International Conference 2019
“Vietnam’s Economy – 50 years of integration and development”

Sustainable and innovative agriculture in Vietnam: past, present and future.

Philippe LEBAILLY (GxABT-ULg)

Hué, 12th April 2019
Is the Vietnamese Government support the agriculture sector?
Producer Support Estimate by country, 2014 and 2015
percentage of gross farm receipts
For OECD countries as a whole, support has roughly halved over the past 30 years and now amounts to 17% of gross farm receipts. At the same time, average support levels in the emerging economies have increased from very low levels to approach the OECD average.

For the 50 countries covered, on average 68% of support to farmers was provided in the form of market price support. These measures distort production decisions and can significantly distort markets and trade.
Are the vietnamese farmers innovative?
Introduction of the VAC system in Vietnam

Brief Background

Centrally planned & Subsidized System
All Production materials (land) have been belonging to collective ownership

“Doi moi” Reform Policy
1986

Market oriented System
Allocation of land to peasants

Vietnamese economy

Overuse chemical fertilizers
Waste agricultural by-products
Introduction of the VAC system

What is VAC?

VAC is acronym for med from three Vietnamese words:

“Vuon” : garden or orchard,

“Ao” : fish pond,

“Chuong” : animal shed (stable, pigsty, poultry shed)

VAC refers to a form of small-scale bio-intensive farming

Where: Gardening (V), Fish rearing (A) & Animal husbandry (C) are closely integrated
Introduction of the VAC system

The interactional relationship in VAC System:

- Some products from the garden (V) is used to feed the fish (A)
- Fish pond (A) provides water, mud and slime to irrigate and fertilizer the garden (V)
- Some the fish (A) generally the cast of fishes, can be used as nutritious animal feed (C)
- Animal manure (C) is used for plant (V) and fish food (A)
Introduction of the VAC system in HaiDuong (cont.,)

- **People role in the VAC system**

  VAC system makes optimal use of land, water & solar energy to achieve high economic efficiency with low capital investment/inputs.

  And people make interactional effects to VAC system: They consume VAC products; Add outside factors (fertilizer for plantation, food for breeding, ...) to this system and control the process of water treatment of VAC simultaneity.
Evolution of the VAC system

Timeline:
- Although almost forgotten, these techniques have been brought back in the 80s through the collaboration of a local NGO (VACVINA) and Australian permaculturist (Rosemary Morrow) as a solution to issues that was plaguing Vietnamese people throughout the country at that time.
- In the 90s, local governments started to pay attention to the permaculture ethics and principles that were attached to the redeployment of VAC practices. The Vietnamese government was also promoting VAC and permaculture in schools.
- In 2000s, many provinces has targeted to develop VAC farming as the “Blue Revolution” for food security and rural development.
Evolution of the VAC system (cont.,)

Changes in the VAC system over time:

- In the VAC system, the livestock, fruit orchard and the pond are usually co-located. The homestead constituting of livestock, fruit crops, vegetables and other trees. Over the time, the VAC’s scale and location have changed:
  - Scale: From small to large
  - Location: From the residence to rice field area.
New VAC
Article

Efficiency of Different Integrated Agriculture Aquaculture Systems in the Red River Delta of Vietnam

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Total sources of on-farm income at fish farms yearly in Hai Duong province. Unit: 1000 VND

<table>
<thead>
<tr>
<th></th>
<th>FS System (N = 51)</th>
<th>AF System (N = 65)</th>
<th>New VAC System (N = 35)</th>
<th>Traditional VAC System (N = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice crop</td>
<td>5265.4 64%</td>
<td>8171.3 62%</td>
<td>6818.2 46%</td>
<td>13,729.1 76%</td>
</tr>
<tr>
<td>Vegetable crop</td>
<td>- -</td>
<td>1380.4 11%</td>
<td>1053.3 7%</td>
<td>2189.6 12%</td>
</tr>
<tr>
<td>Fruit crops</td>
<td>2901.8 36%</td>
<td>3544.0 27%</td>
<td>6958.0 47%</td>
<td>2238.3 12%</td>
</tr>
<tr>
<td>Total crops</td>
<td>8167.1 11%</td>
<td>13,095.8 13%</td>
<td>14,829.5 26%</td>
<td>18,157.1 31%</td>
</tr>
<tr>
<td>Livestock husbandry</td>
<td>4904.6 7%</td>
<td>34,162.4 34%</td>
<td>8077.9 14%</td>
<td>29,243.0 50%</td>
</tr>
<tr>
<td>Fish production</td>
<td>58,922.8 82%</td>
<td>53,594.1 53%</td>
<td>35,024.8 60%</td>
<td>10,997.6 19%</td>
</tr>
<tr>
<td>Total</td>
<td>71,994.5 100.0</td>
<td>100,852.3 100.0</td>
<td>57,932.1 100.0</td>
<td>58,397.7 100.0</td>
</tr>
</tbody>
</table>


1 Exchange rate: 1 USD = 22.500 VND. 2 The cost is excluded the family labour. 3 The fixed cost is calculated based on depreciation over 10 years. Source: survey, 2015–2016.
Hue University of Agriculture and Forestry National Institute for Soils and Fertilizers (VAAS) UCLouvainLN – Gembloux ABT

Improvement of living standards of rural households in the coastal sandy area of Central Vietnam through an integrated approach of farming systems
Importing exogeneous organic matter

Aquatic plants from lagoon, rivers, ponds

CO$_2$

External organic sources

CO$_2$
farm

C-SOIL

C-PLANT

Selling crop production

Selling animal production

Bying animals

Bying food

C-PEOPLE

losses ?

C-ANIMAL

losses

Water hyacinth
harvest and transport of aquatic plants

Amending the soils
Improving the quality of organic amendments

Composting
Vermicomposting → compost
→ earthworms

CO₂

External organic sources

C-SOIL
C-PLANT
C-ANIMAL
C-PEOPLE

CO₂

farm

burning

Selling crop production
Selling animal production
Bying animals
Bying food

Earthworm compost

losses

losses ?
Testing vermicompost substrates

e.g. pig manure + water hyacinth

at the farm

in the lab

with students and farmers
Feeding fish and poultry with earthworms
Optimizing cropping systems & management of crop residues

CO₂

External organic sources

Earthworm compost

C-SOIL

C-PLANT

C-ANIMAL

C-PEOPLE

CO₂

farm

burning

Selling crop production

Selling animal production

Bying animals

Bying food

losses

losses?
- Rice
- Organic amendments
- Peanut
- Associated crops: peanut + taro + chilli
Market gardening with shading roof
Typical farm

Home gardens
Optimizing animal breeding

Food sources and quality, crossbreeding, animal health, excrement processing and use…
THE CHANGES OF LIVELIHOOD IN COASTAL SANDY ZONE IN THUA THIEN HUE PROVINCE, VIETNAM

PHD STUDENT: Minh DAO DUY
PROMOTER: Prof. Philippe LEBAILLY
CO-PROMOTER: Assoc. Prof. Hao NGUYEN DANG
1. Background of the study

**Baseline study**
- Applied the baseline study from Hao (2009) at 4 districts in Coastal sandy zone

**Sample site**

**Objectives**
- Dynamic changes in livelihood’s capital
- The livelihood vulnerable index
- The main changes of livelihood strategies (LS) and its outcomes
- Factors effecting LS, outcome;
- Perception and adoption extreme climate events);
- Recommendations and solutions

- What are the main changes of livelihood capital of households?
- How is the vulnerability of households under the different contexts?
- What are the dynamic changes of livelihood strategies and its outcome of households?
- In the case of changing the livelihood strategies, what are the main reasons of households selecting the strategy?
- What are the main factors effecting on livelihood strategies and livelihood outcomes of households?
- How perceptions of households in evaluating the effects of extreme climate events and what are the main strategies that households adopting with its issues?
- What solutions, implications should be taken into account to have sustainable livelihood strategies for households?
The evolution of LVI and LVI-IPCC

Table.4. Vulnerability index of 5 type capitals

<table>
<thead>
<tr>
<th></th>
<th>2007-2008</th>
<th>2017-2018</th>
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</thead>
<tbody>
<tr>
<td>Human capital</td>
<td>0.365</td>
<td>0.313</td>
</tr>
<tr>
<td>Natural capital</td>
<td>0.194</td>
<td>0.225</td>
</tr>
<tr>
<td>Social capital</td>
<td>0.081</td>
<td>0.075</td>
</tr>
<tr>
<td>Physical capital</td>
<td>0.139</td>
<td>0.048</td>
</tr>
<tr>
<td>Financial capital</td>
<td>0.405</td>
<td>0.273</td>
</tr>
<tr>
<td>LVI</td>
<td>0.244</td>
<td>0.214</td>
</tr>
</tbody>
</table>

Figure 2. Comparative of five sources of capitals

Figure 3. Vulnerable triangle of LVI – IPCC factors
Conclusions

1. Research finds show the less vulnerability of the household from 0.244 to 0.214
2. The livelihood outcome shown sing the approach of the positive increase in 10 year;
3. The income from remittance contributed the important role in the total income of the household;
4. The findings shown the fluctuated of income contribution into the income from crop and animal income sources;
5. It shown the new trend of livelihood strategy by combing to work in the industrial zone at the hometown and work in agricultural sector.
6. Some young labor chosen to work industrial zone at home time than migrate to other province because the stable salary (around 4 million/month) and cheaper cost of living than develop cities.
7. The value of crop contribution tend to increase with a stable trend while the contribution of animal and shown a complicated dimension. This result caused by the risk of market and disease.
8. The transform of raising aquaculture with mono model with only shrimp into the mixed model with shrimp-fish - crab can reduce the risk from water polluted but it reduced the contribution of total income.
You’ve finally reached the golden age!

50
Happy Birthday
Xin Cam On
Thank you
Merci