Organic Farming at the Center Stage

A Primer on Sustainable Rice Based Farming Systems in the Philippines

Jaime "Ka Jimmy" Tadeo
Raphael Baladad

with additonal content from

Irma Yanny

on the

Highlights of the 2012
La Via Campesina – Southeast Asia
Agroecology Exchange

ORGANIC FARMING AT THE CENTER STAGE

A Primer on Sustainable Rice Based Farming Systems in the Philippines

Jaime S.L. Tadeo
Raphael M. Baladad

with additional content from

Irma Yanny

on the

HIGHLIGHTS OF THE 2012 LA VIA CAMPESINA – SOUTHEAST ASIA AGROECOLOGY EXCHANGE

PREFACE

Over the years, PARAGOS has engrossed itself in the struggle for the effective implementation of agrarian reform in the Philippines. Akin to other member organizations under La Via Campesina, social justice and the farmer's right to the land has been our utmost priority.

But out of all of the experiences earned through victories gained and defeats bitterly suffered, an important lesson has emerged: The redistribution of land alone will not solve the multifaceted problems faced by farmers.

Agriculture by far, is still the main driver for most Southeast Asian economies. Yet for decades, this sector remains stricken by complex problems, ranging from the dwindling water and land resources, lack of government support, difficulties in local/international marketing, import dependence, poor appreciation to the importance and economic opportunities of farming, climate change, and ULTIMATELY, the over utilization as well as the increasing costs of chemical based farming inputs.

Thus, it is time to put organic farming at the center-stage.

Despite the endless debate on whether or not organic farming can eventually ensure food security as well as its feasibility in uplifting the lives of farmers, in the long run, I cannot see any unfavorable outcome in shifting.

Hence, the purpose of this humble primer; to urge its readers to SHIFT by illustrating some of best and scientifically proven practices on organic farming as well as sharing the context and experience of organic agriculture in the Philippines.

JAIME "Ka Jimmy" TADEO
PARAGOS - PILIPINAS

A VERY SHORT SITUATIONER

FOOD SECURITY AND RICE IMPORTATION

Similar to most Southeast Asian countries, rice is the staple food for 90 percent of the Philippine populace. It accounts for 41 percent of the total calorie intake and 31 percent of the total protein intake of a common Filipino. It is grown in some 4.0 million hectares of land across the country, providing livelihood to more than two million households engaged in rice-based farming, along with millions of peasants, and tens of thousands of merchants and traders. In contrast, Thailand has from 9-10 million hectares, Vietnam has 7.7 million hectares, and China has over 30 million hectares of land planted to rice, respectively.

As an economic commodity, it is both a major expenditure item and a source of income for many households. As food, it is our most basic necessity, with a demand cutting across all social classes. Rural households also depend, in varying degrees, on the various stages of rice production for livelihood.

Rice self-sufficiency has been a longstanding goal of the Philippine Government since the 1960s. This goal however, proved to be quite elusive. For the past 10 years rice importation from Vietnam and Thailand increased incrementally until it reached an all-time

high of 2.45 Million metric tons, making the country one of the world's top rice buyers. This was caused by a variety of factors: from the persistence of rural poverty, the severe typhoons hitting the countryside in the past years, the uncontrolled rise of the country's population, dwindling public investments on the agricultural sector, to the constant price increase of farming inputs.

This alarming status of food security thus prompted the Philippine Government to undertake an intensive campaign to improve the country's rice production. Part of this campaign is the implementation of programs on improving of irrigation systems, crop resilience, seed banking, post-harvest and marketing facilities as well as the conduct of sustainable agriculture training programs for farmers.

To date, the success of the said campaign is yet to be proven. But it is to mention that out of the list of measures to rekindle the progress of agriculture, the Philippine government has zeroed-in on the promotion of sustainable agriculture, and subsequently organic farming. This was born out of necessity for a shift in production methods and systems in a time when the promise of modern conventional agriculture has failed.

Rice Production and the Impacts of the Green Revolution

For decades, the country's agricultural sector has faced almost insurmountable odds; problems so complex, it utterly contributes to the persistence of rural poverty. These problems are deeply rooted to the "Green Revolution" which, for the past 40 years, have been the anchor for the agricultural programs implemented by the Government. The Green Revolution has systematically molded the country's rice production through the following means: (a) increase in rice mono-cropping; (b) increase in the use of hybrid seed varieties; (c) increase in the use of chemical

fertilizers; (d) increase in the use of pesticides; and, (e) increase in the use of powertillers. (Zamora, 2009)

> *"… the country's rice fields are no longer productive due to multiple nutrient deficiencies."*

Although the Green Revolution certainly did have successes, it was short-lived. Within the initial years of implementation, it has undoubtedly produced higher yields, but at the cost of health and ecological balance. Over the years, farmers became overly dependent on the use of chemical fertilizers and pesticides, and with promise of higher yields and profits, eventually disregarded the natural regeneration of nutrients within the soil.

It was in the petrol crisis during the late 70s when I first saw the impacts of the Green Revolution on farmers, when it triggered the rise in chemical and fertilizer prices. And up to now, there seems to be no halt in its increase.

In 1999, an extensive study conducted by a specialist from the Philippine Rice Research Institute concluded that the country's rice fields are "no longer productive" due to multiple nutrient deficiencies. This was caused by a variety of factors, but was ultimately attributed to the aggressive and improper use of chemical fertilizers and pesticides.

In order to sustain production, farmers relied heavily on loans to procure chemical inputs and other needs for land preparation and harvesting. To date, almost 30% of farmer's gross incomes are given to creditors or traders as debt payment, 42% are either allotted to farm equipment rental payments or lease payments, 18% are allotted for the procurement of chemical inputs for the next cropping season. Only a mere 10% are left for farmers and the survival of their families until the next cropping season. In addition, the average annual income of farming households are

about 30% lower than income of an average family in the Philippines.

Curbing the ill-impacts of the Green Revolution has become one of the utmost motivations for promotion of sustainable agriculture and the steady growth of organic farming in the Philippines. On another note however, organic farming can also be seen as a key to address another pressing issue: climate change adaptation.

ORGANIC FARMING AND CLIMATE CHANGE ADAPTATION

The vulnerability of agriculture in the Philippines has increased drastically over the years due to climate change. Unnatural and severe weather occurrences, such as super typhoons and flooding during dry seasons and droughts during wet seasons and temperature increases beyond usual thresholds have severely affected production patterns, resulting to massive yield losses and subsequently causing the plunge of the agricultural sector's gross domestic product.

The agricultural sector's increasing vulnerability to climate change has also contributed to the disruption of local ecosystems. Extreme weather events have caused the decrease or loss of beneficial insects and the increase in pests. The sudden and uncontrollable increase in pests has prompted farmers to intensify their application of chemical pesticides, causing further degradation to soil and food quality.

Undoubtedly, climate change has already affected the course of Philippine agriculture in a multitude of ways. I could have an entire list going on for days end, but in sum, agriculture and climate can be both mutually beneficial and destructive.

> *"By significantly reducing the amount of chemical inputs introduced in fields, each farmer can contribute to climate change mitigation."*

Next to energy, conventional agriculture is one of the largest Green House Gas (GHG) contributor and accounts for more than "33% of the country's total GHG emissions" (Floresca, 2009), mainly caused by the application of chemical fertilizers and pesticides. By significantly reducing the amount of chemical inputs introduced in fields, each farmer can have a tangible contribution in reducing their carbon footprint, and in due course, their vulnerability to climate change.

Since Organic agriculture production systems are less prone to extreme weather condition, water stress, and problems related to soil quality, it has been widely accepted as one of the most viable methods for climate change adaptation. Through organic farming, the organic matter content on soils increases and therefore, provides higher holding capacities and resistive to drought.

Likewise, organic farming is a low-risk production strategy with reduced costs of external inputs, there are significantly lower risks in incidences of partial or total crop failure; caused by extreme weather events. Also, since organic products fetch higher prices in markets, farming households can acquire higher incomes, not only improving the immediate situation of their lives, but also their coping capacities in climate risk situations as well.

OPPORTUNITIES IN ORGANIC FARMING

Apart from being a viable climate change adaptation strategy, organic agriculture is a broad based-growth and development strategy that provides various opportunities for improving every aspect of rural life.

> *"…organic farming boosts competitiveness… and contributes to the revitalization of rural economies."*

Through increased yields and income and by improving the productivity of farms, in the long run, organic farming helps address the poverty situation in rural areas. In addition, organic farming enhances the capacities of farmers to be self-sufficient (through the production of organic fertilizers and pesticides) and by reducing the risks of indebtedness, organic farming restores agriculture as a viable livelihood for rural communities.

The increase in income due to organic farming boosts competitiveness among farmers and contributes to the revitalization of rural economies. When rural economies flourish, the chance of attaining the National goal of food security and food self-sufficiency becomes within reach.

Moreover, organic farming reduces the health risks of farmers simply by removing them from the hazardous effects by chemical intensive agricultural practices. Consumers also benefit from

organic farming because of the absence of toxic residues on agricultural products.

There is an increasing demand for organically grown products both in local and global markets. At present, more and more organic trading hubs are being established in urban areas because of the public's increasing awareness for their health and wellness. Although still quite a few, some farms are now exploring the export niche for Philippine organic produce and are beefing up their rate of production.

Lastly, the past decade saw some very favorable developments on the organic agriculture in the country. At the top is the passing of the "Organic Law of 2010" (R.A. 10068) has institutionalized organic agriculture as a national development strategy; harnessing development initiatives coming from both the public and private sectors to promote organic farming and shift majority of the rice farms in the country to organic by 2016.

In sum, although organic agriculture can be considered as still in its "infancy" stage, it already provides some very promising opportunities for our farmers. The situation now rests on how we push organic agriculture forward and its acceptance by local farmers.

BEST PRACTICES ON SUSTAINABLE RICE FARMING

While the goal of sustainable agriculture remains the same, there can be no universal technique or system in its application. Sustainable agriculture must be tailor-fitted according to the different needs and conditions of each farm or farmer. Although there are similarities between countries (let's say, between the methods/practices of Cambodia and Vietnam), each has its own unique addition to the ever-evolving discourse of sustainable agriculture; to develop or improve what we already know.

In the Philippines at present, there are various sustainable rice farming systems, practiced according to each region, province or municipality. Each system can be treated as a distinct and viable approach on sustainable agriculture or can be considered as part of an overall process towards conversion/shifting. Out of these various systems however, four (4) are considered to be widely adopted:

a. *Biodynamic farming* – rejuvenates soil nutrients and improving plant health through application of substances derived from animal manure, herbs and mineral in very small amounts.

b. *Low External Input Sustainable Agriculture (LEISA)* - combining the best traditional inputs with organic,

mineral, and inorganic sources to suit crop and soil requirements in order to attain higher yields;

c. *Balanced Fertilization System (BFS)* - sensible use and combination of organic and inorganic fertilizers to address the increasing costs for fertilizers while sustaining the targeted optimum yield; and,

d. *Organic (full)* – a farming system that dramatically reduces external inputs by refraining from the use of chemical fertilizers, pesticides and pharmaceuticals. The term "organic" also includes soil fertility management, seed selection and varietal breeding under chemical and pesticide-free conditions.

Through the years that PARAGOS and its members have promoted and practiced sustainable agriculture, we have identified several viable methods/systems suitable for integration to small scale farms. These include the "Palayamanan Program" and several "Best Practices" on organic rice farming as well as the benefits of (organic) brown rice production.

The following sections (Palayamanan and Organic Input Production) are culled from the publications of the Department of Agriculture - Philippine Rice Research Institute (DA-PhilRice) entitled "Rice Technology Bulletin" released from 2003 to 2005.

THE PALAYAMANAN PROGRAM: MAKING THE MOST OUT OF RICE FARMS

Palayamanan is a farming system that highlights the purposive integration of of various farming components such as rice and other crops, livestock, fish, and recycling so that nothing is wasted, everything in the farm is a precious resource.

Palayamanan: Breaking the monoculture system, one fruit tree at a time.

Some of the benefits of utilizing the Palayamanan System includes: (a) continuous food supply; (b) Higher income and economic stability; (c) increase in farm production and sustainability; (d) reduced production risk; (e) maximized use of land or better resource allocation; and (e) enhanced diversity and ecological balance.

Palayamanan is not a new system of farming. Rather, it is an old paradigm and has long been practiced by many farmers. Despite its benefits however, it is not widely adopted due to the popularity and convenience of the monoculture system as well as the lack of knowledge on how to operationalize it.

The major component of the Palayamanan system is rice, so much as it is the staple food for Filipinos, it has low production risks. Rice is then combined with other crops to increase productivity and income and to provide supplementary food for the family.

Each Palayamanan farm is unique since the diversification and application of strategies depend on the farmer's needs, resources, financial capacity and capability. At the subsistence level, some farmers may not have dramatic increases in income, but food becomes secure and readily available "in-farm".

A. Starting up your own Palayamanan System

Requirements:

1. *Capital* – although not capital intensive, the Palayamanan system needs a considerable amount of capital based on what the farmer wants to integrate on this farm first.

2. *Farm Hands* – at least (3) working full time. May either be members of the family or from the local community.

3. *Land* – Ideally, one (1) hectare allotted to the following areas:

    a. Residential are (0.05 hectares)
        - Farmhouse
        - Nursery
        - Vegetable garden
        - Animal production area
        - Waste recycling area

    b. Field Crop Production Area
        - Rice-upland crop production area
        - Rice-fish culture
        - Continuous cash crop production

    c. Small Farm Reservoir
        - Fresh water fish cultures

- Water catchments
- Fruit trees

B. A few things to consider before Starting up

1. Look for potential in-farm biomass resources such as rice straws, animal manures, etc.) for animal feeds or organic fertilizer production.
2. Determine possible water sources within the area such as ponds, shallow tube wells and irrigation systems. If there are none, rain feeding would suffice.
3. Study the landscape or topography of your farm, to better determine the allocation of components mentioned in letter A.
4. Consider cropping seasons and determine the best cropping system to be utilized.
5. Determine the farms soil condition (in terms of water holding capacity, workability and fertility) through conducting soil tests (with assistance from your local agriculturist). Knowing the soil condition will help you select the appropriate crops to be planted.
6. Integrate livestock, aquaculture or fruit trees into the farm depending on capital and food source for livestock.
7. Prioritize components based on what is more practical to integrate first, especially if there's a limited budget.

C. Some strategies for the different components

1. Crops

   a. Rice Area

      - Plant about half a hectare with rice to ensure continuous supply. Special purpose rice varieties like aromatic or glutinous rice can also be planted for added income.

- Plant one row of *Taro* along the perimeter of the rice area and along the canals.
- Plant the bunds with vegetables such as *beans, okra, eggplant* or *pepper.*

Note: Controlled Irrigation – For lowland areas, practice intermittent irrigation or irrigate every 7-10 days after transplanting. Furrow drip or skip row irrigation on the other hand, can be used for upland crops like vegetables and cash crops. Intermittent irrigation should not be used when "rice-fish" integration is implemented.

b. Cash Crop Production

- Plant a variety of crops to reduce your farm's vulnerability to pest damage and price fluctuations.
- Plant high value crops or cash crops such as *onions*, *melons, cucumbers, squash* and *corn* during the dryer seasons to ensure continuous profit.
- Plant off-season vegetables such as *tomatoes, eggplants, peppers, string beans, bitter gourds, sponge gourds,* and/or *okras* during the wet season.
- Plant open pollinated vegetable varieties to ensure continuous supply of seeds. Hybrid varieties can also be planted for commercial scale production.

- Produce seeds especially when the prices of marketable products are low.
- Construct permanent raised plots, 1m wide and 15-20 cm high so you can plant vegetables even

during the rainy season. Add *carbonized rice hull* (production to be discussed later), *compost, animal manure,* or other organic materials to the beds to maintain soil quality. Likewise, use mulch to conserve moisture and control weeds.

- Construct trellises for creeping vegetables such as *bitter gourd* which are planted along the plots to maximize the area.
- Wrap/bag hanging vegetables to protect them from insects. It is safer and more economical than spraying pesticides.

c. Vegetable Gardens

- Cover the vegetable garden with a fine mesh net to protect the plants from heavy rains and reduce heat during warmer days.

A small herbal/vegetable garden is a fine addition to any farm.

- Plant gree leafy vegetables such as *mustard* and *lettuce* to have a ready source of cash every 30-45 days.
- Plant off season crops such as *tomatoes* and *pepper.*

A mesh-roofed vegetable garden on a small plot.

d. Fruit Trees Area

- Plant different kinds of fruit trees to ensure continuous harvest.
- Delay or advance fruit setting to prevent oversupply in the market (to ensure higher incomes).

Note: *Use organic mulches such as weeds and rice straw instead of plastic mulch. Plastic mulch is non-biodegradable, hence its disposal is a problem.*

Note: *Soil properties can be improved through: (a) Crop Rotation – Plant Crops of different species (e.g. rice-onion-rice, rice-legume-rice) to enhance the diversity of beneficial organisms and increase the organic matter in the soil; (b) Fallow Period – Dry plow the field after harvest and let it stay idle for the whole cropping interval; (c) Minimum or Zero Tillage – Till only the soil that will be planted to preserve the soil organisms in other parts of the farm. Over tillage destroys soil structure and leads to soil erosion. Minimum tillage is only recommended in sandy soil and in sloping areas; (d) Organic Fertilizer Application – Incorporate plant biomass, animal waste, compost or commercial organic fertilizers into the soil.*

1. Livestock

   a. Raise Livestock for added income and to add value to farm biomass and household discards
   b. Raise fowls such as ducks and chicken for immediate profits, goats, sheep or pigs to cover intermediate expenses, and large animals such as cows and water buffalos for major household expenditures. Poultry can be free roaming but ruminants such as cows and goats needs to be grazed or fed with cut-and-carry grass and rice straws.

c. Adopt the multi-animal single roof system for animal housing. Single roof systems are compact, easy to maintain and generates good quality organic fertilizer.

2. Aquaculture

A large man-made basin/reservoir, good for raising Tilapia and Catfish or for irrigating crops during the dry season.

a. If budget permits, you may add fish culture for added food and income for the family. Grow tilapia, catfish or bulig in fresh water areas and bangus, clams and crabs in saline areas.
b. For culturing fish, you can construct a pond refuge along one of the rice area's perimeter. Make it approximately 1/10th of the paddy area with 1 meter

width and 1 meter depth. After transplanting rice, release one fingerling per square meter of rice area.

c. It is ideal to construct fishponds with net-cages in flood prone areas.
d. Construct small farm reservoirs in rain-fed and upland areas. During the wet season, this can impound water that can be used to irrigate the crops during the dry season or whenever water is scarce.
e. Grow fish in small farm reservoirs during the wet season.
f. Plant the perimeter of the small farm with fruit bearing trees for additional income, Also, you may plant forage crops in between the trees to serve as animal food supplement.

Note: Fish in the rice fields do not only help control weeds and insects, but they also drive away rats from the farm. The movement of fish within the rice field also disturbs the soil and provides some aeration to the rice plant root system.

3. Biomass Waste Recycling

a. Use farm biomass such as rice straw, weeds, and plant trimmings as feed supplement for animals. Animals facilitate the conversion of biomass waste into quality organic fertilizer.
b. Convert household wastes such as vegetable peeling and food leftovers and farm biomass into compost or feed supplements using EM microbial inoculant.

Vermiculture: A system of cultivating worms (usually the African Night Crawler variety). The worms break-down compost materials and turns them into "Vermicast" (A high quality organic fertilizer).

Mushroom cultivation (Shitake, Oyster) – fits in very well with sustainable rice farming as it makes use of waste products such as straws. After picking, subtrates can also be a good soil conditioner.

A small-scale biomass composter, conveniently turns farm wastes into organic fertilizers.

c. Use carbonized rice hull to condition the soil and to make microbial innoculants, organic fertilizers and animal beddings.
d. Practice vermiculture to effectively convert biomass into organic fertilizer. Grow earthworms in a wooden or plastic box and feed them with animal manure or pre-decomposed leaves or grass. Vermi-compost is excellent in vegetable production and home gardening. The earthworms can also be used as feed ingredient.
e. Add a mushroom culture for added income. Use rice straw and dried banana leaves as substrate for the culture.

Note: *14 day Composting and Heap Composting*

ORGANIC INPUT PRODUCTION

A. Carbonized Rice Hull (CRH)

Rice hull or rice husk is the outermost layer covering the rice grain which is normally detached during milling and oftentimes burnt and become waste materials. The Philippine Rice Research Institute, researchers have found that this unwanted rice hull can be carbonized and can be used in growing crops.

Carbonized rice hull (CRH) is made from incomplete or partial burning of rice hull. It is porous and bulky with uniform intact black particles. It contains phosphorous (p), potassium (k), calcium (ca), magnesium (mg), and micro nutrients vital to growing crops. Because it is also sterilized it is free from disease causing organisms. It has many uses, ranging from agricultural to industrial purposes, as well as for medical and home uses.

[USES AND APPLICATION]

1. As substrate to organic fertilizer

    a. When mixed with other organic materials, CRH can be a good source of organic fertilizer.

b. The basic mixture of CRH based organic fertilizer consists of animal manure (4 parts), CRH (4 parts), rice bran (1 part), and compost (1 part) to produce a good yield.

2. As Soil Conditioner/Ameliorant

   a. Incorporating 10-15 bags (10 kg/bag) of organic fertilizer with CRH into 20 plots of seed beds at 1 meter x 20 meters each plot (400 Sqm), makes pulling of rice seedlings easier.
   b. CRH helps replenish the nutrients and other micro elements in the soil that were lost due to continuous cropping.
   c. It also improves soil structure by increasing bulk density, water holding capacity and aeration.
   d. When mixed with garden soil and compost at 1:1:1 ratio, it becomes a good potting material. Compost is a mixture of decades-old organic materials decomposed by microorganism in a warm and moist environment, releasing nutrients into readily available forms for plant use.

3. As Water Purifier/Waste Water Filter

   a. Activated carbon from CRH filters the dirty particles in water, making it effective in purifying household/drinking water.
   b. CRH is effective in treating waste water for recycling.

4. As Base Material For Making Microbial Inoculants (MIs)

   a. When 30-50% of CRH is mixed with MIs, it becomes more useful. Naturally, CRH is a habitat for beneficial microorganisms that facilitate composting.
   b. CRH can be used as inoculants-carrier for rhizobia, a nitrogen-fixing bacteria found in the roots of legumes.

5. As Pest Control Agent

   Owing to its natural black color, CRH retains heat from the sun. It also contains silica that irritates 'golden kuhols' (snails). When applied, snails are forced to come out, making hand picking faster and easier.

6. As Charcoal for Fuel

   Charcoal briquettes from CRH are good alternative sources of fuel. Compared with plain rice hulls that takes relatively more time to produce heat, CRH can easily be ignited to produce heat or convert heat into fuel for cooking.

7. As Deodorizer/Odor Suppressant

   a. CRH also cleanses and deodorizes bad air smell through its activated carbon that absorbs foul odors in the air. The same principle applies when a charcoal is placed inside a refrigerator.
   b. CRH is used as mulch bed in animal pens and poultry houses to reduce foul smell from urine and feces.

8. Other Uses

   In large-scale rice hull carbonization, pyroligneous substances (e.g. tar) can be used as active ingredients in producing pesticides. The smoke from the burning rice hull is also a form of gas that generates electricity. CRH also produces smoked vinegar that has many possible uses. At the Philippine Rice Research Institute (Philrice), these new technologies are still under

observation and further testing for agricultural and industrial purposes.

[HOW TO MAKE CRH]

Materials needed:

- ✓ *Rice hull*
- ✓ *Open-type Carbonizer (Refer to page 27)*
- ✓ *200 liter oil drum*
- ✓ *Long-handle spade/shovel*
- ✓ *Match or lighter to start fire*
- ✓ *Dried wood/recycled papers*
- ✓ *Sprinkler*
- ✓ *A piece of sheet metal for base (if the area is not cemented)*

(1.) Produce fire using pieces of wood, dried leaves, and used papers or newspapers. Carbonize in a clean, dry, leveled and cemented area, away from residential places, under a tree and preferably early in the morning or late in the afternoon.

(2.) Cover the fire with an open-type carbonizer.

(3.) Place 12-14 sacks of rice hull around the carbonizer or until it reaches the chimney at 1 meter high. This is to maximize burning time and effort to make more CRH during carbonization than putting a minimum of 3 sacks of rice hull around the carbonizer per batch. When using an open-type carbonizer, carbonization can be done under fruit trees so as to utilize the smoke for fruit setting and insect pest control. Burning in an open area

during windy days can also prolong carbonization.

(4.) After 20-30 minutes or if the rice hull on top of the mound is burning, move the rice hull from bottom to the top of the burning mound. Avoid getting to close to the mound while it is hot. Always use protective clothing or equipment (e.g. mask and boots).

(5.) When the mound turns completely black, put the CRH in 200 liter oil drum and slightly sprinkle it with water (at most, 1 liter) using a sprinkler or a knap sack sprayer with fine nozzles to extinguish the smoke and lower the temperature. Do not over burn the rice hull as it will become ash.

(6.) Allow the freshly-made CRH to cool completely. The following day, bag/seal, and stock it in a safe and dry place. Export quality CRHs has pure, uniform, and intact black particles with traces or mixture of yellow (unburned rice hull) and or gray (rice hull ash).

[MAKING AN OPEN TYPE CARBONIZER]

Material needed:

- ✓ *A 20 liter used oil can*
- ✓ *Soldering iron, welding machine or oxy-acetylene welding*
- ✓ *Some screws*
- ✓ *A metal puncher and cutter*
- ✓ *A 4x1 ft. piece of sheet metal*

(1.) For the Chamber

- Get any 20 liter used oil can, about 4 0 cm height.
- Remove the top cover and make a hole at the bottom of the can about 9-10 cm diameter for the chimney.
- Use a metal puncher to make 30-40 holes at 2 cm diameter aligned at 10x10 cm distance.

(2.) For the Chimney:

- Get a 4x8 ft (122x244cm) metal sheet No. 22 and cut it at 30.5 cm width per chimney. (makes 8 chimneys)
- Take one cut sheet (30.5 cm width; 122 cm high). Fold 1 cm thick at both length ends of the sheet and clamp them together to make a roll.
- Attach a 20 cm circumference metal sheet at one tip of the chimney (upper part of the carbonizer) that can be connected to the chimney of the filter to trap the smoke. (optional)
- Weld the chimney to the chamber hole.
- To make the carbonizer more sturdy and durable (for 2 months of continuous daily use), you can also attach 3 pcs. Of steel (about half inch thick and 1 foot long), connecting the chimney and the chamber.

B. Rice Microbial Inoculant

With the high cost of chemical fertilizers and other farm inputs, Filipino farmers are now learning how to recycle biodegradable waste material and residues to be used in the production of organic fertilizers. In general, the Philippines produces about 30 million metric tons of biodegradable materials, 57 million metric tons of manure and 15.2 million metric tons of agricultural waste coming from households, farms and industries.

There are now simple, practical and economical technologies to convert these biodegradable waste materials into organic fertilizers and increase the utilization of biomass residues for agricultural use.

Microbial Base Inoculants or MBI, is one of technologies that enhances the utilization of biomass wastes in agriculture. It is produce from local materials such as sawdust, coco dust, carbonized rice hull, and molasses inoculated with a mixture of naturally occurring beneficial microorganisms commercially known as Effective Microorganisms or EM.

Traditionally used as soil conditioners, MBI can reduce the use of chemical inputs, thereby cutting the farming cost.

The use of MBI in waste processing is better than the ordinary composting because it undergoes the fermentation thus decomposition processes that reduce the processing time, lessen odor, and minimize nutrients loss.

Here are some useful tips on how to convert biodegradable wastes into organic fertilizers

[PREPARING A MICROBIAL BASE INOCULANT]

Ingredients:

✓ *5 liters of rice bran*	*2.5 liters of rice bran*
✓ *5 liters of CRH*	*5 liters of CRH*
	2.5 liters of sawdust or cocodust

✓ *EM Solution (Effective Microorganism)*

- *150 ml EM (available at your local agriculture store)*
- *150 ml molasses/brown sugar*
- *5 liters ordinary tap water (Chlorinated water can be used only if it is left to settle for at least 24 hours before using. Use only the upper half of the volume. Note: Chlorine can reduce the affectivity of EM)*

✓ *Pail*
✓ *Volume measuring container/instrument (e.g. graduated cylinder)*
✓ *Shovel*
✓ *Newspaper*
✓ *Polyethylene bag*
✓ *Sprinkler*

(1.) Making the EM Solution:

- Measure the ingredients to be used based on the recommended amounts.
- Dissolve molasses into the water, then add EM. (Molasses dissolve faster in lukewarm water). Mix the materials thoroughly.
- Put the solution on a container or preferably a sprinkler.

(2.) Mix the organic substrates, slowly adding the EM solution until substrate has about 30-40% moisture content (MC). To test MC, squeeze a handful of the materials to form a ball. It should crumble when it slightly pushed.

(3.) Place the mixed materials in a pail or any similar container. Compress the materials while filling the container to release the air. (Aerobic conditioning can lengthen the process of fermentation.)

(4.) Cover the materials with plastic or newspaper then seal the container.

(5.) Store in a cool shaded place for 5 - 7 days to ferment. Good fermentation results in a sweet-sour-like smell of the materials.

(6.) Repack the materials in air tight plastic bags. The materials can be stored up to 3 months. (Note; for longer storage, air-dry the materials before packing) Polyethylene garbage bags can be used for this. Place the materials inside the bag, squeeze out the air, and tie it tightly.

[USES AND APPLICATION: COMPOST ACTIVATOR]

As a Compost Activator, the solution enhances the decomposition process by increasing the population of beneficial organisms (macro and microorganisms) and reducing the odor of the compost. Also, the solution follows a fermentation-decomposition pathway, resulting in high quality compost.

1. *Composting* - Mix 100 gram of MBI per kg of organic substrates before piling the materials. While piling, water the materials with EM Solution until moisture content (MC) is about 40% (wet but not dripping). Compress the materials then cover it with plastic sheet. (Note; Follow the 1:30 carbon; nitrogen ratio of mixing organic substrates.) (Note: *For better results, apply MBI with EMAS application to ensure the growth of beneficial microorganisms*)

2. *On-Site composting of Rice Straw and Weeds* - Scatter rice straw over the field after plowing. Spread MBI over the field at the rate of 100g/M2, followed by application of EMAS (1:10 dilution rate) at 200 L/ha. Flood the field and maintain water level at 2 cm. depth. (Note: *Always follow your regular method of plant preparation*.)

3. *In Making Organic Fertilizer* - Mix 100 g MBI/kg of organic substrates (4 parts CRH, 4 parts animal manure, 1 part rice brand, 1 part compost by volume). While mixing, add the EM solution until the MC is about 30-40%. After mixing, pile the materials in mounds or windrows. Compress the materials then cover it with a plastic sheet. Let it ferment for 1 week. After fermenting, turn/mix the materials to allow remaining toxics to disperse, then let it cool down for another week. Pack the materials in plastic bags.

4. *Crop Residue Incorporation Under Dry Land Condition* - Apply MBI at 100 g/M2 over the field before residue incorporation followed by EMAS application (1;50 dilution

rate) at 200 l/ha. Maintain the soil moisture to facilitate decomposition.

5. *Fermenting Kitchen Garbage* - Chop garbage (fruit and vegetable peelings, food wastes, soiled paper towels) then drain excess water. Place chopped kitchen garbage in a pail with drain holes then mix MBI (50g MBI/kg garbage). Compress the mixture then cover the bucket with an air tight lid. Repeat the process until the bucket is full. Let it ferment for 1 week. Fermented kitchen garbage (FKG) can be incorporated into the garden top complete the decomposition process. Mix it with the soil after 1 week, then plant. FKG can be mixed with manure, compost, CRH, and soil to make organic fertilizer. FKG can also be fed to hogs as a feed supplement.

6. *Fermenting Animal Manure* - Mix 100 g MBI/kg of animal manure. While mixing, water the material with EM solution (3% molasses+ 3% EM in 94% water) until the MC is about 30-40%. Pile the materials in mounds or in windrows. Compress the materials while piling. Cover it with plastic sheet and let it ferment for 1 week. After fermentation, spread the materials to cool off before packing.

7. *Composting Weeds* - Cut weeds in row crops such as vegetables, field crops, and fruit trees. Spread or mulch the weeds at the base of the plants, then broadcast MBI at 100g/M2 followed by watering of EMAS at 1:200 dilution rate.

[USES AND APPLICATION: INNOCULANT AND NUTRIENT SOURCE]

As an inoculant and nutrient source, the solution makes the soil: (a) soft and friable; (b) Improves soil physical properties such as compaction and bulk density, formation and stability, porosity and rooting depth, water holding capacity, and drainage; (c) Increases the population, diversity, and activity of beneficial microorganisms; (d) Enhances the availability of more nutrients in the soil; and, (e) Suppresses soil-borne pathogens.

1. *In Rice Production*- Apply 100g/m2 of MBI together with rice straw or organic fertilizer 3 weeks to 1 month before planting, followed by the application of EMAS (1:200 dilution rate) MBI can prevent or reduce incidence of diseases such as sheath, blight, rice blast, and bacterial leaf blight, and bakanae.

2. *In Vegetable Production* - Pre-planting application of MBI at a rate of 100-300g/Sqm during the first harrowing. Post-planting application 50g/Sqm in between the plants then incorporate it into the top layer of the soil. Dissolve MBI in water overnight (1 kg/50 liter of water), then water the solution into plants. Avoid direct application of undissolved MBI to plants especially when the leaves are wet to avoid burning effects.

3. *As Odor Suppressant* - Reduces odor in animal pens/sheds, drainage canals, and dump sites. Decontaminants and purifies waste water.

    - Spread MBI over animal manures in poultry houses, pig pens, animal sheds, or garbage pits. Repeat the process once a week or every 2 weeks depending on the intensity of odor, followed by the application of EMAS (1:200) in and around the fence.

- Spread MBI in drainage canals. Supplement with EMAS application (1:200 dilution rate.)

4. *As Weed Control* - Control weeds in 2 ways; through weed flushing or thru fermentation.

   - Apply MBI over the paddies (100g/M2 before plowing, followed by the application of EMAS (1;200 dilution rate). Flood field and maintain water depth of 2-5cm. Let the weeds grow, then harrow the field to kill the weeds. Shallow harrowing is recommended to incorporate emerging or growing weeds. It also avoids disturbing the lower soil layer. Deep harrowing brings out more weed seeds to the soil surface, thus, preventing the growth of more weeds. Apply EM 3 weeks to 1 month before crop establishment to effectively control weeds.

5. *As Additive to Animal Feeds* - Reduces feed consumption and increases feed conversion efficiency. Prevents scourge and diarrhea, and reduces animal stress.

   - Add 10% MBI to the daily feed ration of chickens and hogs.

[PREPARING AN EM-ACTIVATED SOLUTION]

Effective Microorganism or EM was developed by Dr. Teruo Higa of the University of the Ryukyus, Okinawa, Japan. It contains yeast, lactic acid bacteria, actinomycetes, fungi and photosynthetic bacteria.

A variation of EM Bokashi, which is a Japanese term for naturally fermented organic materials traditionally used as soil

conditioners, MBI can reduce the use of chemical inputs, thereby cutting the farming cost.

EMAS on the other hand is an activated EM stock solution. The application and effect is similar to EM1 but the life span is shorter because of its active state and the production of bioactive substances that can kill most of the microorganisms.

Ingredients:

- ✓ 1 liter water or coconut water or rice wash (1,000 ml)
- ✓ 30 ml EM stock solution (3%)
- ✓ 30 ml molasses or 30-50 gram brown sugar (3%)

(1.) Dissolve molasses and water in a pail (molasses easily dissolves in warm water)

(2.) Add EM stock solution then mix well.

(3.) Transfer the solution in an airtight container (plastic container is preferred). Fill the container up to 80% level to have space for gas exchange.

(4.) Place the container in a cool shaded area.

(5.) Ferment the solution 5 to 7 days.

(6.) Check and release the accumulated gas inside the container daily by opening the cap slowly until the gas is release. Tighten the cap after releasing the gas. Excessive gas accumulation may cause the container to burst. The fermented solution should have a sweet-sour smell.

(7.) Transfer the fermented solution in smaller container for storage.

(8.) Use the material within one month after fermentation because the effectiveness rapidly declines after that period.

(9.) Store at room temperature away from direct sunlight.

[USES AND APPLICATION: EMAS]

1. *As MBI Supplement* - 1:10-200 dilution rate as supplement for composting and pre-planting application.

2. *As Plant Inoculants* – 1:200-55 dilution rate for foliage application by watering or spraying. It enhances photosynthetic activity and prevents the incidence of diseases.

3. *For Seed Treatment* - 1:1000 for soaking seeds to enhance uniform germination and seedling vigor.

4. *As Plant Disease Control* - Spray 1:200 dilution rate.

BROWN RICE PRODUCTION: THE KEY TO BETTER HEALTH AND FOOD SUFFICIENCY



Brown Rice (leftmost) is not a kind or variety of rice. Moreover, any rice variety grown by farmers can be 'brown' rice.

The shortage of rice has been a looming crisis in the Philippines for the past decade. Amid the various programs and policies implemented to modernize agriculture modernization, to intensify local rice production and to maximize agricultural lands, there is still no clear path toward attaining rice self-sufficiency. As such, the Government is unable to prevent the constant depletion of the country's rice supply, and thus left perennially dependent on rice imports.

This has led both the Government and various groups to propose new solutions to revitalize the agriculture sector. Among these is pushing for the widespread production of "brown" or "unpolished" rice.

White rice has completely dominated the market, which begun when rice polishing technologies and equipment were introduced to our local farmers a century ago. The sudden surge of white rice in the markets then has led traditional processes of milling and winnowing to be trumped perpetually.

Up till today, most consumers prefer "white" over brown or unpolished rice, which is derived from the traditional processes of milling. This was, for a variety of reasons including the lack of information/education on the benefits of eating unpolished rice and consumerist stereotype – that eating brown unpolished rice is seen as "dirty" and can be synonymous to being poor.

What most people do not know is that the more polished a single grain of rice becomes, the more it is stripped of its health and dietary value. In a small table below, the Philippine Rice Research Institute illustrates what we're getting between polished and unpolished rice in terms of nutritional benefit.

Property *(per 100 grams @ 14% moisture content)*	**Unpolished**	**Polished**
Energy (kcal)	363-385	349-373
Crude Protein (g)	7.1-8.3	6.3-7.1
Crude Fat (g)	1.6-2.8	0.3-0.5
Crude Ash (g)	1.0-1.5	0.3-0.8
Crude Fiber (g)	0.6-1.0	0.2-0.5
Available Carbohydrates (g)	73-87	77-89
Total Dietary Fiber (g)	2.9-4.0	0.7-2.3
Water Insoluble Fiber (g)	2.0	0.5
Sugars (g)	1.4	0.2-0.5
Phylic Acid (g)	0.4-0.9	0.1-0.2
Phenolics (g, catechin)	0.01-0.02	0.01-0.02

Constituent *(per 100 grams @ 14% moisture content)*	**Unpolished**	**Polished**
Thiamine (mg)	0.3-0.6	0.02-0.11
Riboflavin (mg)	0.04-0.14	0.02-0.06
Niacin (mg)	3.5-5.3	1.3-2.4
Panthothenic Acid (mg)	1.4	1.0
Folate (υg)	19	8

Vitamin E, α - Tacopherol (mg)	0.8-2.5	<0.01-0.30
Calcium (mg)	10-50	10-30
Phosporous (g)	0.17-0.43	0.08-0.15
Iron (g)	0.2-5.2	0.2-2.8
Magnesium	20-150	20-50
Potassium	60-280	70-130
Sodium	1.7-34.0	0.5-8.6
Zinc	0.6-2.8	0.6-2.3

As shown above unpolished rice undeniably exceeds its counterpart significantly in terms of nutritional content (antioxidants, minerals vitamins, fiber and protein); needed to combat various sickness and diseases ranging from Type 2 diabetes, colon cancer, heart diseases as well as malnutrition.

In a small feeding program conducted by PARAGOS together with our local health department years ago, several children (mostly malnourished) were given dishes served with unpolished rice. After the feeding program ended months later, we have observed that the children became healthier (although not in a miraculous manner), and are less prone to illnesses such as diarrhea and flu. On a lighter note, even the wellness of pets is improved when fed with brown rice.

Another important aspect of unpolished rice on the other hand is its potential to aid in attaining food sufficiency. In the milling of polished rice, 38% of the husk is removed whereas only up to 28% is removed from the unpolished. In the simplest sense, this automatically translates into an additional 10% rice volume from the same amount of grain.

Conversely, polished rice has a milling recovery of only up to roughly 63% compared to unpolished with a least recovery rate of 70%. Unpolished rice requires less milling and milling costs and with higher recoveries, it ensures better profits on part of the farmer.

It is also to mention that the per capita consumption of unpolished rice is far less (at 84 Kgs) in contrast to polished rice (at 110kgs). Since unpolished rice is more filling and takes less to complete your dietary needs, people consume about 20%-40% less.

These figures greatly affect rice production and requirement and as illustrated below, can affect the country's rice sufficiency.

General Figures:

A. Philippine Population is at 92.34 M (2012)
B. 110 – 129 Kgs Per Capita Consumption Polished
C. 60% – 63% milling recovery for polished rice
   70% - 75% for unpolished.
D. 16.68 Million Metric Tons (pegged at 17 Mmt)

	Polished	**Unpolished**
Consumption	110 Kg Per Capita Consumption X 92 Million Population 10,304,000,000 Kg/mt Total	110 Kg Per Capita Consumption X 92 Million Population 10,304,000,000 Kg/mt Total* *(Rice intake could be 20% less on unpolished.)*
Seed Requirements	204,000 mt Seed (Planting) + 652,000 mt Livestock + 401,000 mt Food Processing 1,257,000 Mt Seed Total	204,000 mt Seed (Planting) + 652,000 mt Livestock + 401,000 mt Food Processing 1,257,000 mt Seed Total *(Seed requirements for livestock and food processing could be 20% less)*

Buffer	840,000 mt (at 28,000 Mt per day Consumption)	840,000 mt *(Buffer value could be less 20% at 672,000 mt or 22,400 per day Consumption)*
TOTAL	10.3 Mmt Consumption + 1.2 Mmt Seed Requirement + .84 Mmt Seed Buffer **12.4 Mmt Total Required**	*(Value static as with polished rice for the purpose of computing difference between milling recoveries)*
Milling	17 MmT Production (2012) x 63% Milling Recovery **10.71 MmT Production Total**	17 MmT Production (2012) x 70% Milling Recovery 11.9 MmT Production Total
Difference	10.71 Mmt Production Total - 12.4 Mmt Total Required **-1.69 Mmt Shortfall**	11.9 Mmt Production Total - 12.4 Mmt Total Required **-0.5 Mmt Shortfall** *(factor in 20-40% less rice intake per capita and seed requirements on livestock and food processing.)*

As the tables above shows, unpolished rice production can have an immediate impact in attaining food sufficiency, as it is a sober solution in addressing hunger and malnutrition.

But reality of course, dictates otherwise since unpolished rice cannot be forcibly fed into the population instantaneously. Sadly, amidst all of its benefits, most people would dislike eating unpolished rice simply because they're not used to it. And if market demands remains low, there would be no substantial shift to unpolished rice production in the ground level.

However, none of these drawbacks are insurmountable. The success of brown rice lies in effective promotion and enhanced

public awareness/acceptance. These, coupled with the farmer's willingness to shift despite the odds.

CONCLUSION

Organic farming is undeniably, one of the best broad-based development strategies that can be employed to revitalize the agriculture sector. With that said and given that most Southeast Asian countries are dependent on rice, effective organic rice farming can help address not only rural poverty but food security woes across the region.

The purpose of this primer is simple: to provide inputs to the overall sustainable agriculture discourse so that somehow, we could determine which technology or method can best be practiced in our respective countries as well as to provide the reader some basic knowledge on the context and methods of organic agriculture in the Philippines.

I am no field scientist, but what you have read in this primer were results of years of enquiry and observation conducted by some of the best agriculture researchers, professors and technicians in the Philippines. Although this primer cannot be considered as a comprehensive account of all the best practices in organic rice farming, I tried my best to share what methods we in PARAGOS have deemed effective, that is, in its application in our own rice fields and according to the training programs we ourselves are conducting for interested farmers.

I sincerely hope that what we have shared here can be useful to you, the reader, and that somehow, you would be encouraged to shift if not continue the practice of organic rice farming.

Lastly, before we put an end to this humble primer, may I share with you a few recommendations:

- The greatest challenge in promoting organic rice farming is to convince farmers to shift amidst the skepticism caused by the sudden decrease in yields and the convenience of

utilizing chemical farm inputs. Through introducing appropriate production and conversion technologies, and through establishing learning/demo farms, farmers will be able to "see for themselves" the benefits of organic rice farming. Also, by curbing the perception that shifting organic rice farming can be a "gamble", more farmers will be encouraged to adopt.

- The general public awareness on organic agriculture must be enhanced. Inasmuch as farmers should be informed on the impacts of utilizing chemical farm inputs, general awareness must also be raised on the benefits of sustainable agriculture/organic farming to improving public health and wellness, enhancing rural economies as well as its potential to uplift the entire agriculture sector. It should be widely perceived and accepted as a viable broad-based development approach. Simply put, the public's attention on organic agriculture must be drawn far from the usual stereotypes such as being simply chemical free.

- Government support is crucial in effectively promoting organic rice farming, but more importantly, political will. Farmers shifting to organic must have the appropriate training, research and materials/production support coming from the government. Hence, the need for a constant engagement with local to national government and secure involvement in the formulation of policies, plans, programs as well as in the allocation of budget on agriculture.

- Since Third Party (Independent) Organic Certifications can be quite expensive, we need to encourage the establishment of Participatory Guarantee Systems (locally focused quality assurance systems based on the active

participation of stakeholders) to accommodate small-scale producers. This is to make way for the "ethical pricing' needed to penetrate markets and consumers other than the middle to elite classes. Market interventions must also be conducted to help small scale organic farmers sell their produce or to make organic produce more accessible to the general public.

❖❖❖

Acknowledgements

The author and his team wishes to thank the following:

LA VIA CAMPESINA, for making the production of this book possible.

DA – PHILRICE for their comprehensive guidelines on sustainable agriculture systems and organic fertilizer production

PARAGOS – PILIPINAS members and other farmers, for their continued support on sustainable agriculture.

And

Other Sustainable Ecological and Organic Agriculture Groups/Advocates who have provided various insights, inputs and ideas that led to the materialization of this humble primer.

Sources/References

Briones, A. *"The role of agriculture and rural development in the Philippines".* United Nations ESCAP. Retrieved from: http://www.unescap.org/rural/doc/oa/Philippines.PDF (n.d.)

Briones, A. *"National study: Philippines, in: Organic Agriculture and Rural Poverty Alleviation: Potential and Best Practices in Asia."* Bangkok, Thailand: UNESCAP. (2002).

Broad, R., Cavanagh, J., *"Why Billions Eat Unhealthy Rice-and Shouldn't",* An Article in the Opinion Section of the Philippine Daily Inquirer, (March 2011)

Bureau of Agriculture Statistics, *"Palay and Corn: Volume of Production by Ecosystem/Croptype, by Quarter, by Semester, by Region and by Province"* in Country Stat: Philippines, Bureau of Agriculture Statistics, Department of Agriculture, (2012)

Casimero, M., & Dela Torre, J., *"Putting Brown Rice at the Center Stage of Sustainable Rice Based Farming Systems",* An occasional paper released by DA-Philrice, (n.d.)

Corales R., Tadeo, B., & Cordero, J., *"Rice Based Microbial Innoculant"*, In: *" Rice Technology Bulletin No. 48"* Department of Agricriculture and Philippine Rice Research Institute (2003)

Department of Trade and Industry, *"Organic Agriculture in the Philippines - A Country Report. Philippines"* (2007)

Floresca, J., *"Assessment and Valuation of Greenhouse Gases Mitigation of Climate-friendly Farming Practices in Lowland Rice Agroecosystems"* Isabela State University, (July 2009).

Francisco S. R., *"Implications of Brown Rice to Self Sufficiency"* Philippine Rice Research Institute (n.d.)

Habito, C., *"Win-win with Brown Rice",* An Article in the Opinion Section of the Philippine Daily Inquirer, (July 2012)

IFOAM, *"Organic Agriculture and Participatory Guarantee Systems",* A brochure found in the International Federation of Organic Agriculture Movements (IFOAM) website: www.ifoam.org (2008)

Mendoza, T., Pecadizo, L., De Los Santos, W., *"Comparative Case Study of Organic, Leisa and Conventional Rice Farming Systems in Quezon Province, Philippines"*. In: Philippine Journal of Crop Science 2001. Crop Science Society of the Philippines. (2003)

Obanil, R. & Dano, E,. *"Attaining Rice Self Sufficiency in the Philippines: Lessons from Major Rice Producing Countries.* Philippine Peasant Institute, SeaRice, (2007)

Oxfam, "The Grow Campaign and Frequently Asked Questions on Brown Rice", Retrieved from the Oxfam website: http://www.oxfamblogs.org/philippines/grow

Philrice, "Wholesome Brown Rice" A brochure published by DA-Philrice on the nutritional value and importance of brown rice, (n.d.)

Tan R,. *"The Simplicity and Complexity in Organic Farming"* A position paper released by the Organic Producers and Traders Association (OPTA) in the Philippines, (2010)

Zamora, O., *"Organic Agriculture as a Climate Change Adaptation and Mitigation Strategy"* University of the Philippines, Los Banos, Go Organic Philippines, (2010)

HIGHLIGHTS OF THE 2012 LA VIA CAMPESINA –SOUTHEAST ASIA AGROECOLOGY EXCHANGE

By Irma Yanny

A. WELCOMING REMARKS: Jaime Tadeo

Why agroecology take the main place these days?

Industrial farming make factors to accelerate climate change. Main polluter of emission is CO2. 90% of Co2 is coming from fertilizers. Who suffers? Countryside and rural community are most suffered. In Philippine there are too much rain. Global warming and climate change are real. Most farmers and sustainable agriculture can cool down the earth.

You eat milkfish which is national fish here and salty egg for the breakfast. I will teach you how to make salty eggs which is organic. Eggplant. Onions and Tomatoes.

Most are rice farmers because the staple food is rice. 7.5 M are devoted to rice farming in Vietnam as they export the rice. Thailand is the biggest rice export in the world. In Indonesia also 1

M ha are devoted to rice farming. In Philippine is the biggest importer of rice. 2.5 M megaton was imported in 2007. 1.5 M ha are irrigated. We are short in fall as we imported rice from Vietnam, Thailand, and Cambodia. The reason we import rice a lot is that most farmland are devoted to the plantation.

How about Cuba? After Soviet Union fell down, the government implemented genuine Agrarian Reform and also free education and free medical. NO cry, everybody happy. US embargo. Now they achieved 100% self-sufficiency. When we have meeting with doctors and nurses, they kept being with us.

When we visited Sri Lanka, a farmer grew 36 varieties in a single farm and 49 different varieties of vegetables and animals in another farm. Agroecology is sustainable ecological management system. Korean calls it national farming system.

Cuba, Sri Lanka, and India farmers didn't talk about the organic farming in rice. Why? Because their staple is not rice, but ours is rice and most participants here are rice farmers.
International Rice Research Institute (IRRI) was established on June 6, 1960. It's already 52 years. On June 5, 1985, 25 years later, we established Philippine Rice Institute. Sustainable agriculture is a unity of a nature. 1) Can you imagine how the chemical fertilizers affect? It started with Green Revolution. Expert says that rice fields in Philippine is not productive any more. 2) IRRI researched 144 sites of paddy rice fields in 1999 about the effect of chemical agriculture. The result are 91% Multiple nutrient deficiency and 93% very low Organism. In soil, there are 25% H2O, 25% Origer, 45% mineral, 1-5% organism. This is composition of soil. But Scientist said the soil in Philippine is less than 1% of organism and it's almost dead soil. Why? We imported rice. The soil became devastated. Out of 144 sites, only 2 % are still productive. The soil feels fatigue of the fertilizers. At the early green revolution, 1 kg fertilizer could produce 10 kg, but now to produce same equivalent, 6-7 kg fertilizers need. Acidic: 16-7. Physiologically it means that function of organism is disorder

because Hybrid seed need a lot of chemicals fertilizers and pesticides. What is the solution? We are talking about why sustainable agriculture takes central place of LVC activities. Small farmers' block is crucial to the reality of the world. Sustainable Agriculture challenges climate change. Raining season already started. We will demonstrate to you how to make the organic fertilizers. Organic farming is actually natural farming. We can't control nature and human being is not perfect. Our role of sustainable farmers should cooperate with nature for self-sustainable system.

B. PRESENTATION: Introduction of PhilRice

Philippine Rice Research Institute (PhilRice) is a government corporate entity attached to the Department of Agriculture created through Executive Order 1061 on 5 November 1985 (as amended) to help develop high-yielding and cost-reducing technologies so farmers can produce enough rice for all Filipinos. The Institute accomplishes this mission through research and development work in our central and six branch stations, coordinating with a network that comprises 57 agencies and 70 seed centers strategically located nationwide. As proof the Institute's quality of service, PhilRice received the following certifications: ISO 9001:2008 (Quality Management), ISO 14001:2004 (Environmental Management), and OHSAS 18001:2007 (Occupational Health and Safety Assessment Series).

Vision: A self-sufficient, sustainable, and competitive rice economy through a responsive rice R&D system and a strong, innovative science- and technology-base.

Mission: To help the country attain rice self-sufficiency by increasing the productivity and profitability of rice farmers in a sustainable and competitive manner.

- Ecological Engineering in Pest Management

  - International Conference on Planthoppers
  - Planthoppers: New threats to the sustainability of intensive rice production systems in Asia. IRRI, 2008
  - Outbreaks of BPH, sBPH, WBPH in China and Vietnam
  - Approaches to Management
  - Prospects of Ecological Engineering for Planthoppers and other Arthropod Pests in Rice. Geoff M. Gurr - E.H. Graham Center for Agricultural Innovation, Charles Sturt University, Australia

Ecological Engineering - an emerging study of integrating Ecology and Engineering - concerned with the design, monitoring and construction of the ecosystem.

Odum (1962) was among the first to use the term Ecological Engineering.

- Guidance and methodologies for systematic, intelligent design of ecological systems for the benefit of humans and nature.
- The goal is the restoration of ecosystems that have been substantially disturbed by human activities such as environmental pollution or land disturbance,
- The development of new sustainable ecosystems that have both human and ecological values. (Mitsch and Jorgensen, 2003)

Ecological engineering for pest management -aim is to build, strengthen and restore ecosystem services for sustainable pest management. Main philosophy is habitat manipulation- planting of flowering plants as source of nectar and pollen for parasitoids and other beneficial organisms. It involves human activity that modifies the environment according to ecological principles. It considers vegetation diversity playing a central role in habitat manipulation (Gurr, Wratten and Altieri, 2004).

The development of strategies to maximize ecosystem services through improving biodiversity to provide refugia, food and breeding places for predators, parasitoids and pollinators (LEGATO, 2009).

Comparison of ecological engineering with genetic engineering in agriculture

Characteristic	Ecological Engineering	Genetic Engineering
Units engineered	Species	Organisms
Tools for engineering	Ecosystems	Genes
Priciples	Ecology	Genetic/Molecular Biology
Biotic diversity	Maintained/enhanced	Potentially threatened
Maintenance and development Cost	Moderate	High
Public acceptability	High	Low
Level of current use in agriculture	Limited uptake in developed countries, though reflected in many traditional agricultural systems	Widespread in some developed countries

- The Rice Ecosystem and Management of Rice Insect Pests

  - Tropical Asian rice fields - an ecosystem unrivaled by any other in the world in terms of complexity- fields that are robust and stable with extremely rich web of generalist natural enemies.
  - In irrigated rice ecosystem there are rich communities of naturally-occurring beneficial organisms in the absence of toxic pesticides (Shepard et al., 1987).
  - Maximize natural control (naturally occurring biological control agents – predators, parasitoids, pathogens) - - very important principle in IPM.
  - These organisms form the core of IPM program for insect pests in rice (Settle et al., 1996). Conservation of beneficial

organisms is the main foundation that led to the success in rice IPM for insect pests of rice in the Philippines and in other parts of Asia.

- Results of most studies suggested that pest management of insects for much of tropical rice must be based on natural control, rarely supplemented by insecticides (Way and Heong, 1994)

- Arthropod Functional Groups in the Rice Ecosystem

a. Phytophages/Herbivores - organisms that are adapted to eat plants
b. Predators - organisms which hunt and eat other organisms. Most important group of biological control organisms. Consume several prey during its lifetime
c. Parasitoids - organisms that, during its development, lives in or on the body of a single host, eventually killing that individual
d. Detritivores - decomposers (entire order of Collembola (spring tail), adult and larvae of some Diptera and Coleoptera)
e. Plankton feeders - larvae of some Diptera Cullicid (mosquitoes) and Chironomid (midges)
f. Neutrals - other insects that accidentally drop in the rice field without any function

RECENT OUBREAKS OF PLANTHOPPERS		
Country	**Month Reported**	**Area Affected (Ha)**
Yunan, China	April 2009	400,000 (hybrid rice)
Hainan Island and Guandong Province	April 2009	Patches of hopperburn
Mekong Delta, Vietnam (Can Tho, Vinh Long, Hau Giang and An Giang)	January 2009	Several fields destroyed by hoppers
Red River Delta, Vietnam	August 2009	High population of sBPH causing severe damage
Thailand	August 2009	More than 7,000 Ha affected with 172,000

		Ha with patches of hopperburn
Cambodia and Laos	August 2009	4,500 Ha Affected
Bangladesh and India	March 2009	BPH Outbreaks in 13 districts
Philippines	March 2009	60 Ha hybrid Rice (SL-7)
West java, Indonesia	March 2010	10,000 Ha affected, 250 Ha totally lost (Hybrid rice)

- Ecological Engineering Research Activity in Philrice

Impacts of Palayamanan field on conservation biological control in rice and rice-based systems.

To document the role of Palayamanan as refuge to beneficial organisms that can provide a sustainable management of insect pests in surrounding areas with large rice monoculture.

- The higher population of natural enemies in the rice field in Palayamanan was attributed to the proximity of the field in area with high vegetation diversity that includes several kinds of vegetables and weeds that serve as source of food and refugia for these beneficial organisms
- Palayamanan vegetable field serve as refuge of beneficial organisms as shown by the number of predators and parasitoids recorded and percent parasitism of BPH eggs.
- Research Plans in Ecological Engineering

a. Effect of habitat manipulation through vegetation diversity (planting of flowering plants as source of nectar and pollen for parasitoids and as refugia for predators) on the population of insect pests, beneficial organisms and insect damage.
b. Effect of vegetation corridor on the arthropod community structure and species diversity in farmers' fields

c. Activities in Ecological Engineering as part of the LEGATO project.
d. LEGOTO: Land-use intensity and Ecological Engineering-Assessment Tools for risks and Opportunities in irrigated rice-based production systems
e. Promotion of a sustainable pest management and production system through ecological engineering in rice and rice based ecosystem

- Prospects for Ecological Engineering in Tropical Rice

  - Rationalization of pesticide inputs.
  - Avoid insecticide use in early crop stages
  - Manipulate bund vegetation to encourage parasitoids and predators
  - Diversify bunds with beneficial flora/plants
  - Manipulate detritivore shunt with organic matter.
  - Reduce unnecessary pesticide perturbations
  - Campaigns to reduce insecticides
  - Link vegetation and aquatic habitats
  - Manipulate spatial and temporal patterns of rice plantings across entire regions

C. PRESENTATION: Philippine Carabao Center

PCC is an attached agency of the Department of Agriculture. Created by virtue of Republic Act 7307 in 1992, PCC became operational in 1993, taking momentum from the gains and achievements of earlier programs. These were the UNDP/FAO-assisted projects "Strengthening of the Philippine Carabao Research and Development Center" PHI 78/017 and PHI 86/005 coordinated by the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development(PCARRD). PCC has a network of 13 centers strategically situated in various parts of the country.

The carabao development program includes conservation of the water buffalo's genetic biodiversity for long-term and sustainable development and an organized genetic improvement program. The program also aims to maximize the genetic gains through crossbreeding of riverine buffaloes with the indigenous swamp buffaloes to optimize performance for milk and meat without disregard for draft for medium-term requirements.

The programs' ultimate focus is the establishment of village buffalo-based enterprises. It promotes cooperative development to provide small-hold farmers access to resources, allows them to participate in decision-making and develops their potentials for business and viable

enterprises. Its R&D efforts help address technology and policy gaps. Essentially, it seeks to overcome the constraints in building a more efficient and profitable buffalo-based enterprise.

Aside from its contribution to national food security, the program therefore is geared towards the improvement of nutritional status, elevation of income and betterment of the overall living standard of the large percentage of the arming sector.

The Philippine Carabao Center aims to be a premiere research and development institution for the sustainable growth of the livestock industry. In order to achieve this, PCC is dedicated to provide quality products and services that address customers' needs consistent with statutory, regulatory and other requirements, and the international standards, and committed to continuously improve the effectiveness of our integrated management systems, products and services, processes, people,

and workplace by ensuring safety of our workers, and protection of the environment.

Conforming to Upgraded standards under the quality management system (ISO 9001)

D. ACTIVITY: Seed Exchange

We have seed exhibition and at the end we will distribute the seed and exchange.

- SPI Indonesia: *Brought many kinds of seed like: black rice, white corn, mug bean, soya, black corn. The seed keep in the bottle and close tightly. SPI had seed center and in every event conducted we collect and distributed the seed too.*

- MOKATIL Timor Leste: *I am from MOKATIL Timor Leste, I brought the seed from Timor Leste, the rice seed name Pelita and Nona Porto, we can not bring lot of seed because this can be problem at the Philippine quarantine inspection.*

- NPF Thailand: *Thank you and we are happy and we have enough food to eat, and we happy that we can have our biodiversity. We conserve the seed by putting the seed up the fire and the smoke of the fire will preserve the seed from insect. We preserve by sharing and exchange with other tribal people and also people* from other *country who visit our village. We grow 60 species in our village*

and 10 species in our agroecology forest, we can not take our root seed since worry from the Costum. The seed from Chiang Rai will be given to the person who will take good care of it and it will not lost.

- AOP Thailand: *we brought with us 4 kind of rice seed: Lep nog rice, Sam nog rice… You can have the seed and they need to be grow 4 and 5 months.*

- KPL South Korea: *In Korea, we bring bean from Korea called sadipan, in Korea we have 4 seasons and bean will harvest before rice harvest. Bean is black and blue from Korea this is will function in the humit weather.*

- KWPA South Korea: *she brough saseme and bean seed, the bean seed. KWPA had 2 campaign to conserve the native seed in one household and campaign how we can multi play the native seed*

- Taiwan FU: *We brough only one kind of rice seed, this seed provide by government, the seed will have best quality and best quantity to produce.*

- VNFU : *we already plant the rice seed in 2 months already, the rice seed plant in many regions in Vietnam. The seed provide by the seed center in Vietnam and farmers get the best seed. For the rice field we have big area in Mekong Delta, We are cooperate with IRRI Philipine. We change after 2 seasons, and get other variety of seed. We got seed from China and we already implement that for 2 seasons. For the ethinic minority people, they conserve their own seed by using the smoke from the fire.*

- FNN Cambodia: *We bought 4 kinds of rice seed and 2 are seasonal and need to grow in wet season and other 2 can grow in both wet and dry season. Not only rice seed, I also brought 8 kind of*

vegetable seed that we like to eat an consume in Cambodia. We are hoping this vegetable seed and be spreat along Asia countries as well. I have rice selection and vegetable selection, we selected during in the middle stage before harvesting. We need to have good seed to chase away the pest. Rice seed storage, we store in basket leave and the seed can get enough air and we have good germination.

- PARAGOS Philippine: *we have 2 varieties of rice, glutinous of rice plant in up land. We can plant the seed for 2 months during dry season. First week of August will be harvest our rice in Tarlac. The rice is high and we need to cut in the middle part so we can have it harvest for second time. We do not use chemical fertilizer and harvest manual. We use leaves of trees leaves of Acacia tree leaves to preserve the seed to avoid the pest attack. We plan 2 ha with 4O KG of seed for 1 ha at the end we will got 100-120 Kaban (1 kaban = 50 KG). The seed you can plan in up land area, Tarlac is the province of high hills.*

E. ASSESSMENT: Trip Evaluation and Feedback

Q1: *What have you learned from the visit on agroecology?*
Q2: *How do you implement agroeoclogy in the organization?*
Q3: *What is your recommendation in the next agoecolgoy exchange?*

- **Group 1:** *SPI(Indonesia), MOKATIL(Timor Lest), PARAGOS (Philippines), AOP(Thailand)*
- **Group 2:** *NPF(Thailand), VNFU(Vietnam), FNN(Cambodia)*
- **Group 3:** *TFU(Taiwan), KPL & KWPA(South Korea)*

GROUP 1

Q1: What have you learned from the visit on agroecology?

AOP

- I Learn more how to make organic fertilizer
- I Learn how to grow organic rice
- I Learn Agroecology system and best practice
- New knowledge on: (a) Carabao to produce milk; (b) Growing rice in Vietnam; (c) Growing ginger in Cambodia; (d) How to control pest by AEE

PARAGOS

- Pest management
- Making of MBI
- Learning how to make Organic Fertilizer

SPI

- Transfer of information on how to make MBI
- Practice Palayamanan
- Make MBI and carbonized rice hull
- Additional practice for Rice Intensification
- Experience for other delegation like learning how to grow organic ginger from Cambodia
- Rice hull, rice brand, sawdust, learned about MBI as part of the Organic Fertilizer

MOKATIL

- Add on organic fertilizer making, (Ka Jimmy¡¦s training is new)
- Learn about Carabao functions (farm use and meat)

Q2: How do you implement agroeoclogy in your organization?

SPI

- Extensive discussion on Agroecology and ecological engineering(pest management and control
- Practice Agroecology engineering like planting flowering plants

Q3: Recommendations in the next agoecology exchange?

- Strong linkages of LVC national on the implementation of agroecology practice on the community
- Learn how to raise livestock like goat and chicken organically and how to effectively
- market the product
- Actual practice on seed selection by the partners in the next Agroecology exchange
- Extensive discussion on Agroelcology Engineering (pest management and contro of all organisms friendly or enemy of the farmers and sharing of best traditional practices on bio pesticides
- How to draw milk from carabao, and how can it can increase income for the family.
- There should be a continuous training and education of families in the locality on agroecology specially the making of organic fertilizer and organic pest management and control

GROUP 2

Q1: What you have learned from the trip on Agroecology?

- Technique/method, skills development and formula on EM1, EMAS, MBI, MBII
- Ecological Engineering: lady finger bean and flower to attract farmer friends to attract farmer enemies in field rice, Rice Duce and Rice Fish
- Practical SRI
- PARAYAMANAN concept and principle

- Increasing environmental awareness, ecology resources and food value:
- Key message: we take from the soil, we need to pay back to the soil. If we destroy the natural resource, we destroy ourselves. This is accordance with Karen philosophy
- Government roles on rice and carabao researches and development

Q2: How do you implement Agroecology in your organization?

NPF

- Sharing and apply organic fertilizer using agricultural waste among network
- Campaign for government to preserve native genetic

FNN

- Implement organic farming in our farm
- Training youth group, staffs and network members on organic fertilizer and integration agriculture as IPM
- Conduct experiment/pilot plot at the office and in farmer sites

VNFU

- Explore and promote integrated agriculture VIC (garden, pond and animal)
- Add organic farming curriculum into farmer training school
- Develop model of organic farmers to disseminate concept and practice to farmers

Q3: Recommendations in the next Agroecology exchange?

- Sharing about raising awareness / spiritual on Agroecology : important of diversity,

- Visit and exchange among farmers who really implement Agroecology in their farms and also demo farms
- Continue practical exercise
- Including more local farmers in training so we can share different experiences
- Presentation should include economic aspect: cost effective (cost and profit)
- Increasing number of farmers to the exchange then when they go back to countries will continue easier

GROUP 3

Q1: What have you learned from the visit on agroecology?

KWPA

- Economic situation in rural areas is not good comparing to the workers' lives in urban area. It has not been clear for her which way she should decide in organic farming or conventional way She also doubted if organic farming can be implement. But this visit made me confirm that the agroecologic way was the fundamental to sustain agriculture.

TFU

- She implemented organic farming for 10 years. She noticed that it's global trend. Consumer markets became more conscious on their health and environment. Right now the critical problem is labor cost. Organic farming needs quite many labors. We don't have many young people in rural area because the young people don't have enough income. Also the farmers' income also very low. During the visit, she kept talking about making organic fertilizers because the consumers cooperatives already talked to the farmers about it. But it's not easy to solve this problem because of lack of labor forces. The problem she found that when Ka Jimmy talked about how to make organic fertilizers, she is wondering if she can apply larger scale of land. The

production cost to make organic fertilizers and labor expense will be huge.

KPL

- In Korea, when we implement organic farming, the most enemy is weeding. But its part lacks. But it's very great for him to learn how to make the organic fertilizers on seedling and right after the planting. It's revolutionary way if I try and succeed it in Korea. I don't think its cost is quite expensive. But the labor forces are still crucial problem.

Q2: How do you implement agroeoclogy in your organization?

KWPA:

- KWPA have actively advocated to the government to implement the agricultural policies for the small scale farmers, but the agroecology is really new concept to the organization through the education by LVC. 1) raise the consciousness and awareness on agroecolgy, 2) practice for our own way, 3) develop the ways to meet the needs of farmers in particular, farmers' income, 4) demand the government to make policies to support agroecology

TFU

- She could confirm what she has already done. She could realize that the organic farming or agroecology is important for their whole family and villagers.

KPL:

- At this moment KPL has supported the organization which are implementing environmental- friendly agriculture. One of its activities is local food activities focusing on school lunch box and we need to expand more these two programs : school lunch box and building local food system. Most farmers are very optimistic and supportive

for these two programs because they will increase the income of farmers.

TFU

- Taiwan has also similar programs and the farmers cooperated with the government about this program.

Q3: Recommendations in the next agoecolgoy exchange?

TFU and KPL

- sharing experiences and improving methods on the marketing system how the small scale farmers sell their organic products.

KWPA

- The main objective of the education on agroecology is to spread out the concept how we can sustain our agriculture. Then we need to find out the ways to spread the sustainable agriculture through agroecology.

TFU

- LVC should invite on specialist from members of the community on marketing and administrative.

F. REMARKS: Sustainable Agriculture Committee of LVC and Activities – Jaime Tadeo

First of all, I'd like to share is that this encounter need hard work from PARAGOS. We have to give big hands to Elvira and two young ladies for their hard work to prepare this encounter.
We have discussed with three questions. Philippine used and practiced chemicals from 1960s during Green Revolution. It is organic farming there is no problem like health and economic. Consolidation I can give jobs and work to the people. The reason is the irrigation is very low. We have smaller irrigation comparing to Taiwan. As the irrigation system grow, the farm can be near our house and then farmers can take care of their farm everydays. If

the farm is along with your house, it isn't have problem. I started organic farming after visit to Korea. We have already best nutrients and if we implement good practices, we could good harvest best quality of rice.

Water management. 7-9 after planting/ hunting snail /Agroecology is very effective if you protect mother earth. After you plant, it just grows for 4 months. If you are good farmers, you will implement biodiversity farming.

If you practice monoculture system, Philippine started practice after IRRIC arrived at this country. Monocrop system need a lot of cost, but agroecology means sustainability. If you grow the organic vegetable or organic chickens, it costs only for four month. We don't have problem on marketing. People already know natural healing. A lot of chemicals cause disease. Zero pesticides, organic farming, organic vegetables why you concerns about the marketing?

Carabao Milk. 90% milk are imported in Philippine. All the business ruin the farmers and agriculture.

Pest management: ecological engineering. We call it natural/biological management which keeps balance in biology of the nature. If you are hooked by the TNC, you pay for sacrifice by the industries. If the farmers use insecticide, the insect also develop their resistance. Nowadays the corporation produces high-toxic insecticides . What do biological management against pest management means? You increase beneficial insects and they make the balance among of them. It's called as an ecological engineering.

History of La Via Campesina - We have 7 issues to advance and develop. Sustainable agriculture is one of those issues. After I knew the organic farming, I implemented it as a religion. Why

Cuba become a prominent country of agroecology in the world? After US imperialist conducted economic embargo against Cuba, they implemented agroecology or sustainable agriculture. Not monoculture but integrated biodiversity farm 1980s. Now they achieved self-sufficiency. Cuba also has well-organized health and education system. We made journey from Cuba – Sri Lanka-India. In Sri Lanka, they talked about biodiversity. We promote biodiversity. After promoting biodiversity, 93 varieties of vegetable increased. In India, they implemented organic fertilizer called Zero Budget Natural Farming by Fukuoka who said that nature is perfect but human is not perfect and the human have to cooperate with nature about Sunshine, water, and land. No global warming. No climate change. The farmers are scientist and have best scientific knowledge on land.

The lack of those visits is no documents and no history. I will communicate with all of you about the red rice what happen after your planting. We need to make documents about this visit and continue to communicate among us. Every country has best practices. And we need to consolidate to compile the best practices in each country and distribute it to all over the world.

G. SHARING: Agrarian Reform "Farmers" Walk for Land, Food and Social Justice" – Focus on the Global South

Mainly focusing on Agrarian problems in Philippine and farmers' struggle. History of Struggle for agrarian reform in Philippines:

- Philippines has a long history of struggle for land and agrarian reform from colonial times.
- Recent contemporary period-land reform laws evolved from land tenancy laws to the current Comprehensive Agrarian Reform Program.

Agrarian reform/rights of farmers and farmworkers is guaranteed under the Philippine constitution – only Southeast Asian country with such a provision. = CARP Law as basis for the struggle of farmers for land/beyond CARL: rightful resistance.

- Only country apart from Zimbabwe with an agrarian reform program under a democratic set up.
- Many farmers uses this law to protect their right on land. The agrarian reform was implemented by the farmers movement itself for the advocacy.
- In Taiwan, S.Korea, and Japan, the agrarian reform implemented but it was the result of Cold War. Only Zimbabwe and Philippine implemented agrarian reform after setting up the democratic system.

- Current Campaigns and Initiatives

  - Save Agrarian Reform Alliance, a loose coalition of national farmers' federations, rural women, and agrarian reform advocates, NGOs pushing for the just, effective, substantive and immediate implementation of agrarian reform. It took initiatives a lot of programs within the law but sometimes made actions beyond the law.
  - Farmers' land occupations/self-installations which is being in Thailand Indonesia.
  - Struggles against the criminalization, harassment and human right violations of farmer's land rights. The effected numbers are huge. The farmers already reported to Human Right Council about these violating cases.
  - Struggles against land grabbing, agricultural liberalization, anti-farmer policies. It happened over last a few years. South Korea is one of major investors on land grabbing.
  - Switch anti-farmers policies in the current government.
  - Call for solidarity - for Via members to issue statement of support for the farmers' struggles for their land

- On June 10 2012, marks the 20th year of Agrarian Reform implementation in the Philippines. Also marks the 20th year of continuous struggle by landless farmers for land access and ownership.

H. SHARING: Climate Change Adaptation in Relation to Sustainable Agriculture by Rice Watch and Action Network (RWAN/R1)

- RWAN Staple Advocacies: National rice sufficiency produced sustainably, policy advocacy on fair trade policies and good governance in agriculture through budget advocacy and rice program monitoring/tracking
- Implementation of projects - Integrating Climate Risks Management into Local Agriculture Planning
- To assist the local governments in assessing current and future climate risks and vulnerabilities of their agriculture, their adaptation needs and the needed adaptation financing
- To help the LGUs draw out concrete plans to address their current and future vulnerabilities
- To build the capacities of women and men farmers in implementing specific adaptation strategies;
- To document the adaptation strategies and whole project process for learning, advocacy and upscaling.

- LGU Agriculture Planning for Climate Change

  - Focused on municipalities—Gerona, Tarlac and Irosin, Sorsogon
  - Project Stakeholders - local NGO partners as local advocates to ensure local pressure on the local government; Local ngo partners to identify their farmer partners and to monitor compliance of the farmers; convene the multi-stakeholder TWG
  - Farmers to participate in the local planning process and to benefit from the implementation of adaptation strategies;

farmers to devote their land and other resources for the piloting of sustainable and climate friendly technologies
- R1 to facilitate the LGU agriculture planning, support implementation of adaptation strategies to benefit the LGU's constituency and linking of lgus thru advocacy to national and regional programs to open up more opportunities for the local government;
- LGUs entered into an agreement with R1 and are mandated to assign a contact person for the project, mobilize relevant staff for the project; provide the necessary counterpart to be able to fully participate in the project's activities

- Approaches to Climate Change Adaptation/Disaster Risk Reduction in Agriculture

  - Mainstreaming climate risks management in local agriculture development plans
  - Early warning system installation in high risk agricultural areas

- Concrete Outcomes we want to see when we do climate risks management in agriculture

  - Reduce/mitigate damage to agriculture-related infrastructure
  - Prevent/mitigate agricultural production losses that could threaten food security and livelihoods
  - Prevent displacement of households
  - Early warning that provides for decision-making for agricultural operations and wise use of limited agriculture resources
  - Agricultural operations and wise use of limited agriculture resources

    - what crops to plant/ when and how long to go out to sea

- when to apply inputs/possible preparations needed to ensure life, fisherfolk settlements
- when to start planting, etc./when to start/limit stocking

- Policy and Program Reforms

  - Access to climate information and forecast
  - improvement in local climate forecasting services of your local meteorological agency
  - Responding to climate risks by:

    a. adaptation technology and dynamic extension
    b. spreading the risks through diverse interventions—income diversification
    c. programs, crop insurance, etc…
    d. having an early warning system in agriculture through the Climate Field School
    e. Climate sensitive subsidies/support programs
    f. other public investments with appropriate changes in the design vis a vis
    g. current and future climate risks (i.e. infrastructure, technologies, risks spreading
    h. mechanisms etc)

  - Having the financing to support above

I. SHARING: Agroecology Actions and Activities – La Via Campesina Member Countries

- Taiwan Farmers Union (TFU) (TAIWAN)

Growing takes 120 day specially summer time. Recruit labor forces. Small sweet potatoes. She grow sweet potatoes which is second nutrient quality. The price of sweet potato is very good and provides farmers with good income. Organic sweet potato's price 10 times higher than the conventional way, but the production isn't difficulty. It grows well in any place in Taiwan. She have grown the organic sweet potato for last 10 years and more and more consumers become conscious and awareness on their health and the demand for the potatoes has increased. She also grow water melon, red beans and peanuts. She rotate the land for the crops. In her experience, she said water is best season to plant right after the rice harvest because they consume different nutrient in soil. And then she grows rice – water melon – sweet potato in rotation and continue to grow other varieties for all year with organic way. She has 2 ha and rent 4 ha, finally farming total 6 ha. She uses 4 ha for those three crops and 2 ha for other crops. At first 3 years it was quite difficult to change conventional way to organic farming. And that time consumers supported her to survive. The reason she changed the production method was she think that organic farming is global trend. Some universities and

institute helped her to solve the problems she faced. Most farmers are affected by chemicals and she persuaded other farmers to change their ways.

- Korean Women Peasants Association (KWPA) (KOREA)

The Korean Woman Peasant Association(KWPA) is practicing Agroecology in the process of realizing Food Sovereignty in Korea. This term, Food Sovereignty is not well-known in South Korea yet. In early days, some of peasant movement associations used "Eco-friendly Farming", which means food sovereignty, and now this is changed into "Sustainable Ecological Agriculture".

To realize this food sovereignty, two major projects are in progress under the KWPA. One is called "Sisters' Garden Plot", which is a system letting local producers and consumers directly connected each other. Through this project, local farmers make up producer cooperative communities and directly sell their produce to customers in major cities. The other is "Native Seed Preservation Project". Native Seed is the most critical resources for local farming, so it is necessary for farmers to understand the ownership of native seed is up to them.

The KWPA is trying to make agroecology come true in Korea in the process of these two projects.

- *Sisters' Garden Plot (SGP)* has done its business since 2009 to deal with food and climate crisis, practice sustainable farming, and bring positive changes to rural communities. One of its major projects is to make up woman peasant communities and gives opportunities to sell their fresh produce which is grown by their own hands in direct to the customers in cities. With this projects, local farmers would be guaranteed their income and customers can have a box of fresh produce delivered once a week. In addition to this, The SGP has an open market for introducing fresh produce to city customers. Through this the experiences we've got

from this projects, the members of The SGP try to change conventional ways of production into organic ways which are future-oriented and offer customers safety produce. And we can make and sell many varieties of fresh produce, not by large scale single-crop farming but by producing good-quality produce in small quantities. This method ensures us the stability of food production.

The SGP has conducted a training program for farming communities since last year. On the last year's program, the SGP set a goal to make conventional ways of farming take one step forward. This following is what we have decided.

We have decided to concentrate on sustainable and eco-friendly farming by supporting the system of producing good-quality produce in small quality and by rejecting large scale single-crop farming. And we have promised, at least, not to use herbicide. We have to make the slogan, "Do not use all kinds of pesticides if it is possible." Even if it's very hard for a single person to achieve this goal alone, we can do this with the members of Sisters' Garden Plot. The SGP should make an effort to change the ways of farming into agroecolgical way to receive recognition from the public.

This year, 80 participants attended in this training program. They set the goal that all producers in the SGP change the way of production into the sustainable and eco-friendly way. This training is conducted by the organization called People Who Love Nature(PWLN) which abides by the idea of agroecology from Via Campesina. After this Training, woman

peasants in their communities are making natural pesticides and organic fertilizers in their own hands and using them not to harm nature.

We should keep on conducting this kind of training program for all producers to practice agroecology. And it is needed to provide educational contents which includes the true meanings of agroecology and to make plans for sharing new and developing methods of agroecological farming.

- *Native Seed Preservation Project* by Korean Woman Peasant Association(KWPA) has started since 2005. Since the beginning, KWPA has recognized the importance of seed sovereignty through activities for ensuring the diversity of seed with Via Campesina and tried to find ways to make projects for seed sovereignty in Korea. As a result of this effort, KWPA is operating various programs. The following programs are: One is propagation farm, or seed farm, which is operated to increase native seed. Growing at least one native produce by a single female farmer. Surveying present conditions of native seed by carrying out house to house visiting and collecting native seed. Building seed depot. Hosting native seed festivals. Doing activities for responding to laws and regulations about native seeds.

  Among these programs, native seed propagation farm is on operation combined with agroecology. Since 2008, KWPA has planned projects for preserving native seed and set the goal that, "The preservation of native seeds is critical to organic farming. By keeping native seeds first, we should convert conventional ways of farming into organic ones." After setting this goal, KWPA has made specified principles and plans of propagation farm. These principles and plans include pesticide-free agricultural production, education of seed-gathering technology, and education of traditional

farming methods like catch cropping, crop rotation, mixture cropping, and so on.

KWPA hasn't made fully understand in the agroecology programs introduced by Via Campesina yet. So, we, members of KWPA really hope to take this conference as an opportunity to study agroecologial farming practices in other countries and apply what we learn to those of South Korea. And we try to organize our own training programs.

- Farmers and Nature Network (FNN) (CAMBODIA)

I'd like to happy to share how to organic ginger in my village. I started gowring ginger in APil 2011 and harvested 250 kg from his land size of 24 square meters and earned 1750,000 Riel which is equal to USD 435. First of all you need to collect raw materials in the community. Make the soil of 25 m. compost 30 persons.

Mr. Dung Samneng, a youth's leader of Farmer and Nature Net, living in O Makak, Dambok Khpoh commune, Angkor Chey district, Kampot province. Samneg started growing ginger in April 2011 and he harvested 250Kg from his land size of 24 square meters and he earned income in the amount of 1,750,000Riel equal to USD 435. In relation to technical innovation, he applied as following:

In relation to technical innovation, he applied as following:

1. Preparation of raw materials:
   - basket leaves
   - Humus
   - Compost
   - Rice ash
   - Rice Hull
   - Lime

- Ginger seed
- Coconut leaves

2. Land preparation
   - Land leveling
   - Not having more shade (enough air and sunlight)

3. Mixing soil
   - Humus: 60%
   - Compost: 30%
   - Rice ash: 3%
   - Rice hull: 4%
   - Mushroom waste: 2%
   - Lime: 1%
   - Then keep it for 7days

4. Seed selection
   - Mature gingers
   - Good buds
   - One seed has one bud

5. Planting
   - Put 40% of mixed soil into basket palm leaves
   - Then, arranging in line (3-4lines)
   - Planting ginger seed at ground level

6. Management
   - Use coconut leaves to cover the gingers
   - Watering in the first 5days (one time per
   - Use coconut to make a fence/wall
   - Adding 30% of mixed soil into basket palm leaves (5cm)
   - Weeding
   - Put some liquid compost (one time/month)
   - Adding 10% of mixed soil into basked palm leaves when ginger has 5buds (75days old)
   - Adding 20% of mixed soil when ginger is 150-160days old.

- Then cutting of old leaves of ginger in order to gain enough sunlight and air.

7. Harvesting
- a. When gingers are 160-180days old,
- b. Ginger has 3 flowers
- c. Watering 2-3days (one time/day) before harvesting to make easy to pull out.
- d. Pull all gingers from the basket
- e. Cutting off stem and keep only 2cm from the root, cut some root and sell them.

- Viet Nam Farmers Union (VNFU) (VIETNAM)

Organic rice farming combined with fish in Mekong River

1. Objective of organic rice farming

- Create high quality organic products
- Protect public health, safe for users
- Balance eco-system - Improving soil and water, no environmental pollution
- Increase higher income for producers in the same areas.

2. Nutrient, pest controlling methods and natural food chain

A. Nutrient Control:
- Using natural organic fertilizers
- Using rotten straw return compost to soil
- Using waste from fish for organic rice is absorption \
- Using bio - organic fertilizers to provide multi, medium and micro sources for plants to stabilize productivity, increasing quality of product, stimulating the development of algae, plankton, providing natural food for fish

B. Pest control

- Lighting at night: creating light to entice insects gathering like butterflies, vectors for feeding fish to reduce insects for rice
- Creating favorable conditions for the development of natural enemy (not use chemical fertilizers and pesticides)
- Using bio-products for pest and disease management when really necessary (Products allowed for organic farming).

C. Natural food chain

- Multiplication of wolffia to supplement the food source for fish
- Algal sources, natural plankton in rice field Insect source (pest, vector, butterfly) in the rice field
- Use by-products such as: rice brand for supplement in case of high density of fish in rice field

D. Environment effect:

- Better improve soil and water, avoid desertification of land and water.
- Create better conditions for the development of natural enemy, protect crop from attack of pests and vectors.
- Create conditions for stimulating development useful organism in soil and water, balance and stabilize eco-system
- Create conditions for stimulating algal sources, natural plankton mutil, to enrich natural food for fish

E. Social effect:

- Non environmental pollution
- Safe for producer and consumers
- Protect public health care

This is one of the good practices that not only brings economic effectiveness to producers, but also avoid causing environmental pollution, protect the health care for the community as well as people directly involved in production.

- Assembly of the Poor(AOP) (THAILAND)

I'm from southern Thailand. Most farmers have 6.5 ha and grow annual rice. This kind of rice growing have done in many years. To preserve native seeds of rice, … after harvesting we keep best seeds out of seeds and keep in a strong. It's traditional methods we have done. We hold open forum for young people to learn this method. Second issue is the food security for the family. We involved in the actions 1) invite the farmers of conventional agriculture to change their method and inspire them through eco-system. And also keep the native seeds. The duration of growing of rice is 3 months. It means that farmers should use a lot of chemicals like fertilizers and pesticides. We also do mountainous work and seeds network. She is rice plantation. She is working network with seed and mountainous work. Through the network, we could learn each other and share the program and experiences. As a result, we made eco-rice farm together. Most fishes are natural fishes. We also get multi products in rice field. Also we could purify water because we don't use any chemical. Regarding the water, she said that we should allow the principle that the human is a part of the nature and we are center of water, which is going to river and again to seed. Then we have to protect water. Green market for other villagers so that they could buy high quality rice. She will continue to change production methods because she had health problem affected by chemicals.

- Northern Peasants Federation (NPF) (THAILAND)

Tomorrow our members will be in court just because they protected their land and live in harmonizing with nature. Under this condition, we, farmers in the world should work and help each other. We have to work together to protect our land, our right and our livelihood. Based on that, I will present how we are doing and what we have done and are doing. We are not struggling for the money but to protect our happiness.

- Srikat Petani Indonesia (SPI) (INDONESIA)

Agroeocology is one of main activities in SPI. We started to establish training center, April, 2009. We already have 57 alumni of sustainable agriculture graduating from the training centers. Research, Making organic fertilizers, and make local actions. The training center in Bogor: seed testing, seed selection, making natural pesticides with several leaves etc. We have some land growing vegetables, fruit, and staple food. We have intensive system.

Regarding the seed, we produce our own seed. Select best seeds, keep them and reused in next year. We also have animal to make manure for compost and liquid organic fertilizers. We used carbonized rice hull and natural pesticides. We harvest almost every day and sell them in the traditional market and directly selling to consumers by higher price. The experiments are conducting. Monthly 8 tons/ha and less attack from pests and insects. Also we are experimenting with peanuts and spinach. The productivity are significantly different respectively. Also we also conduct the experiment with liquid organic fertilizers to compare to the organic way from the conventional way. What is liquid organic fertilizer? We make two ways: one from animal manure and some vegetables with coconut water+EM.

- MOKATIL Farmers Movement (TIMOR LESTE)

I'm from MOKATIL(Farmers Movement Timor Leste). Generally peasants plant paddy using compost. Farmers prepare for the land and utilize soil. We also plant maize. After the harvesting, they left the strong stem behind in the field and cover with soil. They leave them until good composting. They grow the vegetables in only small land. There is a campaign not to use chemicals but to use natural pesticides. If peasants are attacked by the pests, they hold traditional ceremony. They believe they will make pest move away because pests come by unbalanced ecosystem.

Regarding seed, there are so many local seeds and owned by local farmers. Now I'd like to talk about season calendar. There is long dry season from December to January which is hunger season. And then farmers save some roots in the soil and take out and eat little by little.

J. STILLS: Agroecology Exchange Activities











LA VIA CAMPESINA - PARAGOS PILIPINAS

Regional South East Asia and East Asia Exchange and Meeting on Agro Ecology

La Via Campesina is an International Movement of Peasants, Small and Medium-sized Producers, Landless, Rural Women, Indigenous People, Rural Youth and Agricultural Workers. La Via Campesina defends the values and basic needs of its members.

La Via Campesina is an autonomous, pluralist, and multicultural movement, independent of any political, economic, or other type of affiliation.

La Via Campesina is made up of 150 member organizations active in more than 70 countries in Asia, Africa, Europe and the Americas.

PARAGOS is a Regional Federation of Farmers within seven provinces in the Philippines. PARAGOS' mission and mandate is to fight for the farmer's right to the land and work towards the realization of people-centered rural development.

As implied by the name PARAGOS, a farm implement used in harrowing, the vision is to achieve a level playing field for farmers; where economic equity and political democracy can allow them to fully enjoy the fruits of their toil.

Alongside its Land Reform Advocacies, PARAGOS is also engaged in key issues such as food security, environmental preservation, rural empowerment and effective governance.

PARAGOS is currently a member of La Via Campesina.

LA VIA CAMPESINA International Operative Secretariat (IOS)
Jl. Mampang Prapatan XIV No. 5
Jakarta Selatan
DKI Jakarta, 12790
Indonesia
☎:+62-21-7991890
🖷 :+62-21-7993426

www.VIACAMPESINA.org