

Acknowledgement

I acknowledge with thanks the.....

1) organizers of this conference in giving me this opportunity to synthesize my decades of growinghood experiences in farming plus decades of academic & professional exposures on farming . Without their invitation, the pressures and the adrenalin surge must not have been there.

2) For the many farmers I have interacted with during these years whose names I could not recall at all.....

I thank them for cheerfully sharing on a give- all – atmosphere their organic farming experiences, systems, and innovations unique to their farms.

The start of innovation—10,000 years ago, agriculture was born

→ For 9,800 years -- **Organic agriculture** (about 1B people)

19th century → Chemical agriculture

(After about 220 years)-----→ **Organic agriculture**

1970's---IFOAM → 3 BILLION PEOPLE

2018→7.6 billion

As innovation, can organic agriculture feed the world,

2050-→10 billion people

Innovation characterizes humankind adjustments and adaptive response to deminishing resources and climate change in the recent decades.

Innovation could scale up organic farming adoption. ,, it is the view that organic farming is already an innovation from the conventional agrochemical intensive farming.

... the 4th wave farming innovation, ...we consider OA as the solution to farming in crisis.

Two major barriers in its adoption :

- (1) the nature of organic farming being difficult, laborious, knowledge and skills intensive, the required environment (air, soil, water) and the certification requirement;**
- (2) adequate support systems (from government and consumers) are not in place.**

What is innovation? How do we differentiate it to invention ?

Invention in its purest sense, is the creation of a product or introduction of a process for the first time

Innovation is the process of translating an idea or invention into a good or service that creates value ..improves on or innovate to an existing product, process or service.

Innovators don't stop at the water's edge. They watch the ripples and spot the “next big wave” →innovative nature in every innovators..inventors (*Tom Grasty , 2012*)

How millennials view ecological/organic agriculture ?

→ Ecological/organic agriculture is an **innovation**.

They were not born yet when farmers in the Philippines and in many countries of the world were practicing traditional, indigenous farming .

A related question was asked “**What are the key features of organic farming as an innovation?**,”

“Biodiverse farms, promote ecological balance, protect the environment, sustainable land management, environment and health friendly, sustain food sufficiency, food sustainability, safe and nutrition-healthy foods, decrease carbon footprint, producing more with less a vibrant agricultural systems”

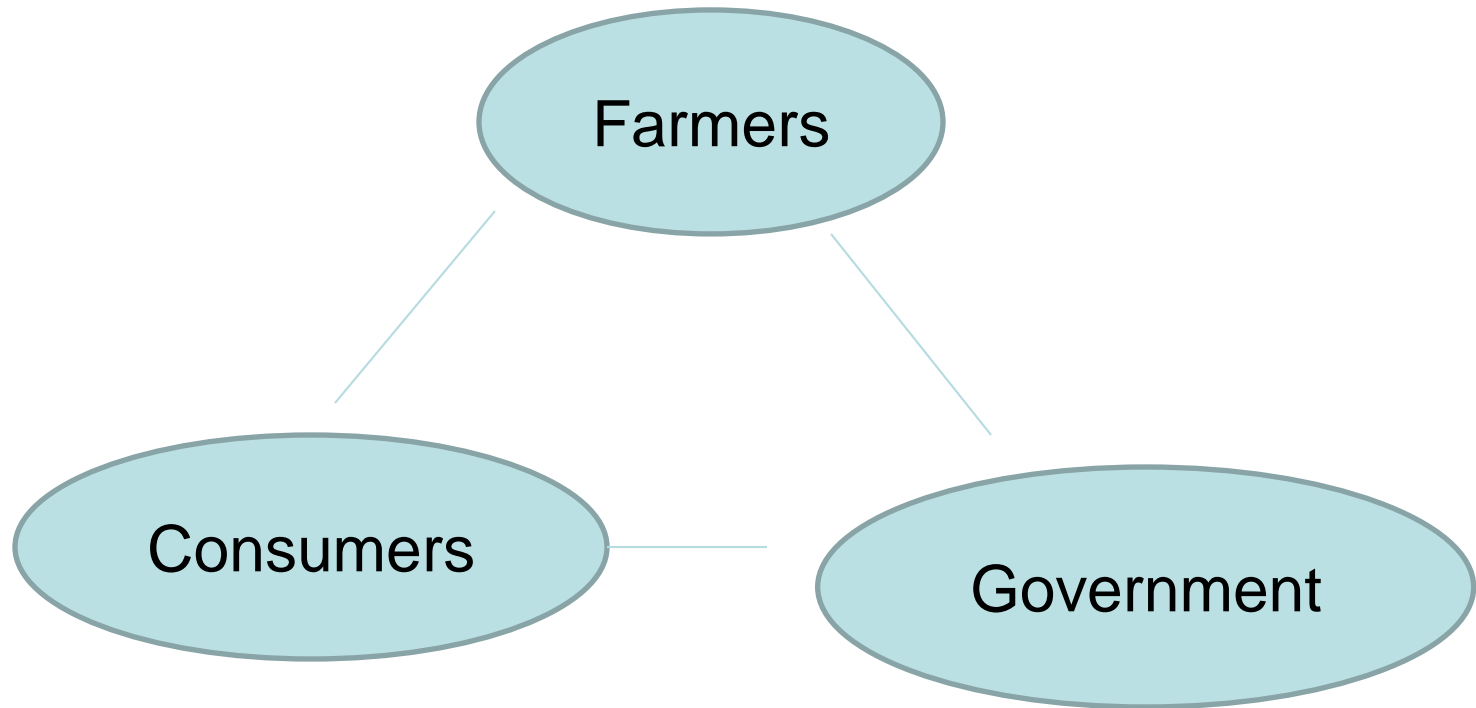


→ **What is (are) the limitations of this view ?**

a vibrant agricultural systems
An agriculture with a future



3 sectors are involved.....innovation



The paper.....43 pages

Content

Abstract

1.0.Introduction 1.1.

Definitions: invention vs. *innovation* 1.2. Current spread/hectarage of Organic agriculture 1.3 Diagnosing the low adoption of organic farming

2.0. Innovation as *game changer* in scaling up the adoption of organic farming .

2.1. The farmers. Researcher/scientist contributions on INNOVATION 2.2. The Consuming Sector

2.3. Governance/ Government Sector. An innovative policy ..ecological tax

3.0. Innovative Paradigm :

- 3.1. Supply chain to Value chain approach in the agriculture and Food systems
- 3.2. Agroecotourism is fast developing farming systems options
- 3.3. Organic Agriculture and Health Security: An innovative paradigm
- 3.4. Organic production innovation must have organic consumption innovation

4.0. Conclusion

References

Acknowledgement

List of Notes----- 9 notes

Notes 1. Organic Farming :Biodiversity-based enterprise

Notes 2. Price Crisis or Farming Crisis?

Notes 3. The cash costs of production is higher in Organic Farming ?

Notes 4. Pangasinan town issued ordinance for organic farming

Notes 5. Toward Fininsurance

Notes 6. Pesticide Contamination in Food

Notes 7. Agro-Eco-Tourism - A new Dimension to Agriculture

Notes 8. Health Per Acre : Organic Solutions to Hunger and Malnutrition

Notes 9. Greener growth could add \$26 trillion to world economy by 2030

Synthesis ... Conclusion

farmers

1. Successful farmers who are into organic are innovators, creative, imaginative

→select their own seeds that are locally adapted and target market, mostly colored rice (red, black rice) as demanded by consumers (Daisy Lagenneger of Alicia, Isabela many rice farmers breed their own seeds, Masipag, Pabinhi Farmers)

→quality/ full land preparation is essential (allowing lead time for the crop/ weed residues to decompose 3-4 weeks before transplanting, timely planted and well-cared/attended to ;

→know the right time to plant so pests/ diseases, rats will not infest their rice crop, plant 3 varietal types for early, regular, late maturing variety for sugarcane. They know agronomy of yield*

$$*Y = G + E + \{(G * E) * M\} \quad (\text{Eq. 1})$$

where : Y = Yield, G = Genotype (variety), E = Environment (climate, soil factor)

M = Management (Inputs applied, cultural practices i.e. land preparation, planting, cultivation and weeding, fertilizer application practices, irrigation, harvesting/milling practices).

→ do soil quality improvement practice; do crop/ weed residue recycling, they do not burn them, allowed them to start decompose after harvesting by spreading them evenly in the paddy, sugarcane planters do not burn the trash, do trash shredding through mechanical shredder or by repeatedly passing tractor –pulled disc harrows.

→prepare their own compost/ organic fertilizer and other preparations, thus saving a lot. The labor incurred is viewed as providing labor in the community



Boy Genosas of Kidapawan City-- learned the techniques of having his mother goat to give birth up to 4 kids

Innovation as the **game changer** ,is key to scaling-up the adoption of agroecology based organic agriculture.

→innovations aim to **overcome the barriers** in the metamorphosisacross the various stages (pre-production, production, postharvest, processing, marketing interlinkages).

--seed, using location-tested **hybrid or inbred** seeds ,seedling preparation (4kg seeds/ ha, sowing seed @ 1,500 seeds per sq. meter,

--transplanting 20 days old seedling at 1 seedling per hill,(double row planting pattern,30cmx 30cm)

-- delayed transplanting-- 35 -to—40 days after seeding

--using bokashi organic fertilizer, vermicompost-vermi tea

-- amplified liquid manure, IMO inoculated hog-biogas generated liquid sludge,

--moist fields not flooded(not AWD)



Which cultivar yields well.. Under organic?
Double row planting pattern

Fig.2. The double row planting pattern (20x10cm—40cm) at various growth stages.



Seed bed ,seedling preparation.. 1500seeds per sq.m,4.0 kg seed per ha (30 x30)cm, 6kg seeds /ha in doublerow planting





RC 222 yielded 8.6 t/ha double row (6 kg seed /ha) ,
SL8 8,5 t/ha at 30cm x30cm (4.0kg seed/ha)

Preparing bokashi organic fertilizer-(compost + 10 kg rice bran + 1li IMO/ton compost)



Amplified liquid fertilizer from cattle manure (1pail manure+2kg molasses+2 rice bran)- mix daily for 7 days





Integrated Rice-duck farming systems provide many benefits : as the ducks graze in the rice fields; they eat weeds, golden snails, and other insects which make pesticides application unnecessary .They excrete manure while grazing, thus contributing nutrients to the soil, and also they cultivate and aerate the soil making rice roots to grow deeper making the rice plant resistant to root lodging. Rice-duck integrated farming leads to organic farming in rice. ONLY FEW FARMERS DO IT ... let's find out & help



www.alamy.com - D58Y3F

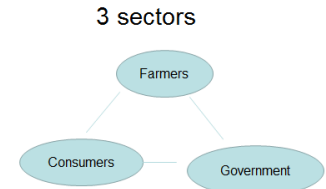


www.alamy.com - EAKXHN

Organic farmers as *INNOVATOR* & entrepreneur

...practice total quality management (TQM).

.....their partner- workers happy, be motivated ,



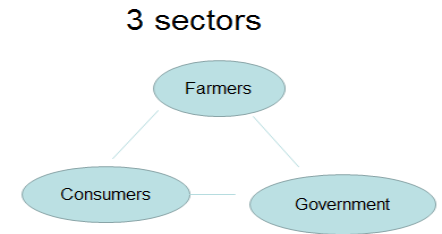
Fair share of benefits--profit is shared (50:50 after deducting the resource costs- land, capital, technology, management)

--- paying transplanters higher (PhP 500) by planting 1 seedling per hill in double row planting pattern

----Partner- workers must have additional income

Promoting Innovation

3. From farmer driven to “Consumer driven or Demand –led promotion of organic agriculture !”



Consumers must support organic farming

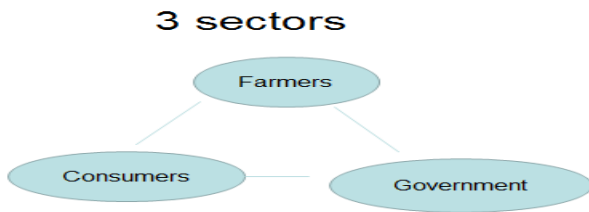
→ by paying fair price to put economic value to the care farmers extend to the soil, and to mother earth at large

→ by rebuilding-restoring soil fertility, by not applying “easy” but destructive, health hazardous and heavy greenhouse gas emitting oil-based inputs.

→ Consumers patronizing on-season and locally –grown crops .

Buy local to avoid food miles and to discourage food imports,
as it imperils food sovereignty

→ **food globalization by few MNC/TNC's.**



Governance

- Much of the burden in Organic farming Adoption could be attributed to governance....
 - Our decade old law R.A 10068, in general, did not “scale-up the adoption of organic farming in the Philippines
 - Massive adoption need “proverbial shot in the arm.”
 - Governance --Policy /financial support -legislative and executive
- policies should be coherent & supportive to the promotion of agroecology-based organic farming innovation



4. The innovative paradigm : *from supply chain approach to value chain approach.*

A supply chain approach must be a tinge of the past where our farmers simply produce/ supply raw materials to the processors/ manufacturers of high value products.

Value adding product must be done by farmers so they could reap the benefits of the value addition in the food systems.

The challenge is how to help farmers achieve the benefits accruing across the “value chain”.

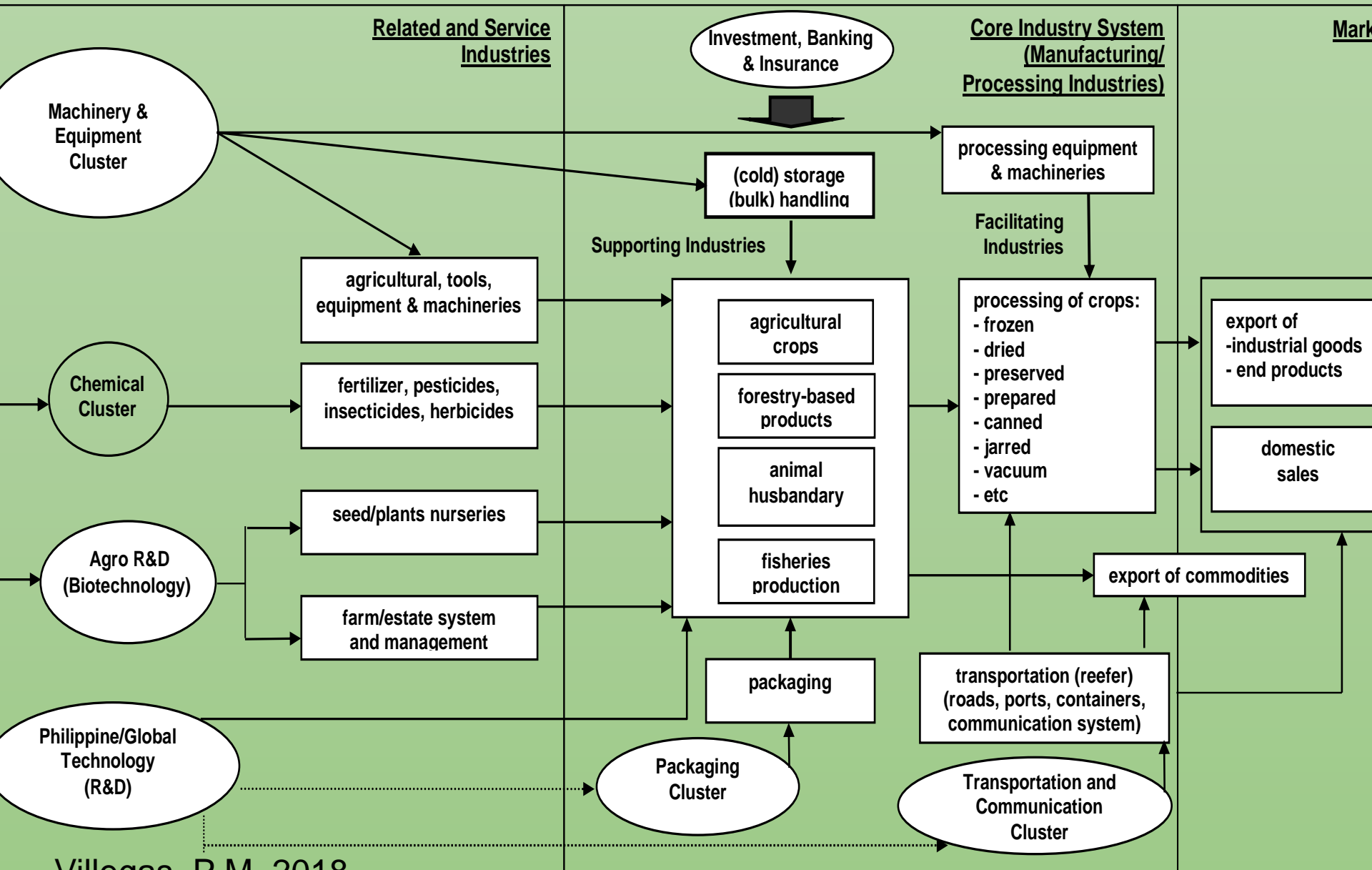
It will spell the differences between the past (20th century) to the present – the 21st century.



Cacao farmer in Kidapawan City, North Cotabato process his cacao beans into tablea, increasing the price of his cacao bean from PhP120/ kg to PhP 400/kg up to PhP 600/kg, acquired a lot in the city to establish a marketing outlet for his produce
Coffee farmers in Batangas are grinding their coffee bean and sell Kapeng Barako at PhP216/kg...Dried coffee beans sell only at PhP80/kg(increasing the price almost 3 times)



Value Chain and Cluster Relationship among Inputs, Supporting, Facilitating and Related Industries with the Agro-Based Industrial Cluster (ABIC) as the Core Industry



Villegas, P M. 2018.

Source: National Industrial Strategy, Ministry of Industry and Trade, Agency for Industry and Trade Research and Development, 2000 with modifications from the SRAI Study Team

5. Another major value adding innovation

– *farm metamorphosis* ... re-shaping agriculture landscape into **agroecotourism**.

A number of farms not only in the Philippines but across Asia and the Pacific are into agroecotourism.

There are farms in the Philippines whose major income are earned through entrance fees, seeds/seedling, fruit sales from the agrotourists.

Their farm is serving as market and educational site for environment- health friendly farming and food consumption style.

Costales Farm, Lucban ,Quezon,

Penalosa farm in Victorias , Negros Occidental

→ increased the market value of their organic produce through their package tour (plus the foods and snacks);

→as a training venue, as a direct marketing for their produce,

→when the agroecotourists go home, they buy organic produce including seedling

Farmer – entrepreneur in Victorias, Negros Occidental earn a 70% of his total income from the tourists who visit his farm arriving on a bus load.

To accommodate overnight visits or several days'stay, he built hotel and restaurants. But organic food served are all harvested from the farm.

Innovative Paradigm

6. Agriculture = food and health; ***food as medicine***

Health banking rather than money banking by growing eating or buying foods grown in...

healthy soil → healthy crops

This lump together financesurance or healthsurance.

→ Agriculture should shift into biodiverse, agroecology based organic production that ***innovate*** yield assessment into **health per acre** rather monoculture yield per ha.

- Dr. Vandana Shiva “If food is nourishment, then health and nutrition per acre, is what we should be measuring.”
- ”Under Indian condition, Vandana Shiva and her colleagues argued that there will be more food and Indians shall be healthier if from chemical-conventional monocultures, they will shift to organic-polyculture farming systems.
- Rather than measuring crops yields per ha, why not calculate **health per acre!**
- They are able to show that **protein production per acre** (124kg/acre@60g protein/adult/day), India’s farmland of 184Mha can feed 5 billion adults,
- calorie energy production could feed **2.4 billion** @ 2,500Kcal/cap/day .
- The current population of India is 1.3 billion people (2018) (<http://eatstayfarm.com/2017/02/health-per-acre-with-dr-vandana-shiva/>).

7.Organic production innovation complemented with organic consumption innovation

→How foods are prepared and served on the table for eating. Food preparation/ recipes innovation must be promoted .

→The consuming public must be informed on the energy aspects of production and consumption – the logistic aspects of making food available (packaging, storing, transport) is energy intensive. Less food imports

→The thermodynamics of food must be popularized.

As we covert food energy from one form to another, there is considerable food lost @75%-84% loss of animal protein

Food type and resource use

→ 1 beef calorie requires about 50 times more land than 1 wheat calorie.

--Kg beef= 22,000li of water (1 year water for taking shower)

→ Meat based diet requires about 1.4 ha(22 x more lands) than Vegetarian diet = 0.0640ha

→ 1.2 billion cattle consume the food equivalent of 8.5billion people, emits more GHGs than all our 850 million cars.

Can organic agriculture feed the world ? No agriculture systems can feed 1billion cars (biofuel), 1.2 billion dogs and cats

That mother earth can support 43 billion if we become vegetarian.

By 2050, we are anticipating 9.5 to 10 billion Global population..

Philippines from 106 M (2018) to 160 million.

Agroecology-organic farming innovation requires that there must be ...

food consumption *INNOVATION!*

Innovation --*Game Changer*...

Scaling up the Adoption of Agroecologybased-organic farming **innovation** is....

the **Vision** to achieve

the **Mission** to be performed &

the **Goal** to be accomplished !!!



Thank you 4 your attention..

Maraming salamat po

Daghang salamat....