0 on continuous innovations, transparent governance, and inclusive growth.

Currently, Kauswagan is upscaling its support on the full implementation of “Organic Farm Mechanization” and is a model of the national government’s Balik Probinsya Balik Pag-asa Program (BPBP) to attract urban settlers by opening local opportunities through local organic agriculture development.

In the Philippines, Kauswagan is the seat of the LOAMCP-Ph with Hon. Rommel C. Arnado as the current National President and actively leading LOAMCP-Ph members as members of the Asian Local Governments for Organic Agriculture (ALGOA) and IFOAM Asia.

Impact

Impact of SIKAD PA

The significant impacts of SIKAD PA are the following:

1. Poverty Incidence from 79% on 2010 to 9% in 2018

2. No more hunger and with happier families and children
3. Local government supports in the organic agriculture supply chains, from seeds, fields to markets
4. More healthy citizens due to the availability of local organic food from organic family farms, communal villages/barangays organic plots and organic school gardens especially during the COVID 19 pandemic.
5. Lowest incidence in crimes
6. Muslim war commandos as models and trainers in organic family farms development
7. The Municipal Organic Agriculture Training School saw an increase in the youth enrollees due to real felt experience on the results of organic farming
8. Developed harmony among Muslims and Christians cultures
9. Family farms and citizens have more trust in local government and have better relationships with authorities, leading to cooperation in government initiated sustainable development activities
10. More local organizations are established, hence, expanded the functional participations of CSOs
11. Significant increase in business establishments
12. Willingness of citizens to pay local taxes, improving the fiscal resiliency of the municipality
13. Sustained peace and development of the municipality

Impact on Sustainability

To sustain the sustainable development agenda of the municipality, the SIKAD PA practices are now mainstreamed and institutionalized. Good practices are framed in legal instruments from the municipal level to the barangays (villages) levels.

The legislation on municipal-wide full organic mechanization of Kauswagan is making organic farming easier. From “Arms or Bullets to Organic Farms” to its local organic agriculture development, Kauswagan shows that societal

transformation need a new brand of pioneering mindset of governance and leadership to effect a new societal mindset in government, business and culture as keys to the multiple solutions in Organic 3.0.



(Left)
Honorable Mention of the 2018 Future Policy Award received by Hon. Rommel C. Arnado (the Sikkim State Minister of India who won the Gold Prize)

(Below)
The launching of Kauswagan full organic mechanization by Local Chief Executive Hon. Rommel C. Arnado with the Vice President of the Philippines, Her Excellency Maria Leonor "Leni" Gerona Robredo



Sources

1. Future Policy Award 2018: <https://youtu.be/VVdluCluF6Y>

Case Country: Philippines 

The Model City for Organic Agriculture in the Philippines by 2020

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Introduction

The winning of the municipality of Dumingag, Zamboanga del Sur of the 2012 One World Award (OWA) of IFOAM-Organics International and Rapunzel inspired the city of Bislig to mainstream and institutionalize its city-wide organic agriculture development processes. Consequently, the city enrolled in the Proficiency Governance System (PGS) of the Institute for Solidarity in Asia (ISA). With ISA, the city formulated the city-wide vision and strategy map as the *“Model City for Organic Agriculture in the Philippines by 2020”* anchored on the core values of integrity, courage, accountability, resilience and sustainability.

The City Mayor or Local Chief Executive (LCE) Hon. Librado C. Navarro institutionalized the development processes with the formation of City Management Board to bring the strategy map of the city’s 2020 vision and goals to its entire employees within the city governance structures.

The city created the Office of the Strategy Management (OSM) to develop and provide programs, plans and activities geared towards the realization of the city’s vision, mission and core values to mobilize the entire city governance system and structures mainstream, institutionalize and consolidate the city-wide societal development approaches with various stakeholders and citizens (in organizations, family farms, 24 villages/barangays) of the city.

A Multi-Sectoral Governance Coalition or MSGC chaired by a civil society organization was established primarily to encourage the participation of all the stakeholders in local governance.

To focus on the development support of family farms' conversions into organic agriculture, the city established the City Organic Agri-Fishery Tourism Complex (COAFTC) of thirty hectares as a hub for research and innovations and trainings. From a budget of USD 30,000 or Php 1.5 Million pesos for organic agriculture in 2014, the city budget significantly rocketed to USD 3 Million or Php 150 Million pesos in 2018 to provide support for organic rice subsidy, organic inputs and organic capacity building programs for farmers and citizens, and for the construction of infrastructures in COAFTC.

Unique Approach

Bislig City mainstreamed and institutionalized the city-wide organic policy called the "Model City for Organic Agriculture in the Philippines by 2020" through the formal cascading with employees within the local governance structures. The Vision Align Circles (VACs) with 10 members of permanent and co-terminus employees of the city were tasked to perform a 6-month project in line with the city's vision, mission, and core values.

All city employees were trained in COAFTC and at the minimum, were required to raise organic vegetables (backyards, containers, farms) which was a part of the Employment Performance Evaluation and Merits of employees.

To reach farming communities, the local City Agriculture Office (CAO) was responsible for farmers' extension services. These activities were carried out in cooperation with the trained "Barangay/Village Organic Agriculture Workers (BOAW)" created with budget support from the city government.

Impact

The city won the “2019 Most Outstanding Organic Agriculture Achiever” given out by the Department of Agriculture in the city and municipality category. Added to this are the following achievements:

1. A total of 2,320 farmers fully adopted organic farming with an estimated of 15,461 hectares planted with organic products of irrigated and rainfed rice (119.50 ha), corn (43.80 ha), vegetables (13 ha), banana (174 ha), coffee (122.40 ha) and coconut (14,988.30 ha).
2. Institutionalized the formal cascading of employees within the local governance structures through the VACs with 10 members of permanent and co-terminus employees of the city tasked to perform a 6-month project in line with the city’s vision, mission and core values
3. To sustain its organic agriculture programs for the young generations, the city supported the senior high school students with scholarship grants for organic agriculture-based programs
4. Strong partnerships with the Regional Department of Agriculture for the implementation of the national Organic Agriculture law
5. Active affiliations with IFOAM Asia and the Asian Local Governments for Organic Agriculture (ALGOA) and the LOAMCP-PH.
6. Designation of COAFTC as the “Organic Education and Social Innovations Institute (OESII) of IFOAM Asia”⁴ during the hosting of IFOAM Asia 3rd Asia Organic Congress (OAC) and related international events from 16-21 September 2018.⁵

Bislig city has been recognized as the “Organic City of the Philippines” by the National Department of Agriculture during the National Organic Agriculture Congress in November 2019.

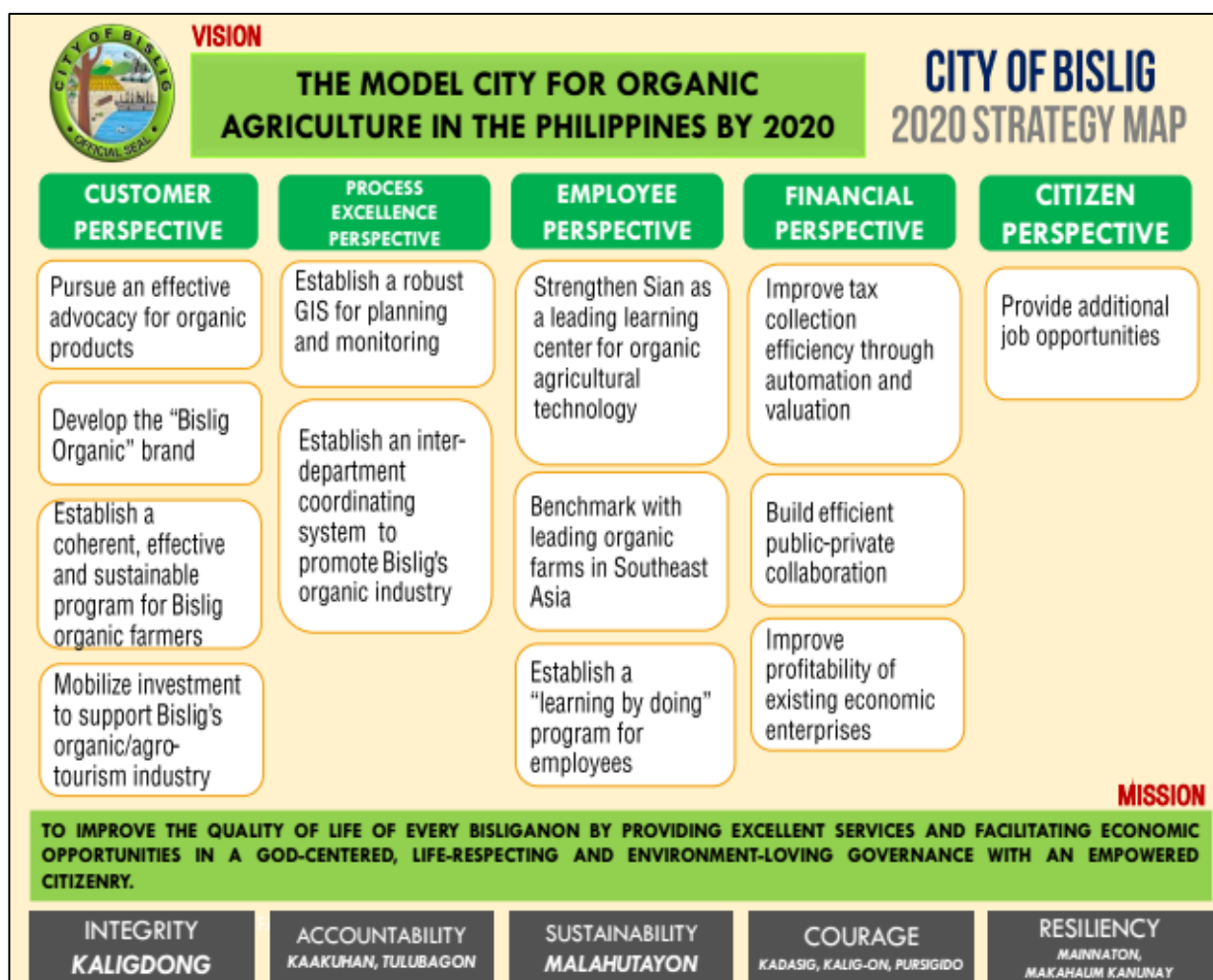
⁴ OESII was launched during the 19th LOAMCP-Ph General Assembly with the presence of IFOAM Asia President, Assistant Secretary of the national Department of the Interior Local Governments (DILG) and over a hundred LOAMCP-Ph member Local Chief Executives or Mayors from municipalities and cities from all over the country.

⁵ Asia Organic Youth Forum, ALGOA Philippines Forum, 6th Asia Organic Rice Conference, Organic Farming Innovation Summit (OFIA) and a global meeting of leaders under INOFO.

Impact on Sustainability

The huge challenge of Bislig City was the change in leadership in the election of new Local Chief Executive or City Mayors in the 2019 May election. After the 3 terms of 9 years (2010-2019) of the City Mayor and Mayor Librado went to be elected as the provincial Vice Governor.

Although the city organic agriculture program has already legally mainstreamed and institutionalized, it would still take time for the new leadership to deeply understand organic agriculture as a societal-wide sustainable development platform in agricultural city such as Bislig.



The Bislig City Strategy Road Map to achieve the goal as the Organic City of the Philippines by 2020



The 30 hectares City Organic Agri-Fishery Tourism Complex (COAFT) as the city's hub of organic research, innovations, and capacity-building



IFOAM Asia's "3rd Organic Asia Congress" and related international events, September 2018

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Case Country: South Korea

Pregnant Women Food Scheme: Linking Local Farmers to Consumers

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Introduction

In 2019, the South Korean organic movements in partnership with the Ministry of Agriculture, Food and Rural Affairs submitted a proposal to the Ministry of Economy and Finance for the provision of environmentally friendly food⁶ to pregnant women and new mothers.

The proposal has been submitted as part of the “citizen participation budget” scheme through which the public can submit proposals for new projects. It is an open and transparent process and the public are asked to vote on the proposals submitted. Hence, the more popular proposals get budget allocation and implementation from the central and local governments.

Unique Approach

The proposal called for the delivery of a box of local environmentally friendly food to pregnant women and new mothers, twice a month. The aim was to target forty-thousand women in 2020 with the purpose of safeguarding the health of

⁶ The “Environmentally-Friendly Promotion Law” of South Korea, “environmentally-friendly food includes both organic and pesticide-free food.

pregnant women and new mothers, and newly born babies. The other purpose was to expand the sales of environmentally friendly food and uphold the values of ecological services and organic farming. The method is direct e-commerce linking up the women with the local farmers.

The project started from January 1st, 2020 with the aim of providing environmentally friendly food to 45,000 pregnant women and new mothers. But with the onset of the COVID-19 pandemic, the number has been extended to 80,000 beneficiaries. The areas under project implementation are two cities, one province and twenty-three other local governments throughout South Korea.

The project is implemented through online orders in specific websites set up by the local government authorities. The beneficiaries can go online to do the one of the following:

1. Put in orders for individual items of food,
2. Put in orders for a box of food (no individual selection),
3. Choose a food package that automatically delivers food from 3 months to 12 months (no further selection needed throughout the year)

Impact

The beneficiaries can order food up to 480,000 Korean won (360 euros) annually. 20% of the costs are self- paid while the rest of the costs are supported by the central and local governments.

This project has received a very good favourable response from the Korean public especially in this COVID-19 pandemic and is a good example of the government taking a pro-active approach to help the local farmers and provide safe, and nutritious local food to its people.

임산부와 아이에게 친환경농산물 꾸러미가 배송됩니다!

새 생명을 위한
자연의 선물

임산부 친환경농산물
지원사업

■ 지원대상: 임산부라면 누구나
2020년 1월 1일 이후 출산한 산모와 현재 임신상태인 임부

■ 지원내용: 12개월간 48만원 상당의 친환경농산물 꾸러미 공급
지정된 온라인 쇼핑몰을 통해 친환경농산물을 80% 할인된 가격
으로 구매, 20%는 본인부담
ex) 5만원 구매시 1만원 본인부담

■ 제출서류: 신청서, 임신·출산증명서류
※ 임신·출산증명서류는 산부인과에서 발급받은 임신확인서나
출산증명서를 일함

■ 신청방법: 신청서를 작성하여 읍·면·동 행정복지센터에 제출

농림축산식품부 at 한국농수산식품유통공사

2020
안성맞춤
예산안

임산부
친환경 농산물을 지원
시범사업

연 48만원/1인

모든 임산부에게
친환경 농산물 꾸러미
택배 배달

90.6억원

'19예산 '20예산

대한민국정부

Source

Ministry of Food, Agriculture and Rural Affairs, South Korea.

COMMUNITY DEVELOPMENT



Women in a community-based Initiative in East Java, Indonesia

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Introduction

Brenjonk Lestari is a community-based initiative organic farm. The word of Brenjonk comes from the word “Sumber Rejo”, meaning spring water in the Javanese language. The community is situated in Penanggungan, Kecamatan Trawas, Kabupaten Mojokerto, East Java in Indonesia.

Mr Slamet initiated this community in early 2007 and the initial motive of this community is to alleviate poverty, increase food sufficiency, as well as the production of healthy food. Organic horticulture was also started for domestic consumption.

Unique Approach

The members of the community have learned how to prepare compost, select seeds, cultivate and how to sell their products in the market. The members get free courses and training as well as access to *Rumah Sayur Organik* (RSO, Organic House Vegetable).

The community service offer training to the households on the methods of growing organic vegetables, access to the use of the RSO and supply of decomposer from biological agents. The production of compost is done by utilizing the waste from the household.

The unique approach of the initiative is to encourage the participation of women. According to the Indonesian Organic Alliance (Aliansi Organik Indonesia, AOI), 90% of the members of the community are women and these women have access to their home backyards and household wastes for decomposer.

The initial purpose of this community is to increase household food sufficiency, but if there is an excess of production, then the farmers are encouraged to sell their products. Farmers in this community use the limited land to produce the food - the concept of utilizing backyard and any space for growing the food.

Mr Slamet argues that every little space should be used for food production as well as suggesting and prioritizing to grow edible plants compared to decorative plants.

Up to now, this community has produced vegetables, herbs, and other horticultural products. It also produced rice, honeybee, tropical fruit as well as traditional and medical drinks such as *Jamu*. In response to the market, the community also produced chips and another traditional snacks. It has offered affordable organic food by minimizing the supply chain by using the Participatory Guarantee System (PGS) as known as PAMOR.

To have a fair competition between third-party certified organic products and PAMOR products, the strategy of the community is to place the PAMOR labelled products separate from the third-party certified products. Even though, the product is not "side by the side" with other organic certified product but the demand of PAMOR product of Brenjonk have still been high because of the positive publicity through word of mouth (WOM) among the farmers and consumers. Most of the consumers are well educated and with a proper exposure to organic agriculture, and so they consider PAMOR as an adequate control system to ensure the authenticity of organic products.

The community has claimed they can supply around 8000 packs of vegetables to the nearest supermarket. It has also created a market among farmers through an organic café, and a campaign to create a garden in every household's backyard. In 2018, the variety of product increased not only focusing on vegetable but also on rice, and production of organic rice is projected to cover 30 ha in the next five years. This community has 4.2 ha of land has been converted to organic farming with 11 ha under organic rice production.



Figure 1. House of Vegetable (*Rumah Sayur Organik* – RSO) (Source: Brenjonk)



Figure 2. Woman activity in the community (Source: Brenjonk)

Impact

Each house has access to *Rumah Sayur Organik* (RSO) or organic vegetable house. From two hundred households in these villages, seventy-three have become members of this community. The rest continue with doing organic agriculture in their backyards and gardens.

This community has replicated the method of urban farming in eighteen districts in Kabupaten Mojokerto, East Java in Indonesia. The same replication has been done together with consulting local women and farmer organisations in Tuban, Gresik, Bojonegoro, East Java.

In 2007, Ashoka (www.ashoka.org) recognized the community as a model of innovative social entrepreneurship. In 2011, it was also recognized by the British Council.

Further appreciations for the efforts of the community came from the Governor of East Java Governor for their contribution to the alleviation of poverty in the community. Funding was also received from the Bank of Indonesia for facilitating infrastructure and grants from the local government to build a meeting hall, food court as well as packaging and processing houses.

Brenjonk has become a brand for organic villages, and its success has also created extra income from tourism, the non-agricultural sector.

Acknowledgments

The author would like to thank to Ms. Miske M Tirta and Mr. Slamet for their support in the collection of various data and relevant pictures. He would also like to thank the Indonesian Organic Alliance (Aliansi Organik Indonesia, AOI) for sharing the data about PAMOR Indonesia.



Building Trust among Members with Communication Strategy in Lesman, Boyolali, Indonesia

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Introduction

Lesman is a Non-Governmental Organization (NGO) aiming to conserve the environment, including agriculture focusing on gender equality with all the relevant stakeholders related to agriculture. It was founded in 1992 in, Boyolali Central Java, in Indonesia. It assists and organizes the movement of sustainable agriculture which began with the movement to maintain soil nutrients and to minimize the use of agricultural inputs. This movement has been growing and adopted by many farmers as well as local governments in Boyolali.

In early 2000, farmers awareness on organic agriculture as well as sustainable agriculture were enhanced, reflected by the increasing productivity and by minimizing the use of agricultural inputs. Accordingly, the farmers could consume their products and sell the excess in the markets.

However, farmers were faced with the challenge that there was no significant price difference between organic and conventional products. To overcome this, farmers started to create a collective market with the cooperation of consumers—consumers committed that they would buy products of the farmers and this helped to keep the production sustainable. The consumers' awareness

on healthy food came from good communication with the farmers about agricultural practices which was organic agriculture.

Unique Approach

The unique approach of the Lesman was the way they built the trust among the members and other stakeholders. Communication was an essential strategy to understand their members. Consistency of information, education, and inspiration, story-driven narratives, etc, helped to establish the trust. Understanding the motivation of each member made Lesman into a strong organization that could be easily adapted to the PAMOR Participatory Guarantee System. The communication strategy also applied to the marketing channel. Based on this experience, Lesman learned to nurture their members and increase their member engagement.

In the development of PAMOR Participatory Guarantee System, Lesman had a unique approach based on mutual trust that was the foundation on which Lesman was established.

Lesman created the market by using a farmer network with campaigns on how to convince consumers on the integrity of organic food consumption. Consumers had access to all information (1) how the cultivation was done and (2) what strategy was used to maintain the environment as well as (3) how the products are delivered to consumers.

Participatory Guarantee System (PGS) known as PAMOR, has been established by Lesman to respond to the market demand. PAMOR not only guaranteed the credibility of the farmers but also created a new potential market.

PAMOR was introduced by the Indonesian Organic Alliance (Aliansi Organik Indonesia, AOI) in 2009. Up to now, there are four groups of farmers under PAMOR:

1. Agni Mandiri in Sruni, located in Musuk Kabupaten Boyolali with fruits, vegetables, and horticulture.
2. Karya Tani in Clutang, located in Musuk Kabupaten Boyolali with vegetables as their main product,
3. Sri Lumintu in Samiran, located in Selo Kabupaten Boyolali with vegetables as their main product,
4. Budaya Tani in Wonodoyo, located in Cepogo Kabupaten Boyolali.



Community tillage activity (source: Pius Mulyono)



Enrichment of soil (source: Pius Mulyono)

PAMOR was implemented with the following purposes:

- To maintain the continuity of horticulture production as well as fruit production,
- To assist farmers to maintain the excellent quality of production as well as consumer trust.
- To recommend to farmers to have a guarantee system where certification scheme still not affordable

PAMOR has been proved to be a viable option as a guarantee system as the average land ownership is 0.2 ha per farmer. The distribution channels of organic products are managed by the Lesman network as well as local government and an online platform for marketing has also been created. The critical success of PAMOR in Boyolali is the readiness of infrastructure, including market information, marketing channel, and successful negotiations with the stakeholders.

Impact

The trust-building done by Lesman has impacted the development of the PAMOR PGS which was easily adopted by the members as well as the local market. PAMOR has involved farmers, traders, consumers, non-government organizations as well as local government, in assessing and evaluating the compliance with the organic agriculture standards.

The replication of the PAMOR system is growing in Boyolali. Farmers believe in using the PAMOR system to establish markets. Therefore, Lesman has been consistent in advocating farmers to adopt PAMOR a tool for quality assurance for organic agriculture products. The local governments have encouraged this guarantee system to be used widely in the region.

Country: Bangladesh



Landcare Approaches in the Organic Way

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Introduction

Homestead production remains the source of most vegetables consumed in rural households. Poorer households cannot afford to buy vegetables and fruits from the market as the most of their income is spend on the procurement of cereals, as the staple food. This is particularly factual of hilly and flood-plain areas where land is deemed unsuitable for vegetable cultivation due to soil type and climatic patterns.

Even when the vegetables and fruits are cultivated at homestead level, it is dominated by traditional varieties – with little consideration for the suitability of land for the types. And these varieties are not suitable for much of the homestead land type due to differences in wetness, sunlight intensity etc. Therefore, a significant proportion of the homestead land remains unused.

A transformation into homestead production is likely to have two effects on the households; i) they become more food secure and self-sufficient as production is increased, and ii) food consumption becomes more balanced nutritionally. This also has the potential to raise household income through the sale of surplus produce in the local markets.

Unique Approach

“Landcare” is a new approach initiated in Bangladesh in 2012 under the initiatives of FIVDB⁷ on a small scale, in collaboration with the Secretariat for International Landcare (SILC, Australia) and the Neo-Synthesis Research Centre (NSRC) of Sri Lanka. The approach focuses on building on the existing knowledge where the local people assess their practices of land use, the suitability of land for different productive activities, and design and implement suitable land use plans for maximizing their productive potential. Successful adoptions had led to increases in consumption of nutritious foods and income from the sale of surplus crops.

Impact

The advantages of this approach are:

i) Increased intensity of homestead land use:

Planned improvement and use of land for suitable purposes are expected to enhance the usable land at marginal land-owner households. Homestead land use pattern can be documented and monitored against baseline maps.

ii) Increased productivity of land:

The approach can bring into use previously unused land. Efficiency also increase as a result of land quality improvement, under a owner developed management plan.

iii) Increased food security and income of practicing households:

The Landcare approach is expected to increase food and cash crops production at homestead level.

iv) Increased intake of nutritious food:

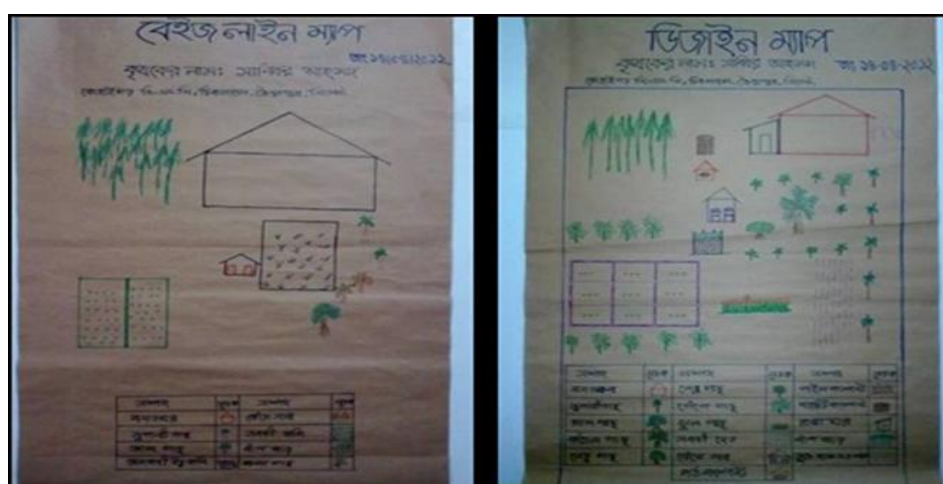
The increased production and income is expected to enhance intake of nutritious food.

⁷ Friends of Village Development Bangladesh

v) Replication of approach through peer demonstration:

The success of beneficiaries is expected to motivate neighbourhood landowners to replicate the approach. Beneficiary practitioners will act as community-based knowledge resource persons helping their peers.

As the Landcare approach is built on organic farming methods and takes into account the changes in local eco-climate, the interventions will be environmentally sustainable. Demonstration of success of the approach will also encourage replication of the method in other eco-climates across the country. The involvement of government functionaries – agricultural extension department and research bodies, in project implementation - will assist in mainstreaming of the approach and replication in other areas.





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Social Benefits of Developing Organic Agriculture in Xichong

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Introduction

Organic Agriculture has three main benefits inclusive of social, economic, and ecological benefits. This paper focuses on the social benefits of organic agriculture in Xichong county - a small county located in Southwest China and famous for organic agriculture.

Unique Approach

Xichong County was established in 621 AD (Tang Dynasty) and located in the southwest of Nanchong City, Sichuan Province, with a total area of 1106.59 square kilometers and a population of about 680,000. It is a subtropical humid monsoon climate area with shallow hilly landforms. It is famous for its sweet potato, 'Erjingtiao' peppers, 'Xifeng' oranges and Chongguo peach.

Before 2008, Xichong as an agricultural county with a large population with the GDP at 6 billion yuan, and the per capita GDP at less than 10,000 yuan. As such, young people left for big cities and the county composed of mainly the elderly, children, women, the sick, and disabled people. The county had many social

problems with a high divorce rate, and psychological problems among the young, etc.

In 2008, the Government of Xichong County recognized the importance of developing organic agriculture. Experts were recruited from various fields and the Xichong Organic Office was set up to develop organic agriculture. This momentous decision led to the rapid development on organic agriculture in the county. At that time, only two operators in the county were certified organic, which involved vegetables and miscellaneous grains. The certified area was only about 150 hectares.

In 2009, under the leadership of Xichong Organic Office, more than 10 farms applied for organic certification and the products included sweet potato, Xifeng navel orange, grapes, loquat and other fruits, peppers, tomatoes and other vegetables, beef cattle , pigs, chicken and other animal husbandry products. There were only few registered companies or cooperatives at that time, two of the organic conversion certificates were even issued to individuals. This is the first step in organic farming in Xichong county.

To pursue a rigorous development of organic agriculture, Xichong has formulated and issued a series of measures as follows:

1. Funding for infrastructure, facilities and equipment, and certification, such as insecticidal lamps, facilities for compost, etc,
2. Organic inputs subsidies, such as fertilizer, plant protection products. There is an organic shop for inputs in Xichong, and operators are able to buy organic inputs at cheaper prices due to the government subsidies on inputs.
3. Capacity-building programs were offered on the technical aspects including organic national standards technical training and production technology onsite training.
4. Marketing subsidies were set up to build linkages with the consumers and. organic shops for Xichong organic products were opened in many big cities such as Beijing, Shanghai, Guangzhou, Chengdu and Chongqing.



Training Session



Field Training on pest control



Xichong Organic Shop in Beijing

Xichong County fully recognized the importance of publicity and branding from the beginning of the establishment of the Organic Office. There were three main aspects.

First, to promote organic concept through various medias, the county made full use of billboards, television stations and other media. The organic principles 'health, ecology, fairness and care' are very well-known to the public.

Second, the establishment of specialty stores in large cities such as Beijing, Guangzhou, Shenzhen, Chengdu, and Chongqing, and the sale of the

characteristic organic products of Xichong have been very successful in the big cities.

Third, the county built a unified regional brand. In 2017, it released the county-level high-quality agricultural product unified brand called 'Haochongshi', which includes the name of Xichong, but also makes full use of the 'chongshi' homonym which means 'to enrich', and this has become quite a catchy word. This branding has been very effective in promoting the healthy development of Xichong organic agriculture.

Impact

In 2011, Xichong was recognized by China National Certification & Accreditation Agency (CNCA) as one of the first *Organic Certification Demonstration Creation Zones*.

After 12 years of development, changes take place almost daily and the county has become more and more beautiful. The changes affected the environment, economy and the society. The main changes are as follows:

First, there were more than 50 certified organic companies in Xichong, with a total production area of 4,500 hectares. More than 100 varieties of products are produced including grains, oils, miscellaneous grains, fruits, and vegetables. This has led to increase in employment of nearly ten thousand people and attracted nearly a hundred people to return to their hometown to start businesses.

Second, Xichong County had become a popular gold signboard in the organic agriculture although it is a small rural county. More and more local governments and enterprises visit Xichong to study and promote the experience of Xichong.

Third, in accordance to the development of organic agriculture, Xichong attracted many natives to return home, start a business, set up an agricultural cooperative or company, and engage in the production and sales of organic

products. So, the number, area and product range of certified organic operators are increasing year by year.

Additionally, infrastructure construction in Xichong County had also undergone changes for urban reconstruction, ecological restoration, and natural parks such as North Wetland Park, Lianhua Lake Park, etc have been opened.

The county has also built a traffic circle that run through the entire territory of Xichong, and the county-township highway are fully connected forming a 'half-hour economic circle within the county'. Urban development is fully integrated with the strategic development other nearby cities. A 5-star Hotel has been built to facilitate international organic events.

As such, the development of organic agriculture contributes not only to the growth of the GDP but also to the preservation of the environment, boosting tourism and to the overall happiness of the citizens of Xichong.

Acknowledgement

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Committed to the Development of Organic Business - YanTai Shinho

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Introduction

Established in 1992 in Yantai City, Shandong Province, Shinho mainly produces fermented soy sauce, sauce, vinegar, cooking wine, condiments and snack food. It is a leading food manufacturing enterprise at home and abroad. It has ten processing plants and eleven independent brands, and more than one hundred kinds of products.

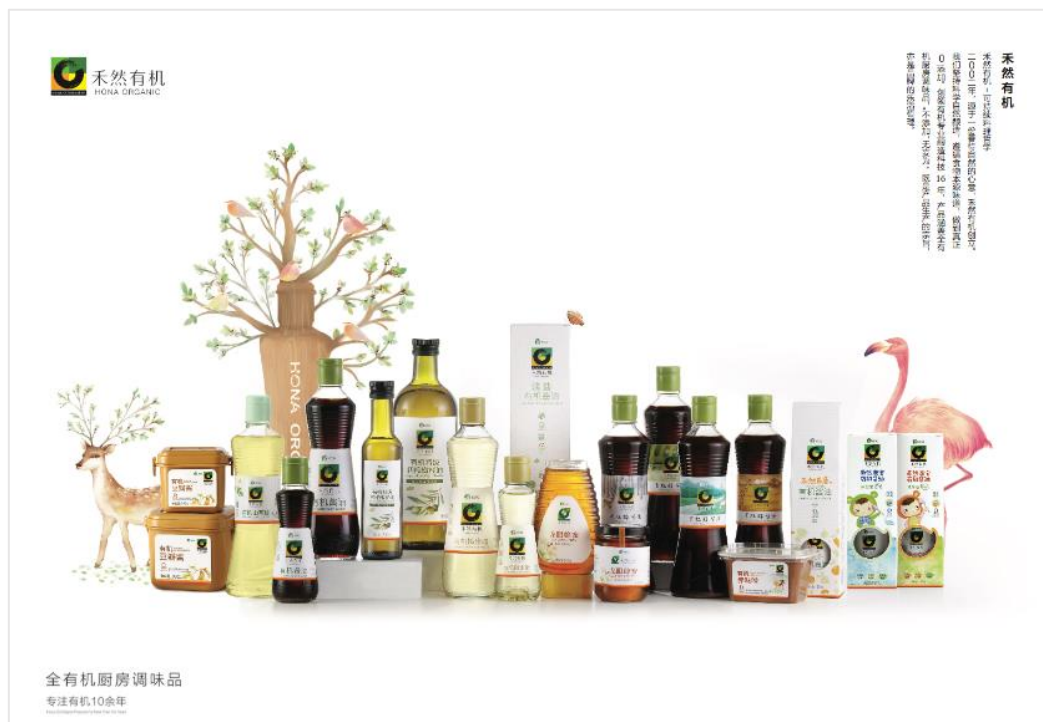
Shinho has adhered to the organic spirit, and advocated for safe, nutritious, delicious, healthy, and sustainable diets for eighteen years and called on people to choose seasonal organic ingredients for their diets. It also emphasizes the respect of the original taste of food, pays attention to food nutrition collocation as well as to the protection of the environment for sustainable development.

Unique Approach

For Shinbo, practising control is the key to carry out organic production. It has established an organic production management team, strengthened technical training and publicity, and the management of organic raw materials, production process, production management measures, storage, transportation, packaging and other links in order to meet the requirements of organic regulations.

For Shinbo, the source of ingredients should be organic and safe. As such, it invests a lot in process improvement and technological transformation of traditional industries every year. In addition, it has also set up a professional laboratory, and passed the national CNAS⁸ approval in 2007.

Above all, during the development process, Shinho adheres to energy conservation and environmental protection, care for the community and for the earth, to achieve the orderly use of resources and build a good ecological environment in the company.



Impact

As a leader in the organic food industry, Shinho constantly leads the breakthroughs in China's high-end organic soy sauce technology, with its HONA organic soy sauce. It has the lowest content of organic salt. HONA organic alcohol soy sauce has high amino acid nitrogen with supranational and super-grade standards of 25% amino acid nitrogen. Accordingly, HONA ORGANIC

⁸ China National Accreditation Service for Conformity Assessment

products sales increase annually, leading to its continuation as a leader in the industry.

Shinho continuously creates high-quality products, which are widely recognized by consumers and the society. The products have used officially at the Asian Beach Games, the BRICS, Qingdao Summit meetings, etc, and have won many awards and recognitions⁹.

Shinho has organized many organic food workshops, community workshops, restaurants, and enterprises to share their diverse and healthy and sustainable cooking methods and jointly promote the concept of sustainable food.

Sources

Company web: <https://shinhoglobal.com/>

⁹ Global Food Industry Award, Product Innovation Award, Shandong Province Quality Standard, Organic Production Demonstration Units, China Condiment Industrial Famous Brand of Organic Products, Gold Prize Product and High-Quality Partners of China International Food Exposition, Low Carbon Award, etc



Farmer Innovations through Land to Lab - a Bottom-up Approach Towards Sustainable Farming

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Introduction

Peermade Development Society (PDS), an NGO based in Idukki, Kerala, India, was established during 1980. Its mission was set seeing the marginalization and exclusion of small farmers, women and tribals of the remote district of Idukki in Kerala, which has been totally agrarian, and their only livelihood is farming.

With the industrialization of agriculture in India since late sixties, large and medium farmers were reaping the benefit of commercial agriculture, the phase known as “Green revolution” in India. Evidently, the weaker sections of the society, which include small and marginal farmers, women and tribals were left behind from this development due to their lack of resources, lack of skill and knowledge to adapt to the changing science and technology and market inaccessibility.

When rest of the country was leaping through the phase of Globalization, even the livelihood of small and marginal farmers became a challenge. The unsustainability of “Green Revolution” was foreseen by PDS.

Innovation

To address the sustainability of these vulnerable section of the society, one of the “out of the box” thinking was the “Land to Lab” approach, reversing the trend of introducing unaffordable, locally unsuitable technology from outside, to a phase of localization, where, the solutions for the relevant local issues are to be evolved locally.

Farmers’ abilities and capabilities in developing location-specific innovations and agricultural practices for maximizing their local limited resources are an unnoticed reality. This initiated an approach for the participatory technology development of farmers’ innovations and unique traditional knowledge practices.

Documentation, development, and dissemination of farmers’ innovations are the major activities envisaged under this approach. In a span of eight years, we have been able to mobilize around 10,000 local practices and innovations from the region and more than 40 innovations received national awards from the National Innovation Foundations.

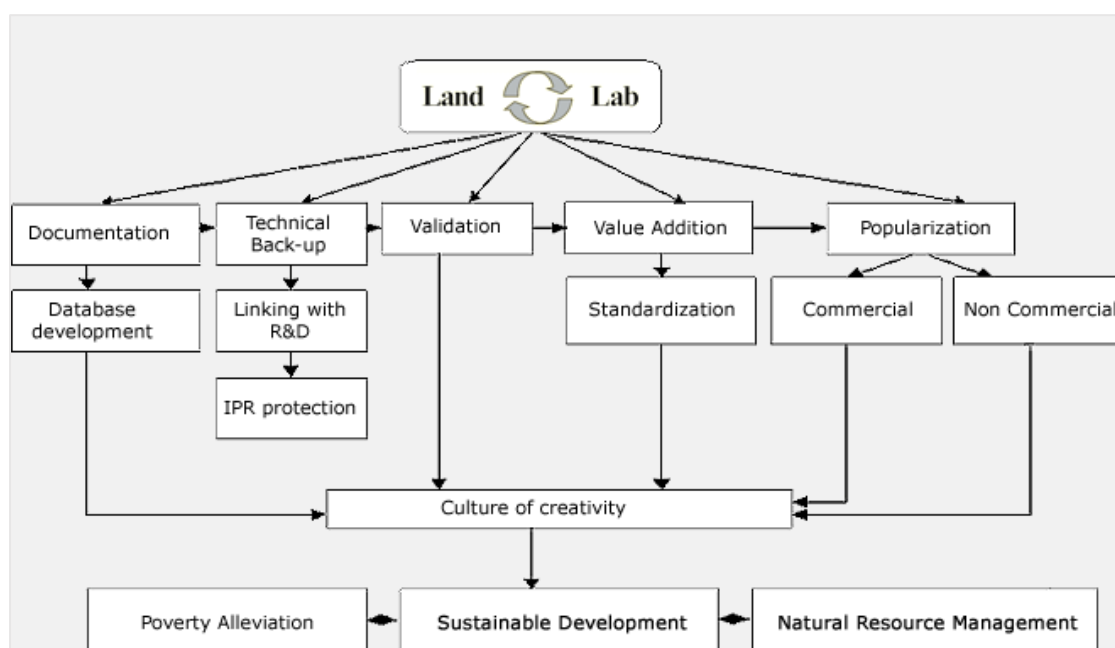
PDS organizes a competition specifically for women self-help groups (SHGs) for pooling women-based best innovative practices and outstanding women’s traditional knowledge and practices. PDS has recorded more than 8000 practices from a single block of the district. These included innovation/traditional knowledge in agriculture, food, fish or agricultural processing, weaning foods, childcare, cultivation, non-chemical pest control, harvesting, storing, preservation, livestock, recipes, health, nutrition, mechanical technologies, housing, soil and water management, toys, herbal dyes and cosmetics, etc. Many of the innovations were developed as women enterprises so as to improve and sustain family income.

The gap between formal and informal research, documentation, validation, value addition, Intellectual Property Rights (IPR) protection and dissemination of local innovations and unique traditional knowledge practices are the activities undertaken in the 'Land to Lab' programme.

Intensive search was undertaken among rural communities to identify their farming problems and also documented several innovations, traditional practices and low-cost technologies from the farmers. Instead of building on local creativity and innovation, Government and Private Research and Extension institutions tried to impose technologies from outside, which many times failed to solve the location-specific problems.

The need for a paradigm shift for technology development by putting farmer's innovation as a corner stone was adopted under "Land to Lab" programme. It was also realized that some of the local innovations, with further refinements and improvements, would result in viable low-cost technologies for rural agriculture.

Concept of Land to Lab approach for promoting farmers innovations



Validation of Farmer Innovations

Farmer innovations are validated at the R&D Institute of PDS and also at other regional and national research Institutes. At the same time, the status of data on diffusion of the practice /innovation, feedback of other farmers and opinion of local experts are also collected. Subject experts undertake detailed technical documentation of the Farm Innovators. This collected data is cross-checked with the available scientific literature. Scientific testing with all parameters is done in collaboration with these R & D institutes.

Intellectual property rights (IPR) have been protected and patents have been filed with the help of institutions like National Innovation Foundation on the behalf of the innovators.

Dissemination and Sustainability

Value-added knowledge practices and innovations are disseminated through various commercial and non-commercial sectors. Non-commercial channels include various training programmes, workshops, publications, newsletters etc.

Development of Agri-preneurship of selected unique replicable enterprise models for disseminating local innovations and knowledge practices with people's participation. Enterprise models helped to sustain the activities of the farmer as well as helped to support the local sustainability of farming.

Selected farmer Innovations and impact of regional farming sustainability

1. Farmer Varieties.

Many climate resilient, locally adapted farmer varieties have been documented and farmers are encouraged to develop their own nurseries and increase their income through sale of these farmer varieties. Many of the farmer varieties are

performing better than other high yielding varieties and also helped to maintain biodiversity within the cultivated crop.



Selected Farmer Varieties of Cocoa, Nutmeg and Pepper

2. Machines and tools

Farmer innovations like cardamom washing machine, cardamom polishers, cardamom dryers are used by all cardamom farmers and no other equipment have been developed by Research Institutions to tackle the local issues. So is the case with pepper threshers, Pepper dryers, nutmeg decorticator, arrowroot extractor, soil pit makers, water pumps etc.

3. Farming Practices

- a. Rooting hormones –using Moringa leaf paste by Mrs. Simi
- b. Multi rootstock grafting in nutmeg, rubber by Mr. Gopi



Conclusion

- The 'Land to lab approach' facilitates and calls for a collective approach from various stakeholders such as research institutes, innovative farmers, NGOs, women's groups for promoting local innovations in sustainable and scientific way.
- The analysis of documentation of local and farmer's innovations has brought out the tremendous potential of local innovation for developing location specific solutions.
- Lack of formal training helped the local innovators to break the rules of conventional research.
- Though traditional practices are community based, further improvement has been noticed by the individuals.
- Close association between formal and informal experts will improve both formal and informal research and will supplement each other.
- Development of localized Agri-preneurship.
- Increase in self-esteem and confidence of the farmers to tackle localized problems without external support.
- Increase in sustainability of farmer innovators through promotion and sale of their innovations.

Case Country: Japan



Preserving the Irrigation Ditch through the Involvement of City Dwellers: The case of *Motoki-Wasedani Seki to Satoyama wo Mamoru Kai*

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Introduction

Farmers in Motoki-Wasedani area, Kitakata-city, Fukushima prefecture, have maintained 6 km of irrigation ditch that extends from the foot of Mount Iide to the two farm villages, Motoki and Wasedani. The ditch is not only essential to supply water to the terraced rice paddies, but also an important cultural asset that has been cherished by the villagers for over 270 years. It requires heavy dredging work to maintain the ditch, and due to the decline in population, it became increasingly difficult to do so.

Therefore, Akihiro Asami, an organic farmer, and others in the village have started to solicit volunteers for the dredging work from the year 2000. Then in 2005, they founded *Motoki-Wasedani Seki to Satoyama wo Mamoru Kai* as an association to take care of the dredging events as well as marketing of rice and value-added products.

Unique Approach

1. Involvement of city dwellers in the maintenance of irrigation ditch. Many city dwellers participate in the dredging work to maintain the irrigation ditch.

2. Involvement of other stakeholders. The association works with other players in the region, such as breweries and owners of guest houses.

3. Branding of rice and value-added product. Rice grown in the paddies watered by the irrigation ditch is branded as "*Uwazeki* rice," thereby consumers are informed that purchasing the rice will help preserve the irrigation ditch, the cultural asset to the locales, and the landscape of terraced paddies. They also sell sake (rice wine) made of *Uwazeki* rice.

4. Pricing of the products at farmers' discretion. Farmers put prices on *Uwazeki* rice and related products at their full discretion. In so doing, they can set the prices at the level that can sustain their farming.

5. Research and communication. They are also active in conducting historical research on the irrigation ditch and publish books and newsletters, valuable communication tools to the volunteers.

Impact

- The dredging activity with volunteers has continued for more than 20 years and has successfully led to the preservation of the irrigation ditch.
- Many city dwellers are attracted to volunteering at the Motoki-Wasedani irrigation ditch to join the dredging work and about fifty volunteers participate each year on average. Many of them are have been long-term participants.
- The dredging activity is now organized as a fun event for the volunteers to exchange with the villagers and to experience farming and rural life.

- The interaction with volunteers gave the villagers a sense of pride in their work and community.
- The branding of the rice and sake brings in extra income to farmers.



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