MY DREAM, YOUR DREAM !!

SAFE AND HEALTHY VEGETABLES FOR PHILIPPINE CONSUMERS

MASAKI YOKOMORI

PILOT PROJECT FOR BETTER INCOME BY ORGANIC-BASED VEGETABLE PRODUCTION

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By

Masaki Yokomori

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Pilot Project for Better Farm Income
By Organic-Based Vegetable Production

MY DREAM, YOUR DREAM!!

Dear friends in the Philippines,
I am Yokomori.

I dream a big dream, which I want to share with you.

I am a Japanese farmer. When I was young, I went to the United States to train myself in American farms. After returning to Japan, I built a farming system of my own. It was vegetable farming based on enriched soil. The farming was successful.

I had a chance to come to Benguet Province in the Philippines to work with you. I met you farmers. What impressed me was that you farmers always worked very hard. I also found that you loved vegetables and strawberries. Your hard work and your love of farming had built the Salad Bowl of the Philippines right here in Benguet.

However, one thing is worrying me. The soil, the very basis of vegetable production and strawberry farming, is being destroyed day by day. Vegetables after vegetables grown on the farm get a large quantity of nutrients from the soil. But farmers do not return them to the soil after the harvest. Massive application of inorganic fertilizers and agricultural chemicals kills soil microorganisms. Soil is now very poor in microorganism activities. If nothing is done now, rich salad bowl in Benguet will be dead in a short while.

0-1 Bird's eye view of La Trinidad Valley

Fortunately, it is not too late yet. The soil will revive if the Benguet farmers recall the **basic of agriculture** and start practicing it right now. What is the basic of agriculture? It is "soil

enrichment" (***"tsuchi dukri"*** in Japanese language). Improve soil condition by giving a sufficient quantity of organic compost so that soil microorganism activities may be enhanced and plants may grow easily. You may further enhance the activities by additional materials such as charcoal and wood vinegar.

If you do it, the soil never dies. Enrichment takes some years. But if it is done, the soil produces the safest and tastiest vegetables in the entire Philippines. Consumers will feel safe in buying and eating your vegetables. The products will fetch you good income. The Province of Benguet will enjoy the name of "Salad Bowl of the Philippines" forever.

My dream…… It is to develop and maintain fruitful vegetable production bases in Benguet.

My fellow farmers! Let's start soil enrichment. And we let our dream come true.

The Author

Masaki Yokomori

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Chapter 1
SOIL ENRICHMENT

1. The Problem

The basic of farming lies in **SOIL ENRICHMENT**. Healthy soil rich in organic materials raises healthy crops. Fertilizers do not produce crops. Soil richness lets vegetables grow. Farmers not aware of this fact try to grow vegetables by inorganic fertilizers and farm chemicals only. Then, the soil loses its health and the crops become sick.

1-1 Minor nutrient deficiency symptom

Many vegetable fields I saw in and around La Trinidad are in serious condition. Soil is compact and plant roots do not penetrate Soil microorganisms are inactive. It is deficient in major nutrients (nitrogen, phosphorus and potassium) and micro nutrients. Plants suffer from soil-born pests and diseases such as club roots.

1-2 Chemical spraying in between harvests

1-3 Green onions planted among poor iceberg

What causes these problems? Farmers grow same type of vegetables repeatedly, depleting major- (i.e. N, P, K) and micro-nutrients. Lack of organic materials in the soil eliminates small bugs, earth worms, fungus and bacteria, which eat and propagate on these materials. Absence of these creatures lets the soil be compact and poor in air and moisture.

Vegetables planted on these fields grow poorly and unevenly. Products are small and look poor. Their mineral and vitamin contents are lower than normal. They are susceptible to pests and diseases, need frequent spraying, causing chemical residues to be higher in the products.

1-4 Raw materials of compost of Yokomori Farm
Rice straw, cattle manure and charcoal

2. Compost Production and Uses

Farmers need to return to the basics of farming. The soil has to recover its activity. We have to start from composting the fields.

How do we produce compost? Make full use of locally available materials. We can find many different materials such as weeds in wasteland and roadside, fallen leaves, rice straw, vegetable clippings, animal manure, etc. Gather them and cut them into right sizes. Find right mix of these materials rich in carbon and nitrogen. Adjust their moisture and pile them up. When temperature goes beyond 60-70 degrees Celsius, disband the heap to cool it and pile it again.

1-5 Mokusaku is poured to compost materials

Let me tell you about composting in the Yokomori Farm. Materials used are rice straw and cattle manure. I mix rice bran and charcoal powder. I pour *Mokusaku* (wood vinegar) over the materials and pile up the mixed materials. Rice straw, cattle manure and rice bran are purchased from local farmers and dealers. Charcoal and mokusaku are produced at the charcoal plant built in the corner of the farm. Volume of mokusaku produced in a season is equal to 10,000 liter, equivalent to more than 300 plastic containers of 30 liters.

Rice straw is cut and mixed with cattle manure. Mokusaku is poured over the heap of materials. The quantity of materials is too large to be handled by manpower. Hence, machine power is used.

Half-mature compost is preferable to fully mature one for the vegetables fields. I spread 30 tons of compost in 1 ha field every year. It is equivalent to 3 kg per 1 square meter or 3 tons (60 sacs of 50kg) per 1,000 square meters.

It may not be possible for you to use that much of compost at a time. You may, instead, spread 20 sacs per 1,000 square meters 2 to 3 times a year. It is important for us to repeat it every year. The first-year production may not indicate any recognizable changes. The effect becomes gradually clearer when we repeat it 2 to 5 years. Please do not stop here! When you continue it every year, you will find that your soil will be as active as ever. You will continue producing healthy and tasty vegetables.

Vegetable production on enriched soil has another advantage. Weather is unstable these days because of global warming. Heavy rain washes the fields in the midst of dry season and temperature changes abruptly from very high to very low. This prevents vegetables to grow normally. However, vegetables planted on enriched soil grow healthy and strong and they neither get damaged much by weather nor suffer from pest and diseases. Since other farms get lower production and the market is short of supply, you will enjoy good production with higher prices.

1-6 Charcoal Mokusaku plant on Yokomori Farm

3. Production of Charcoal and Mokusaku

When charcoal and Mokusaku is mixed with compost materials, we can produce better quality compost in shorter time.

Charcoal is porous and contains air and moisture, which offers favorable living conditions to useful microorganisms. Its effectiveness is valid both in composting and soil

conditioning.

1-7 Charcoal kiln (built by stone)

1-8 Water cooling Mokusaku liquification

Mokusaku (wood vinegar) helps fermentation of compost materials. It eliminates noxious microorganisms and enhances useful ones to propagate. Organic materials contained in Mokusaku become nutrients to plants and microorganisms. It is also effective when it is fertigated to soil around the plants.

1-9 Mokusaku is collected into container

How do we produce charcoal and Mokusaku? Any material of plant origin which is burnable can be used. Example: woods, bamboos, coconut shells, rice husk, dried weeds etc. Carbonate it and you get charcoal. Cool smoke (gas) emitted by heated materials and you get Mokusaku.

1-10 Community people at the charcoal site

Yokomori Farm produces charcoal in cold winter (from December to February). My charcoal plant has a heat chamber made of stones. The chamber is filled with logs. Fire is set to the wood from its front entrance.

When inside temperature gets sufficiently high, the entrance is closed with wet mud. The wood is heated and emits gas. The gas is led to the cooling chamber made of stainless steel, cooled by running water.

1-11 1st. charcoal Mokusaku plant in Philippines (Municipality of La Trinidad)

The remaining gas is led to a long chimney (10 meters) and gets liquefied in the cold outside temperature. The liquid is collected in a container. It is Mokusaku. We get 10 tons of charcoal and 10,000 liters of Mokusaku in one season. They are all mixed with compost materials.

1-12 Second plant (La Trinidad)

Incidentally, the Yokomori Farm has another plant built by the Municipality of Sakuho-Machi, just next to my Mokusaku plant. In the winter season, Citizens of Sakuho-Machi come to the place and produce charcoal together. While working for charcoal production, people talk about farming, weather, community activities, and so on. The charcoal site plays the role of communication center for the local people, too.

The JAEC Project and Local Governments together built charcoal – Mokusaku plants in the Philippines. Two such plants (Plants 1 and 2) were built in the Municipal Compost Center of La Trinidad and another (Plant 3) in Agricultural Experiment site of the Benguet Province. Plant 1 has been in operation for more than a year and so far produced more than 600 liters of Mokusaku. The Municipality of Tublay also set up a plant (Plant 4) with our guidance. Department of Agriculture Regional Office IV built one each in Parawan and

1-13 3rd plant (Province of Benguet)

1-14 4th plant (Tublay)

Cavite. At this moment, therefore, we have six (6) charcoal Mokusaku plants in the Philippines.

The project and participating farmers in La Trinidad use Mokusaku for composting. We found that Mokusaku was quite effective in enhancing fermentation of compost materials.

4. Patience Is Needed for Soil Enrichment

1-15 Compost material: grass in wasteland

Patience is needed for soil enrichment. As already stated, spreading compost to the field only once does not produce discernable effects. When we continue 2 to 3 years, we can recognize the effectiveness little by little. Continuation for 5 years will definitely demonstrate the effects. Please do not terminate it before that. It is also necessary to continue applying compost even after the soil

1-15 Heap of grass

demonstrates very good performance. Never stop it. We need patience. Then, your soil continues to be active forever.

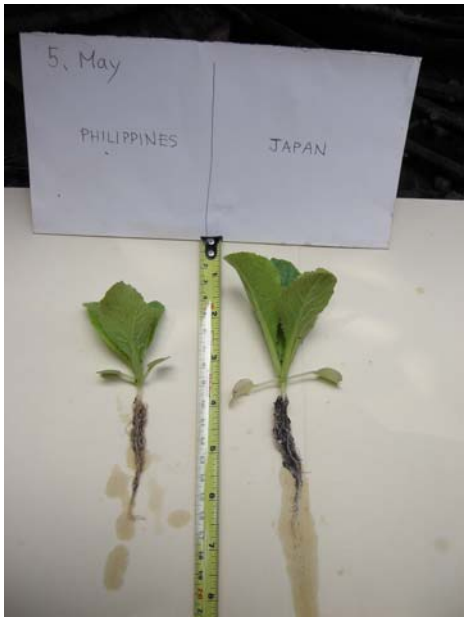
We need patience in terms of continuous hard work, too. Composting needs long labor hours, though it does not require much in terms of material costs. Labor is necessary in search of materials, gathering/cutting/mixing them. We need to dissolve the heap when temperature gets high and pile it again. It is additional work for us. I am convinced that Benguet farmers can do it. I recall that many Japanese farmers neglected compost making. Patience and endurance brings rich soil to us.

We need another facet of patience. Do not overuse soil. Leafy vegetables can be planted every 2 months. You may want to plant them 3 to 4 times a year, hoping that repeated cropping brings you larger amount of production and good revenue. If you do this way, you give no time for the soil to rest, not even time for composting. Soil richness is eroded and production goes down. Our patience, i.e. not planting too many times, increases yield, improves product quality and then brings better income to us.

Chapter 2
PRODUCING SAFE AND TASTY VEGETABLES

1. Healthy Vegetables

Cultivating vegetables resembles bringing a child up: Grow them strong and healthy. Vegetables on rich soil grow strong. A child grow fast and strong when its mother is healthy and gives enough milk from her breast.



2-1 Good seeding mix makes difference

Strong seedling comes first. Put seeds on pathogen-free soil. Good seeding soil mix helps germination and growth to a great extent. When seeds germinate, irrigate everyday. Do not miss planting time: Plant them on the field before the seedlings get too aged.

Early-stage growth is very important. Let plants grow fast and big. They grow good when soil is in good condition and rich in nutrition. Poorer nutrition and slower growth causes the plants to be attacked by pests and diseases more badly. If you find the soil is short of nutrition, please do not hesitate to give chemical fertilizers.

2-2 Romaine lettuce grow healthy

If young plants get attacked by insects and diseases, spray chemicals and Mokusaku immediately. Early spraying prevents massive outbreaks in later stages. It makes near-harvest spraying unnecessary. In the end, total amount of chemical used is reduced and its residues in the harvested vegetables are eliminated.

Fields with enriched soil lets vegetables grow fast and strong. Growth continues until the time of harvest because the soil continues to provide nutrients. Plants attract fewer pest and diseases.

Vegetables can be harvested in shorter days. Products are larger and look better. They contain vitamins and minerals in larger percentages.

2. Can Vegetables Grow without Chemicals?

Vegetables may grow without chemical fungicides/insecticides and without inorganic fertilizers. However, the products look poor and have insect bites, unless the grower has quite high level of technology and grow them under intensive care. While they are free of chemical residues, some data indicate lower vitamin and mineral contents of the organic vegetables. Do consumers buy them? Perhaps yes. But its quantity is small and represents only a small fraction of the whole consumption.

2-3 Organic tomato
(Failed in disease control)

2-4 Semi-organic Chinese cabbage
(On enriched soil)

It is not easy for the producers. It takes a large amount of manpower. Yield is low. Hence sales do not cover the costs unless a high price is charged. Even so, marketable quantities are limited. Can income from organic vegetables pay the living expenses for the family? It may be quite difficult.

Let us think about rearing a child. One buys cow milk if mother milk is not enough. If he gets sick, he will be taken to the doctor for injection and medication. It is best to feed the baby with breast milk only. But one needs something else if not sufficient. It is best not to have to go to the doctor and not to take any medication. But one needs them when the baby happens to get sick.

Same is true for vegetables. We care the soil and enrich it so that it may give enough

nutrients to the vegetables and the vegetables may grow healthy and strong. This is, as I told you repeatedly, the very basic of farming. What if, however, nutrients happen to be short or insects happen to attack? We have to use inorganic fertilizers or chemicals. But our "organic-based" approach will let us save at least half of chemicals and fertilizers compared with traditional farming practices.

3. Use of Mokusaku as fungicide, pesticide…

Mokusaku (wood vinegar) is not agricultural chemicals. But it may be used as a supplementary material. Dilute it to 200 - 500 times with water and spray it over plant leaves. It controls some diseases such as grey molds. It can be used as insect repellant. Foliar spraying let plant leaves thicker and stems sturdier, increasing plant's resistance to pest and diseases.

2-5Mokusaku with chili

(Extract effective substance)

Mokusaku also helps us extract effective substances from herbal plants. Chilies and ***neem*** (leaves/fruits) are soaked into Mokusaku for 1 to 2 months. The solution is used to control (kill) insects.

Mokusaku may be added to the solution of fungicides and bactericides. Adding Mokusaku lets the solution absorbed by the plants easier and makes its effectiveness greater. We can save 40-50% of chemicals by following this formula.

Chapter 3
MARKETING

1. Safe and tasty vegetables sell well

Filipino consumers look for safe and tasty vegetables. Everybody is concerned about it now. There is strong demand for vegetables rich in vitamins and minerals and those free of chemical residues. Consumers also want the vegetable farmers not to pollute air and water by chemicals. Our organic-based vegetable farming built on soil enrichment can respond positively to these requests of the consumers.

I want to name our vegetables "medical vegetables". Vegetables rich in vitamins and minerals enhance human health. Chinese people believed that food and medicine is the same. The belief was perhaps based on the fact that both most foods and medicines were of plant origin. I follow this idea and believe that vegetables good for human health is "medicine". I want to produce medical vegetables, i.e. vegetables which enhance human health. It is not difficult at all. Enrich soil by using compost and supplementary materials such as charcoal and Mokusaku. That's all. We certainly can do it in Benguet

2. Direct Sales

Safe and tasty vegetables sell well. That does not mean, however, that we may let other people/agents sell the products. We have to let the consumers know that our vegetables are good. We have to explain them.

3-1 Supermarket sends a truck to Nagano

Right now, most farmers pay no attention to marketing. Japanese farmers bring their product to the cooperative depots only. Filipino farmers let the dealers pick up their vegetables. Both let the agents to judge where and to whom to sell. Farmers do not know how their products reach the consumers.

They are not interested in how much the consumers pay for the vegetables. They do not want to know how the consumers' taste changes.

3-2 Containers are provided by buyer.

I sell my vegetables directly to supermarkets. My rich soil produces good vegetables. The supermarkets know it, and want to buy and sell my products. They send trucks to pick up the products in my fields. Crates to carry vegetables also belong to the supermarkets and I do not have to buy them. Hence, I do not pay packaging and transportation costs. It is me that decide the price. I can get good profit.

Benguet farmers should think about marketing the products by themselves, too. It is better to sell to supermarkets and retail chains, instead of dealers.

3. Organize ourselves

It is not easy, however, to sell directly to supermarkets and retail chains. We have to bring them in large quantities and with uniform qualities. We have to continue supplying them everyday for a certain period of time. A small farmer alone cannot do it.

3-3 POBAH members at DOLE for registration

If many farmers get together and put their products together into large lots and adjust harvest time among themselves, they can supply the products in large quantities and continuously. Then, the buyers will be glad to buy them and very likely for good prices. Member farmers can save their time because they do

not have to bring the product to the market individually. Members may improve their technology and practices by exchanging information among them to produce good and uniform qualities.

In Nagano, Japan, the number of farms practicing organic-based vegetable production with soil enrichment has increased. I set up a marketing corporation to sell their products and built a collection depot. We now can sell our vegetables profitably without paying margins to the intermediate dealers.

In La Trinidad, a "Pioneer Organic Based Producers Association in the Highlands" (POBAH) was formed in December 2008, assisted by the Municipality of La Trinidad. Thirteen farmer participants of the JAEC Pilot Project for Better Income by Organic-Based Vegetable Production joined it. I am looking forward to their active participation in collective production and marketing. I dream of exchange and collaboration between POBAH and our Nagano Association.

Final Chapter
TOWARDS OUR DREAM

As I told you at the beginning, I succeeded in farming myself. Why did I succeed? Let me list important reasons:

- Hard work, less dependent on farm machinery and chemicals.
- Soil enrichment: improve physical, biological and chemical (nutritional) conditions of the soil.
- Improve farm management, i.e. planning, cost reduction and marketing
- Group collaboration, particularly in marketing
- Ask for help to those who has advanced technology and experiences. Listen to them carefully. Know your limitation and motivate yourself to learn from others.
- Look for information. Think globally and dynamically. Collect and analyze information. Plan your farm with foresight.
- Keep dreaming and work for reaching your dream. You may or may not get what you wanted. But, whatever the results may be, they will enrich you for the future.

F-1 Farm fields in Bugias: They need to be maintained as rich vegetable fields.

They may be summarized as follows:. One: I always dreamed. And I worked hard for bringing the dream to reality. Then, I could withstand many hardships. Two: I was helped by many people. All whom I talked to responded warmly and gave me information and suggestions I asked for. Many helped me in various ways. I was really lucky.

I am now retired from farming, handing over farm to my son. Then, I thought I would return kindness so far given to me to other people from now on. By doing what? By helping young farmers have dreams and realize these dreams. So, I came to the Philippines. Two years have already passed. I have one year left. I want to progress as much as I can during the period.

I want to see the Municipality of La Trinidad regain vegetable and strawberry farms rich and full of life. I want to see the whole Benguet rich and productive as the Salad Bowl of the Philippines. For this purpose, I want to help farmers to build more productivity into the soil.

My fellow Benguet farmers! Let us work together for our DREAM!

April　2009

Masaki Yokomori

Author's Profile

Name MASAKI YOKOMORI

Date of birth August 8, 1940

Career records

1963－1966	Participated in Farm Training in the United States.
1975	Started vegetable farming in Nagano.
1985－present	Developed soil enrichment technology of vegetable farm using charcoal and wood vinegar (Mokusaku).
1988－present	Accepted farm youths on JAEC Young Farmer Training Program from Brazil, Indonesia and Philippines (20 persons)
1995－2005	Vice President, Non-Tree Forest Product Promotion Committee, Nagano Prefecture (Chairman of Charcoal Working Group)
2000－present	Chairman, Organic Based Vegetable Producers Association in Nagano
2000－present	Guided farmers on farming technology using charcoal and Mokusaku in Brazil, Argentina and Peru
2007－present	Guided farmers participating in the JAEC Organic-Based Vegetable Project in Benguet Province in the Philippines

Yokomori Farm

Farmland	10ha
Harvested area	Iceberg 5ha、Chinese cabbage 4ha、paddy 0.2ha
Technical approach	Organic-based vegetable production based on soil enrichment using compost, charcoal and Mokusaku

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