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Gembloux Agro-Bio Tech
Université de Liège

INDUSTRIAL UNIVERSITY OF HOCHIMINH CITY

« Environnement et développement durable : une priorité pour le partenariat entre le Vietnam et Wallonie-Bruxelles »

Philippe LEBAILLY (GxABT-ULg)

Ho Chi Minh Ville, 22 avril 2019

Remerciements

Proverbe vietnamien

An qua nho ke trong cay

« En mangeant le fruit, on songe à celui qui a planté l'arbre »

« While eating its fruit, think of those who have grown the tree »

ACCT

Agence de Coopération Culturelle et Technique

Du 13/09/90 au 03/10/90
HANOI (Viêt-nam)

Quelles nouvelles politiques rurales pour le développement des exploitations familiales ?

Session d'échange organisée par l'Ecole Internationale de Bordeaux.

CGRI

Commissariat Général aux Relations Internationales

Appui à la formation et à la vulgarisation agricole au Viêt-nam.

1992

Une économie circulaire inventée pour et par les vietnamiens: le système VAC

Introduction of the VAC system

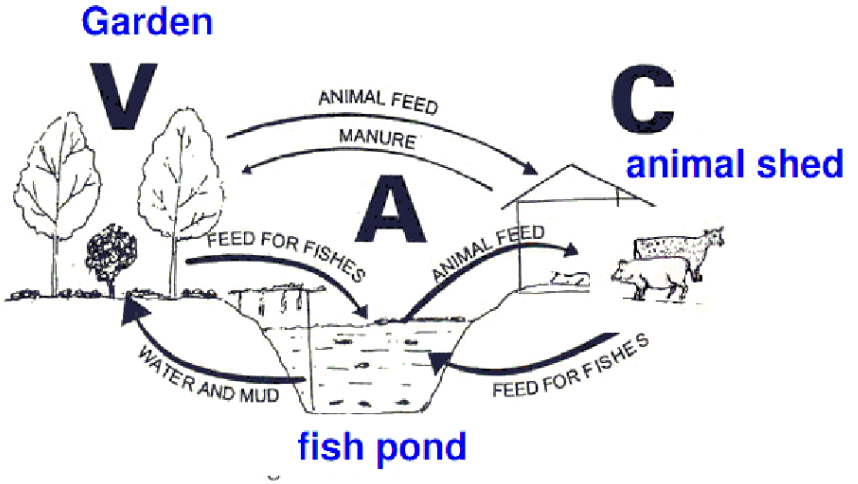
❖What is VAC?

VAC is acronym for med from three Vietnamese words:

"Vuon" : garden or orchard ,

"Ao" : fish pond,

"Chuong" : animal shed (stable pigsty, poultry shed)



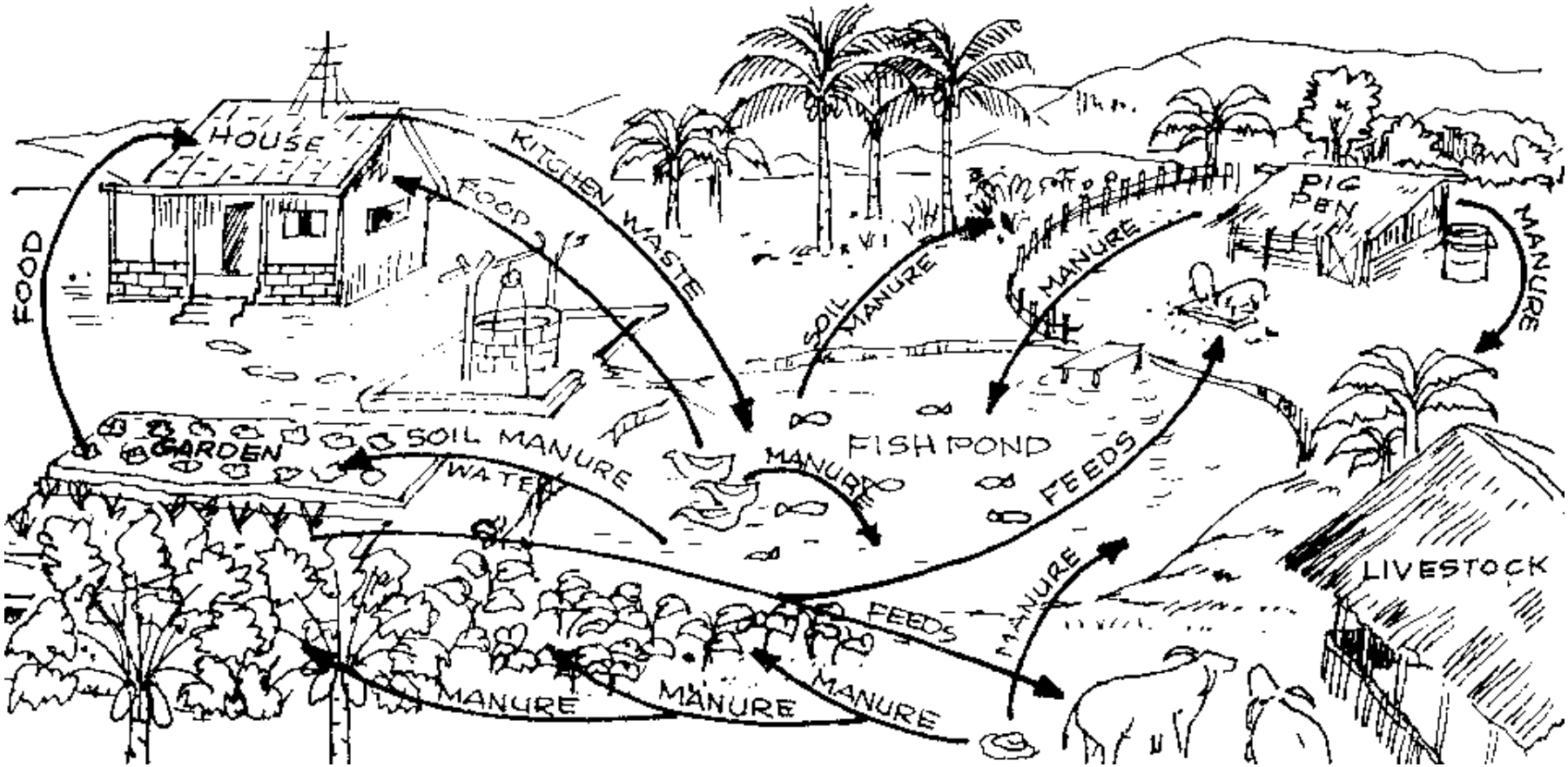
VAC refers to a form of small-scale bio-intensive farming

Where: Gardening (V), Fish rearing (A) & Animal husbandry (C) are closely integrated

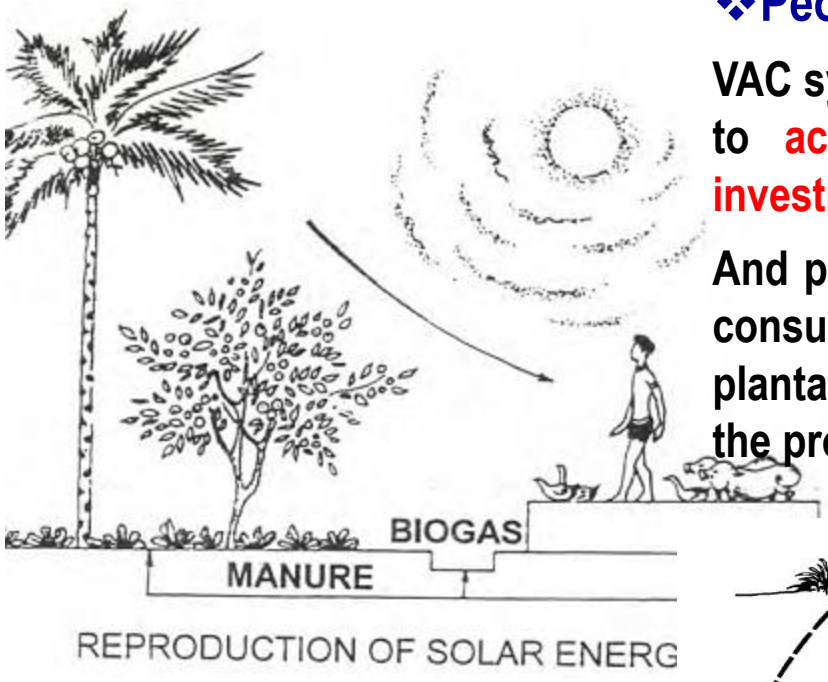
Introduction of the VAC system

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)



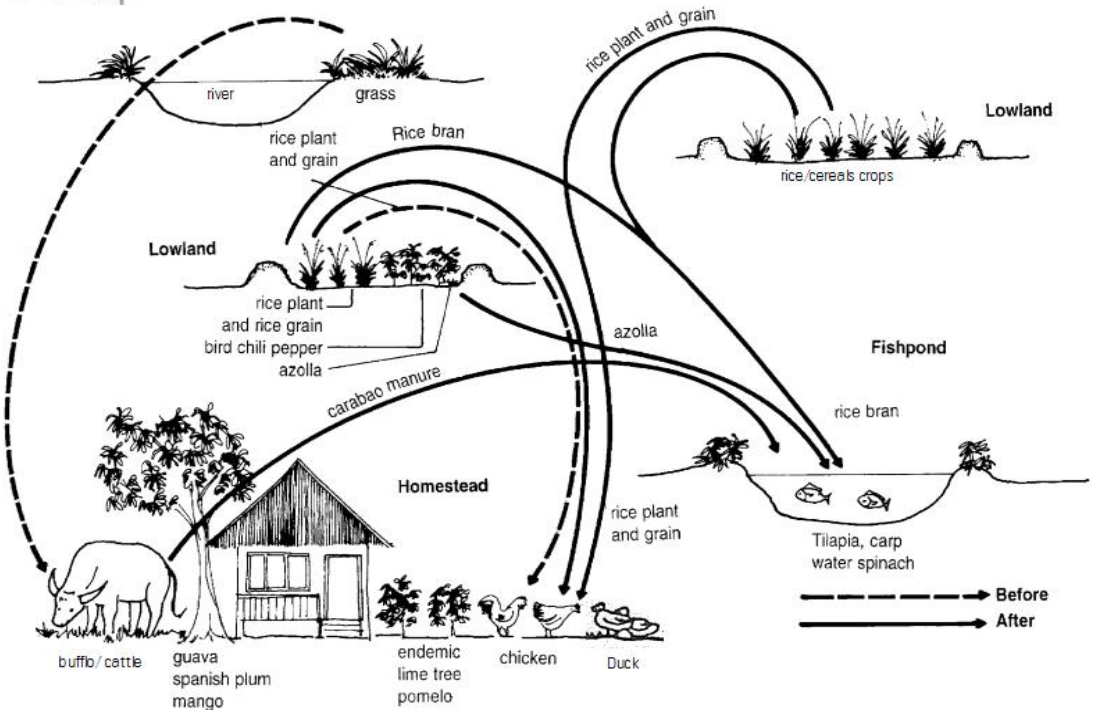
Introduction of the VAC system in HaiDuong (cont.,)



❖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



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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

sustainability

MDPI

Article

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

Nguyen Van Huong [1,2,*], Tran Huu Cuong [1], Tran Thi Nang Thu [3] and Philippe Lebailly [2]

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2 Economics & Rural Development, Gembloux Agro-Bio Tech, University of Liège, Gembloux 5030, Belgium; philippe.lebailly@uliege.be
3 Faculty of Fisheries, Vietnam National University of Agriculture, Hanoi, Vietnam; trannangthu@vnua.edu.vn
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Total sources of on-farm income at fish farms yearly in Hai Duong province. Unit: 1000 VND[1]

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

Source: survey, 2015–2016.

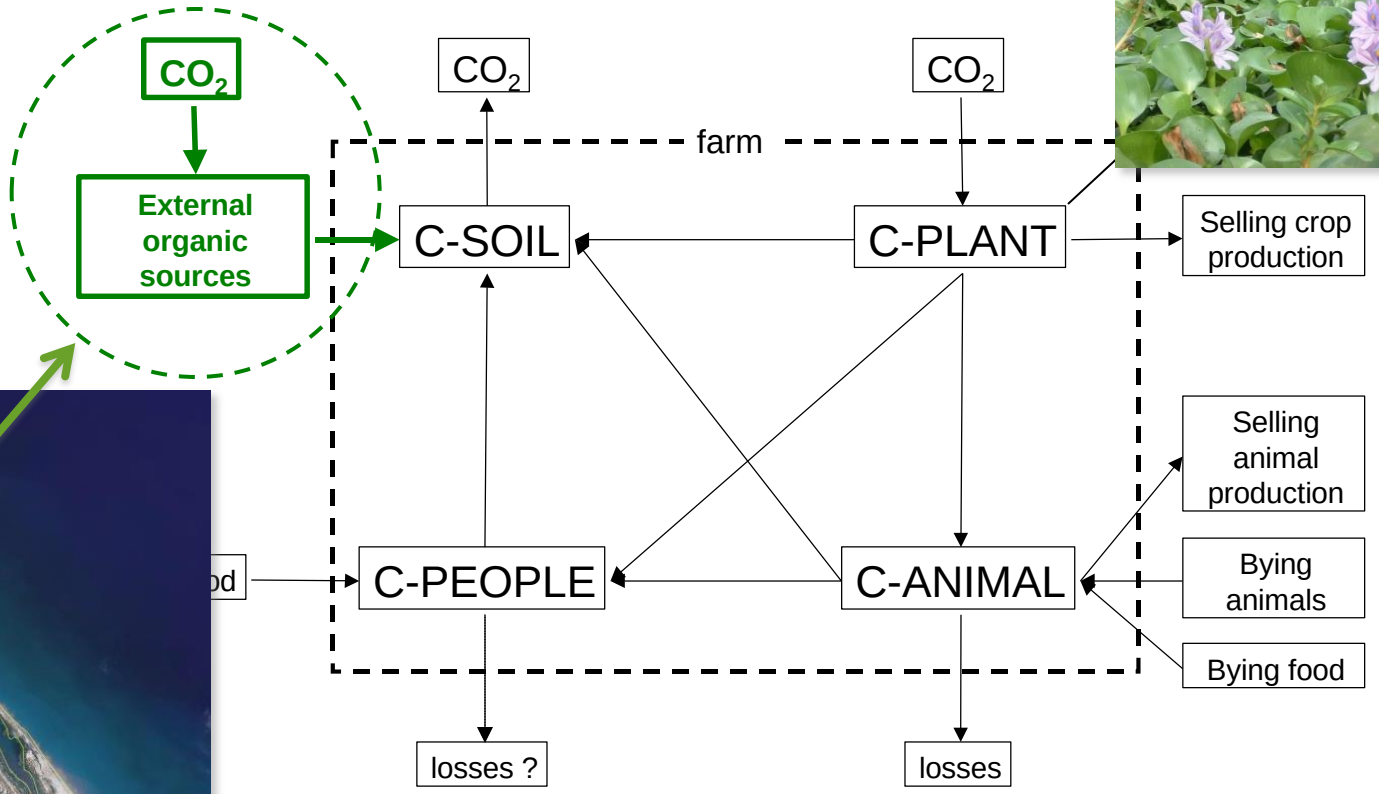
[1] Exchange rate: 1 USD = 22.500 VND. [2] The cost is excluded the family labour. [3] The fixed cost is calculated based on depreciation over 10 years. Source: survey, 2015–2016.

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

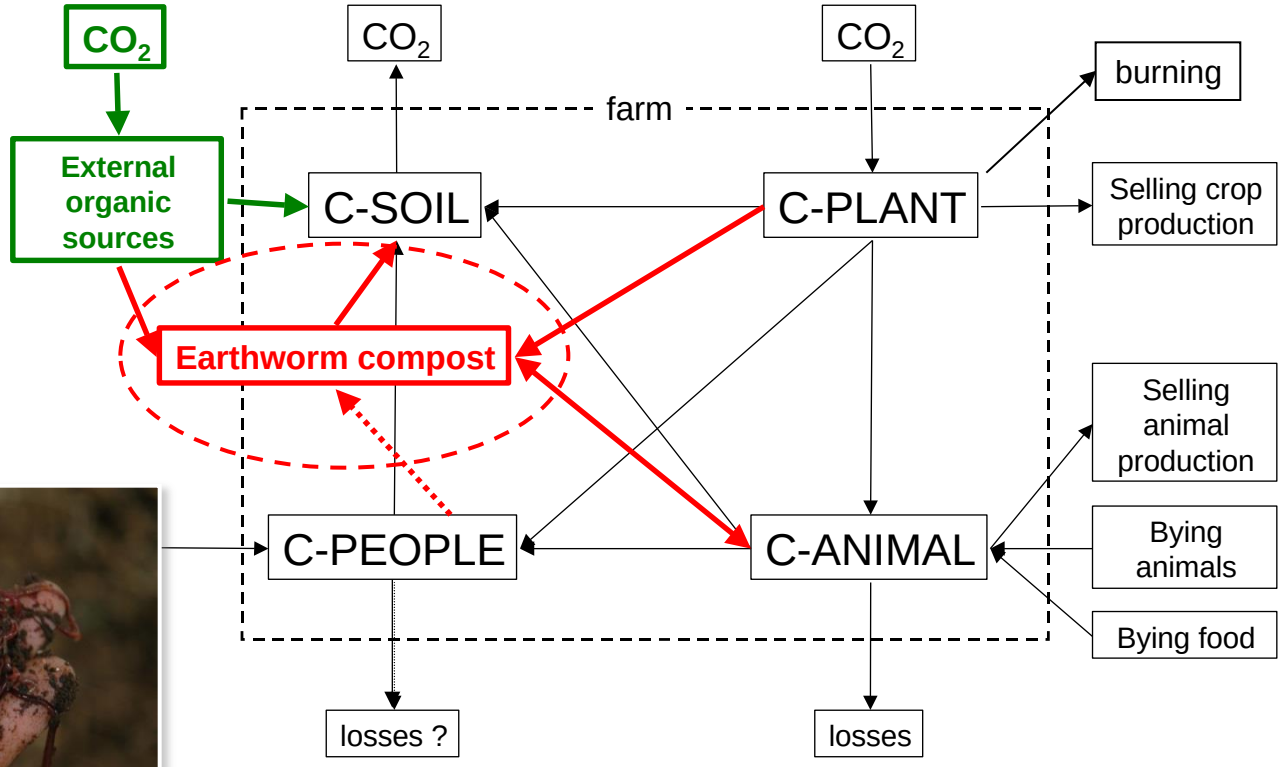


harvest and transport
of aquatic plants

Amending the soils

Improving the quality of organic amendments

Composting
Vermicomposting ➔ compost
➔ earthworms



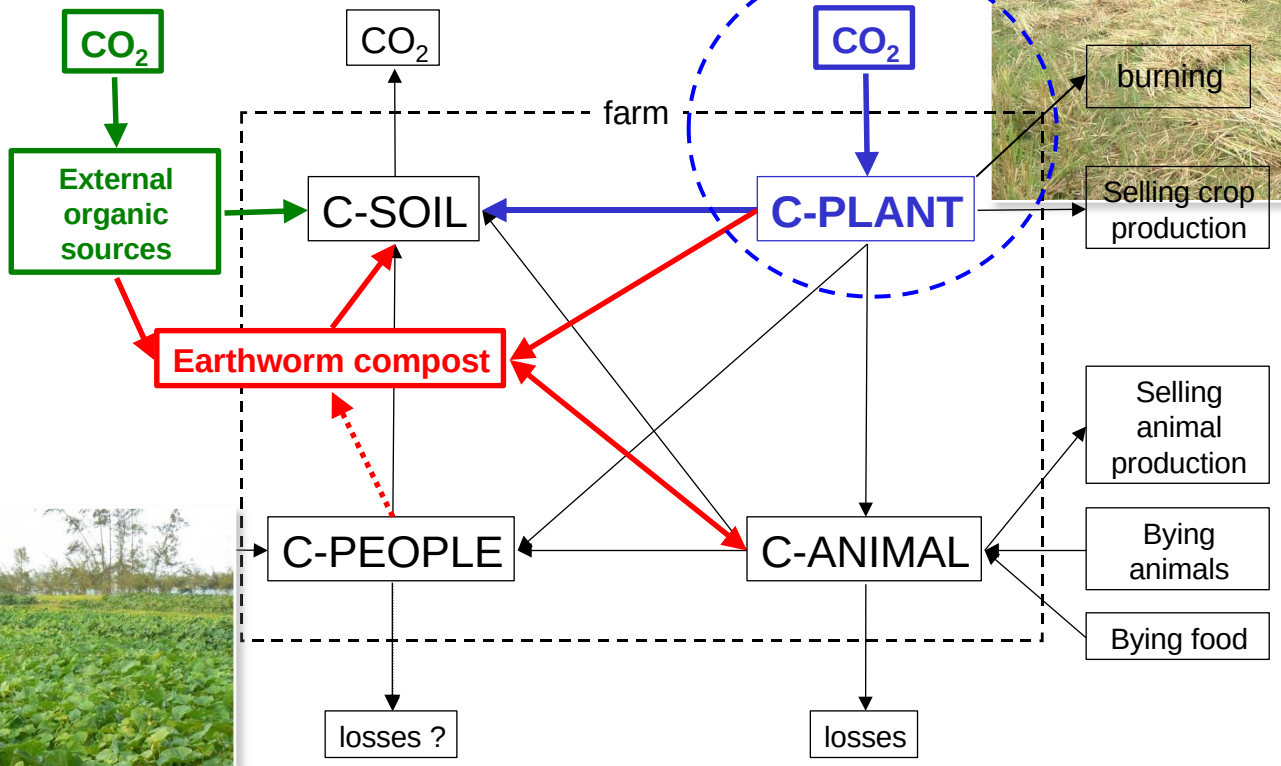
Testing vermicompost substrates
e.g. pig manure + water hyacinth

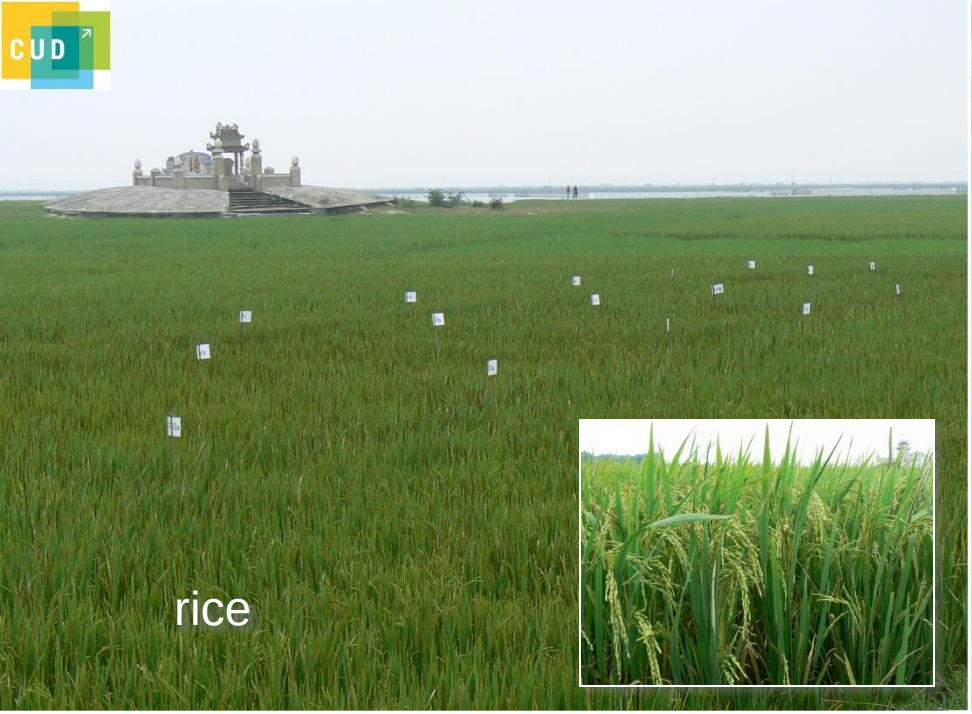
with students and farmers

at the farm
in the lab

Feeding fish and poultry
with earthworms

Optimizing cropping systems & management of crop residues




rice


organic amendments


peanut


associated crops
peanut + taro + chilli

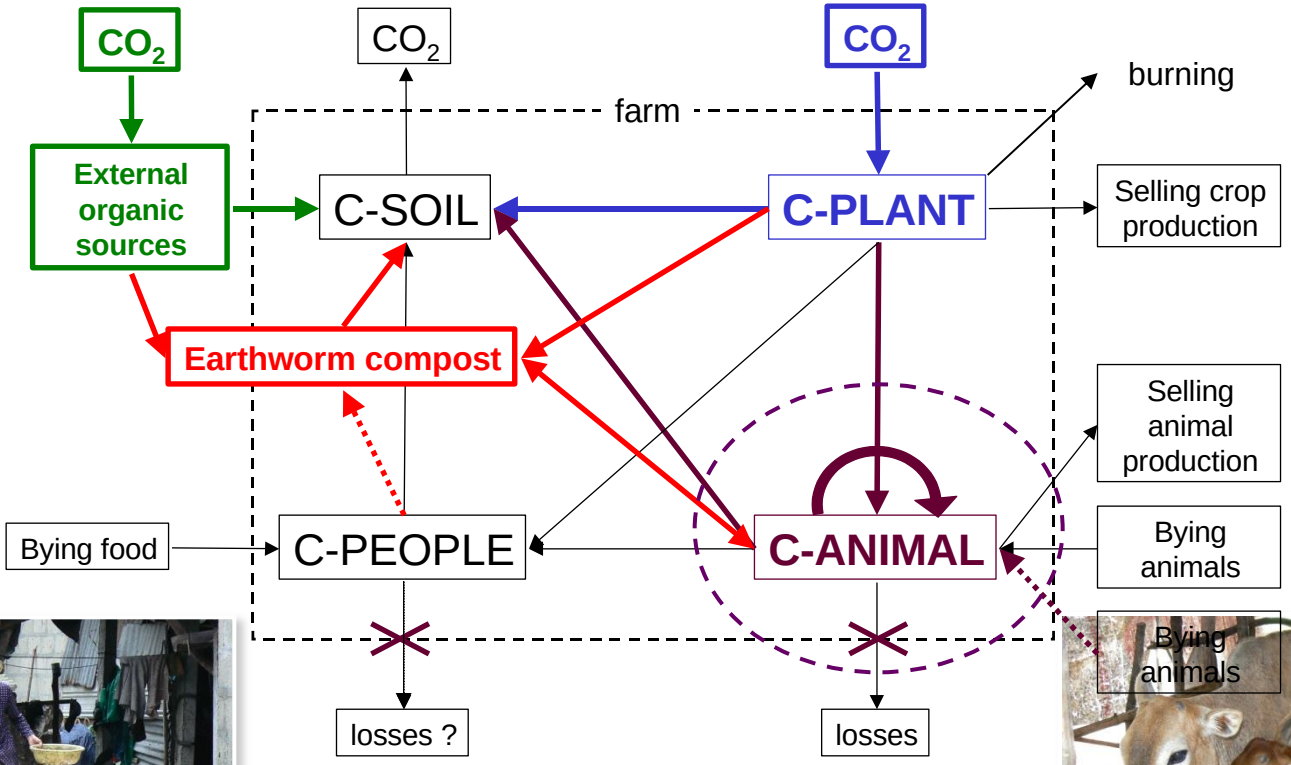
Market gardening with shading roof


Typical farm
Home gardens


Agroforestry

Optimizing animal breeding

Food sources and quality, crossbreeding, animal health, excrement processing and use…



Projets en cours

RENEWABLE

REmoval of NutriEnts in Wastewater treatment via microAlgae and BiofueL/biomass production for Environmental sustainability in Vietnam

Prof. Gauthier Eppe, Liège University

Prof. Lê Hùng Anh, Industrial University of Hochiminh City

RENEWABLE
Removal of Nutrients in Wastewater treatment via microalgae and BiofueL/Biomass production for Environmental sustainability in Vietnam

To couple waste water treatment and the production of valuable microalgae – based biomass via the use of microalgae strains selected.

Microalgae acts to remove the pollutants (N,P) in waste water from shrimp cultivation activity. Microalgae –based biomass gained from the cultivation will be used for the production of biofuel and animal feedstuff.

Ninh Thuan was chosen to install a field pilot.

RENEWABLE
PRD Project

- 4 years project (2016-2020)
- 2 PhD students financially supported to perform research in Belgium and Vietnam (Mrs Thuy and Mr Luu)
- Many master thesis exchanges
- A total budget of approx. 500.000 €
- Share scientific knowledge

Trường Đại học Kinh tế
ĐẠI HỌC HUẾ

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WBI PROJECT "Master en administration et en gestion"

Projet N°5

The general objective of the project will make significant improvement of education and training quality by linking the teaching and research activities with business enterprises and meeting the enterprises needs.
This will, in turns, contribute positively to the socio-economic development of the Central region by providing advanced knowledge to students who will be fully equipped with both theoretical and practical knowledge in the economics and management field.

SOLVAY
asking more from chemistry®
Belgique

ARES CCD

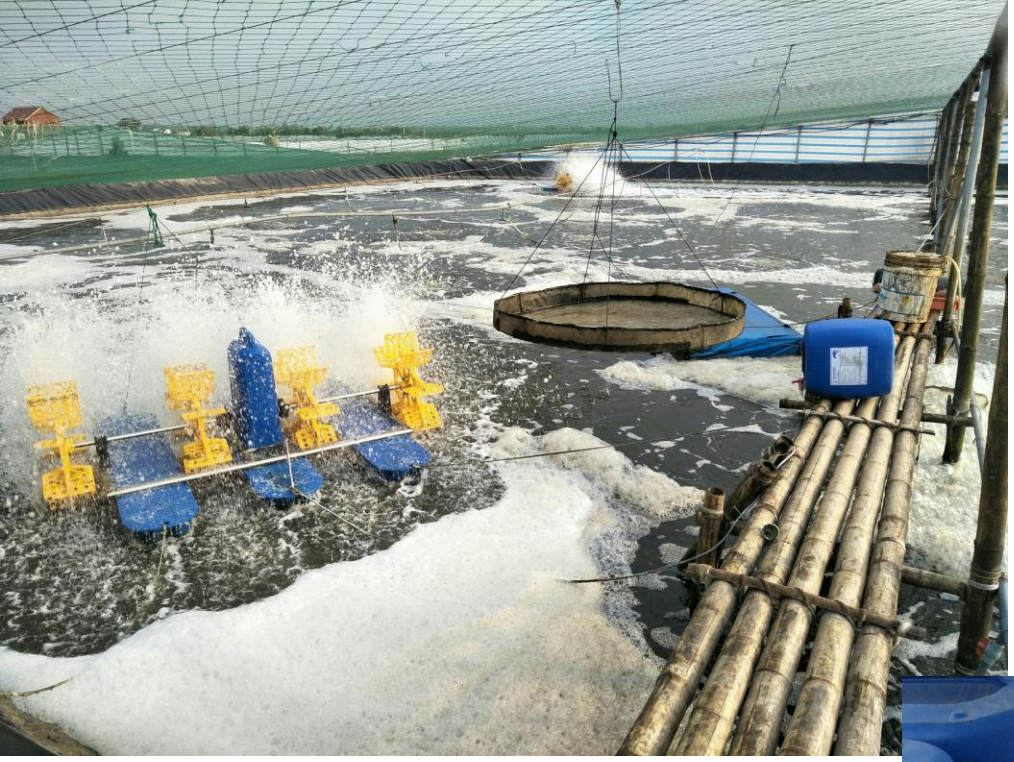
"Study on the utilisation of disinfectants for shrimp farming industry in Northern Vietnam"

Period of project (1/2017) to (3/2018)

Objective: Commercialization of Solvay product in Vietnam

Food safety for aquaculture; protection of environment

VNUA: Technical support (labo trial, field trial, registration of product…)




AQUALISAN
DISINFECTANT FOR AQUACULTURE
SOLVAY อควาลิแซน
LOBSTER BRAND
AQUALISAN
DISINFECTANT FOR AQUACULTURE
SOLVAY อควาลิแซน
LOBSTER BRAND

Projet de Recherche pour le Développement (PRD)

INNOVATION DANS LE CONTRÔLE DES MALADIES COMBINÉ À LA GESTION ET VALORISATION DES DÉCHETS DE LA CULTURE DU FRUIT DU DRAGON

Vietnam

RICHEL Aurore, Université de Liège
TRAN Tien Khai, Université d'Economie d'Ho Chi Minh Ville

Ce projet vise à offrir une collaboration entre structures wallonnes et vietnamiennes dans le cadre d'une approche intégrée centrée sur l'économie circulaire et la création d'une nouvelle chaîne de valeur au départ des résidus de culture de fruits du dragon combinée à la lutte systémique d'un (ou plusieurs) agent(s) pathogène(s) qui touche(nt) cette culture.

Localisation: la province vietnamienne de Binh Thuan.

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Xin Cam On
Thank you
Merci

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