

VAC

Integrated System-based Agro-ecology Development



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I. What is VAC ?

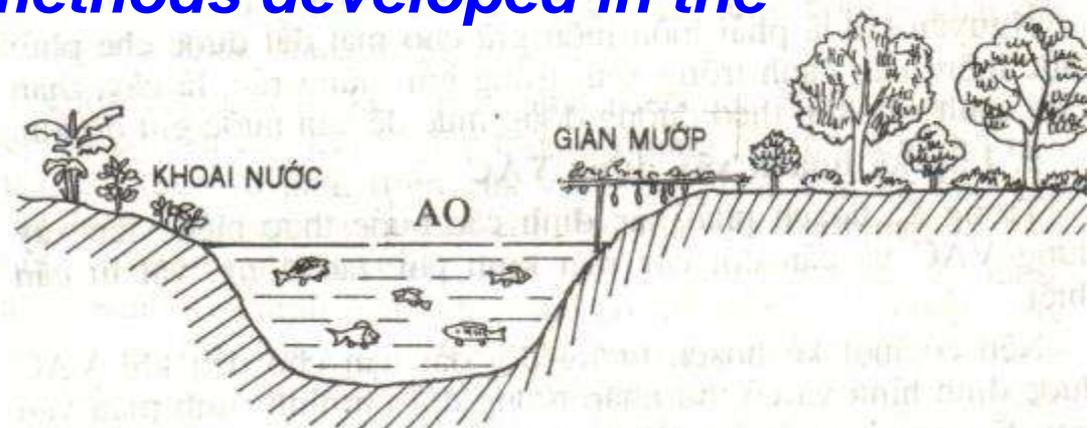
VAC is acronym formed from the three Vietnamese words:

Vuon : garden or orchard,

AO : fish pond,

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

Origination: VAC system stems from long standing farming methods developed in the Red River delta.



In the fertile plain of the Red River delta, a major rice growing area, farmers have traditionally some pieces of garden around their houses for growing crops and trees for their domestic needs.

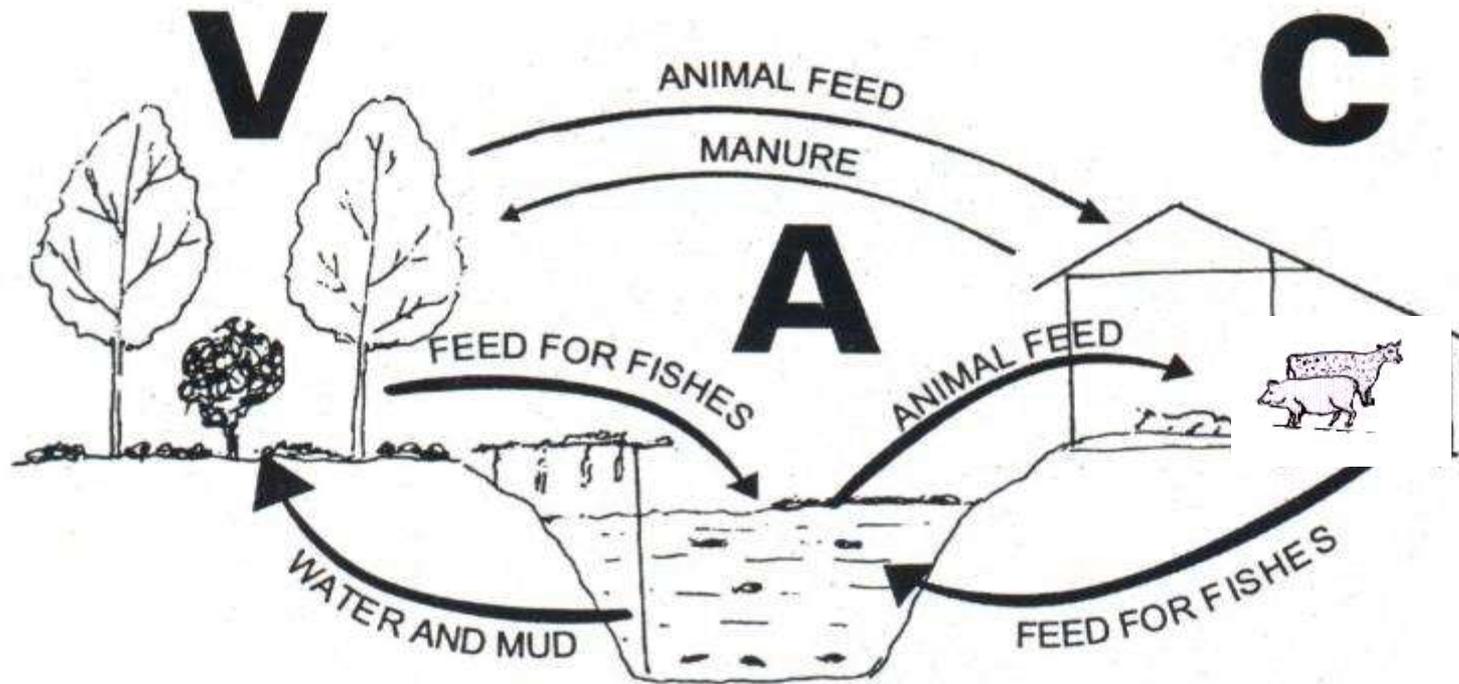
As delta areas are normally flooded each summer, farmers build a pond to rear fish, its soil is used to raise foundation of the house and animal shed, and garden beds. Thus, an area of gardening, fish rearing and animal husbandry take place in an interrelated fashion adjacent to the house.

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

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

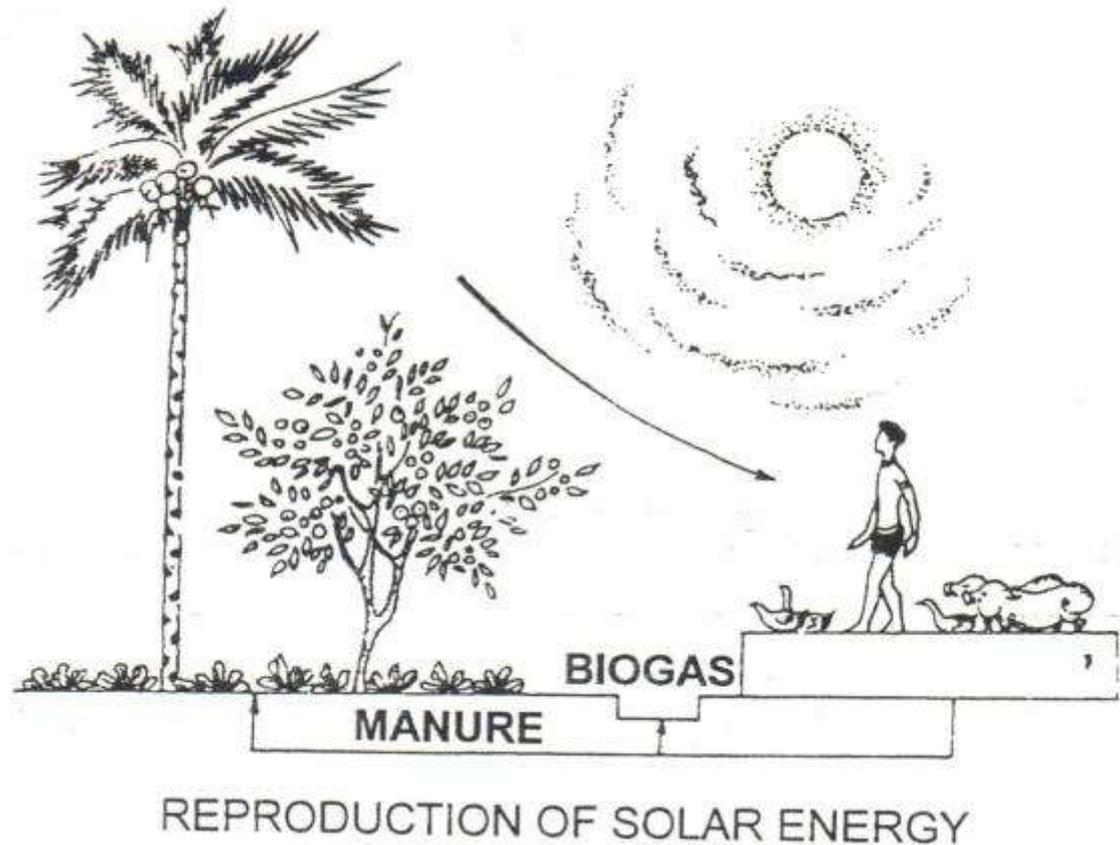
VAC makes optimal use
of land, water & solar energy
to achieve high economic efficiency
with low capital investment

The interactional relationships in VAC integrated system



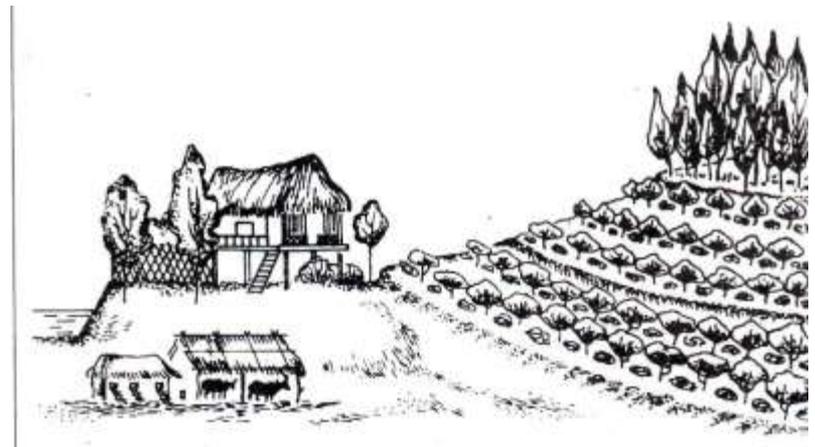
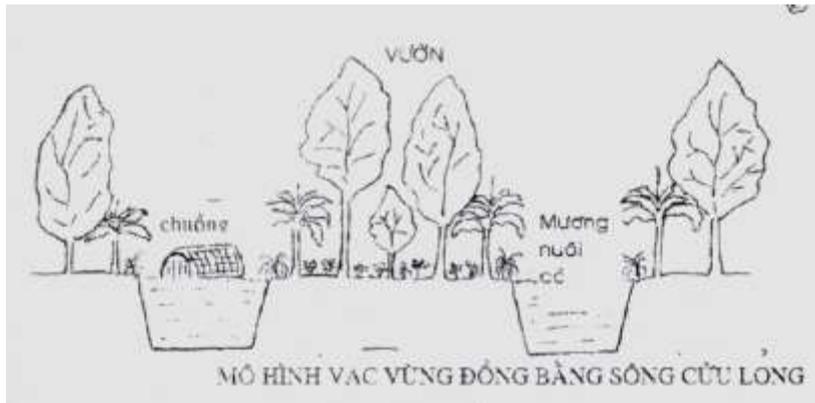
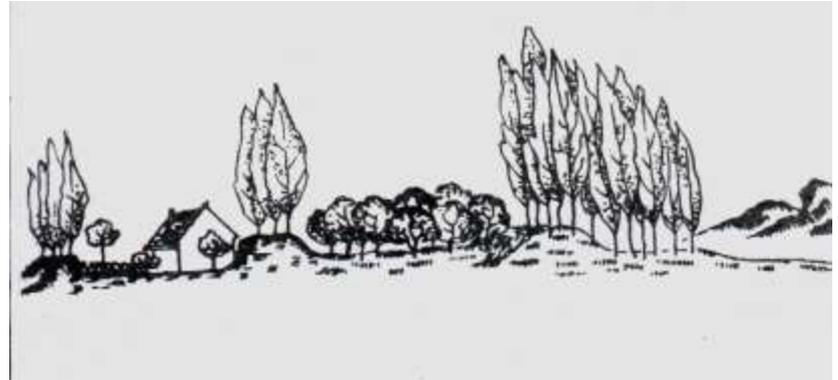
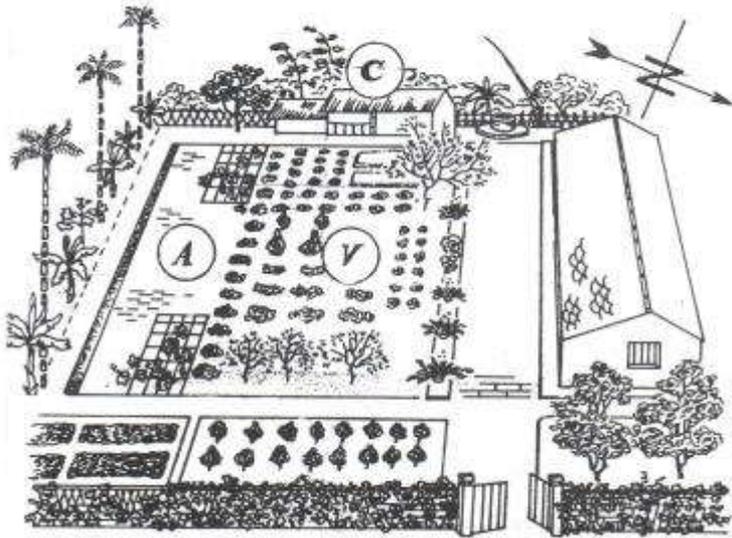
Drawing : VAC ECOSYSTEM

**And ...
The People ' roles
in VAC system ?**



**People make interactional effects to VAC.
They consume VAC products, and contribute organic
waste to the system and control the process
of waste treatment.**

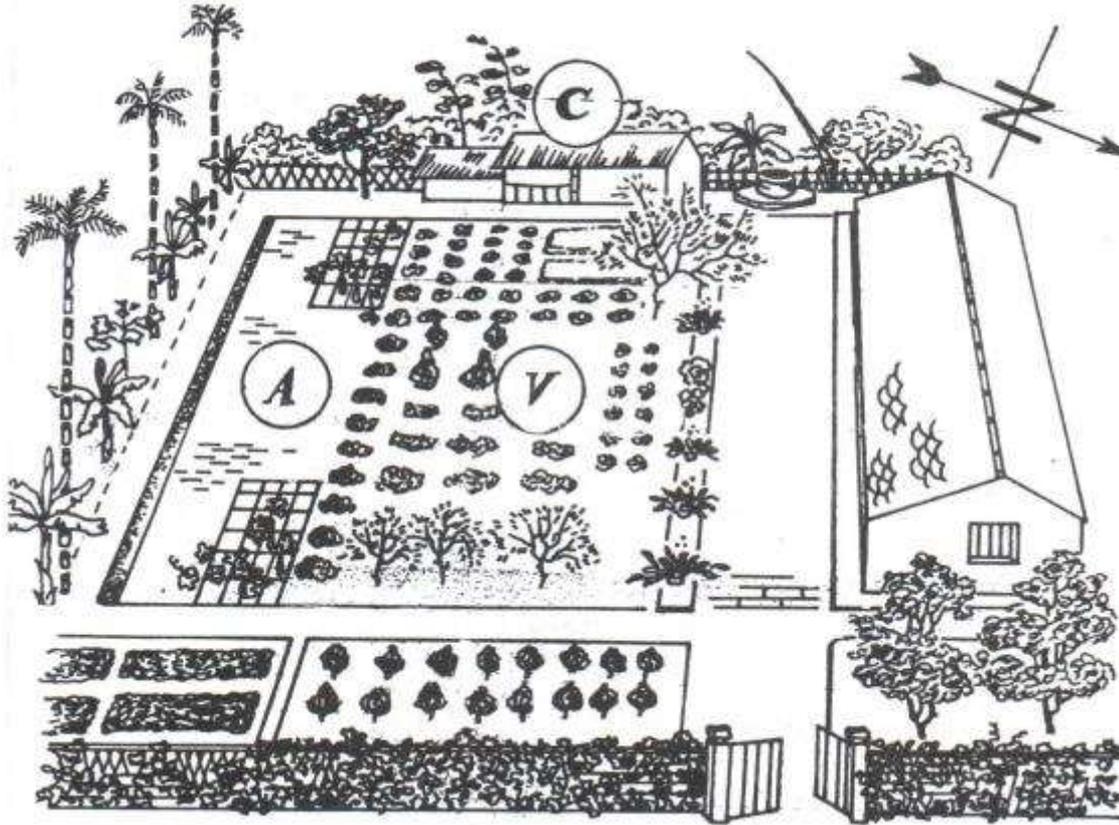
II. Different VAC models



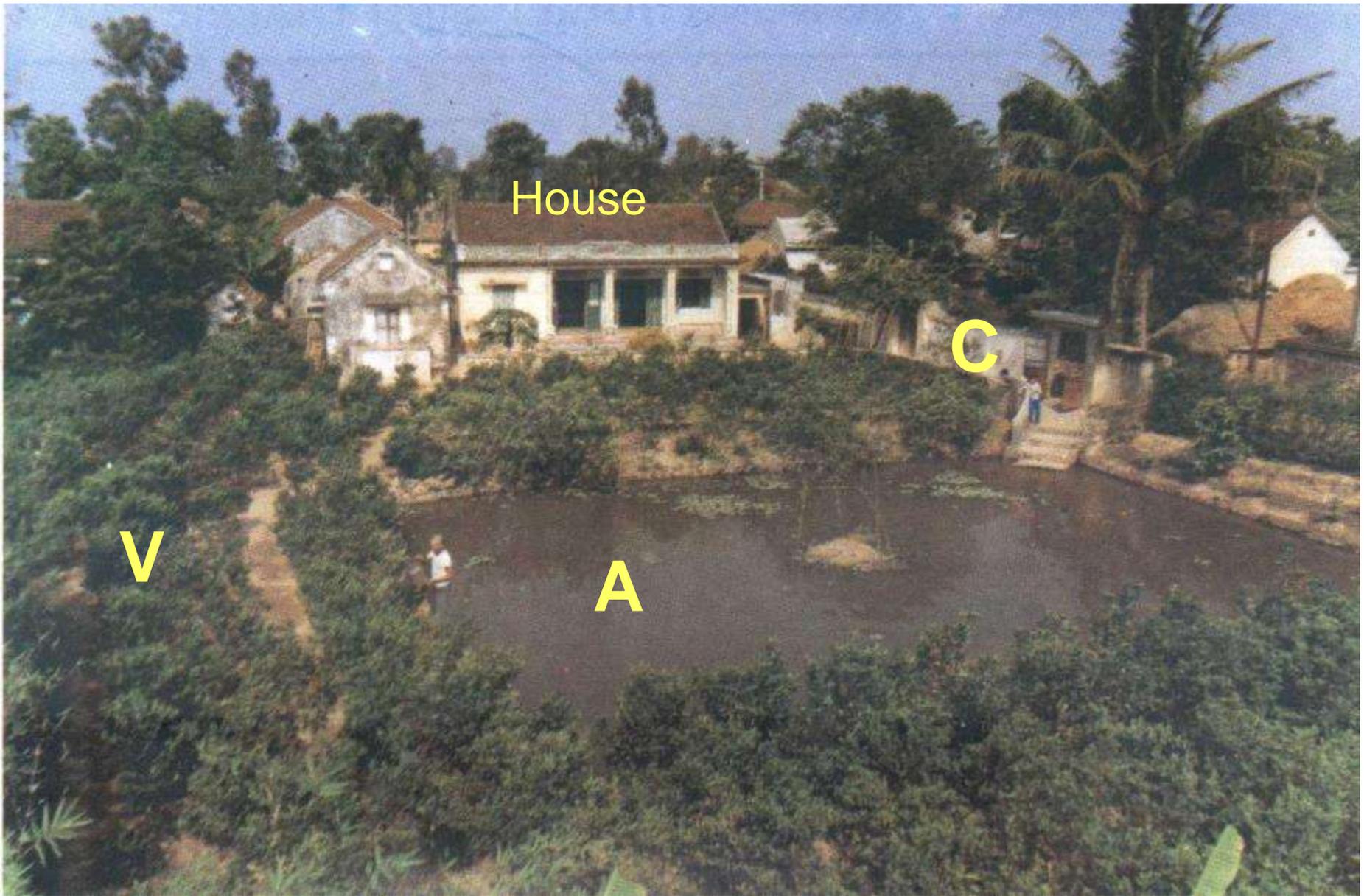
Depending on household' areas & conditions, the VAC System can be applied all 3 V,A,C components or some of them such as:

- *Model with VAC complete.***
- *Model with V,C***
- *Model with V,A***
- *Model with C,A C,V***

1. VAC model in Red river Delta

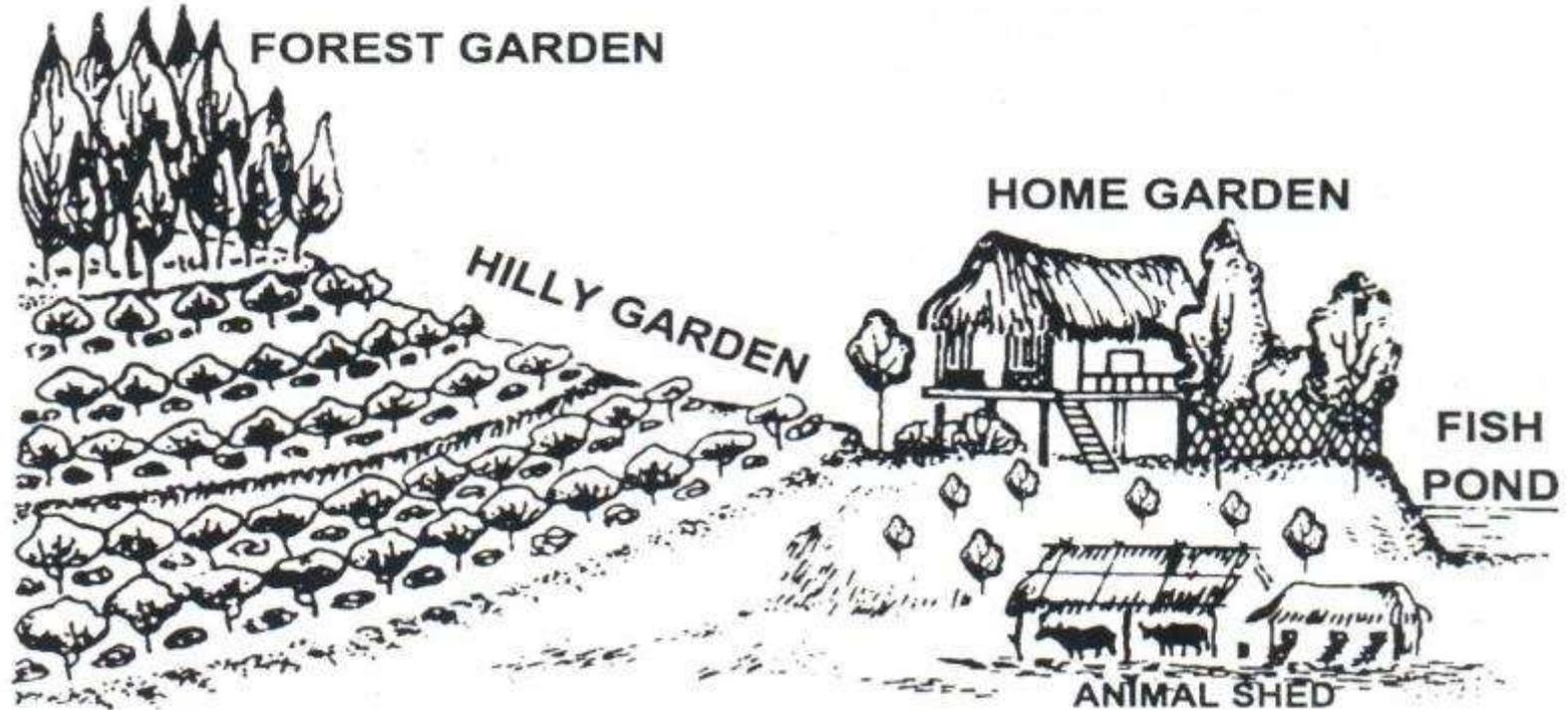


A Pond is built nearby the house. The house is surrounded by garden and pond: “garden places near pond”, “pond is in front of the house and garden is behind the house”. Animal shed is near pond with a composting heap to produce organic fertilizer.



VAC model in Red river Delta

2. VAC model in Midlands & Mountainous areas



Drawing : VAC ON SLOPPING LAND

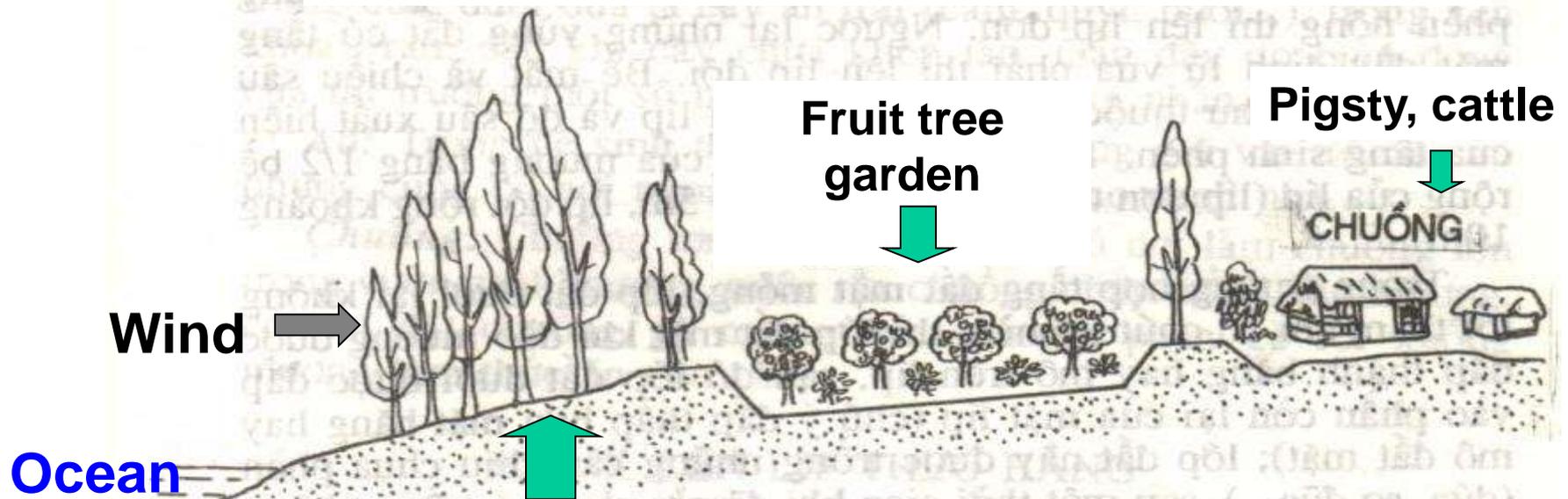
Forest garden is arranged on the steeper slopes with timber trees.

In hilly garden where trees are mixed- cropped with tea, coffee or with fruit trees such as apricot, plum, persimmon, longgan, litchi, peanuts... Series of small ditches and contour banks are built along the slope and pine apple are grown along the contour banks to prevent soil erosion.



VAC Model in Mountainous areas

3. VAC model in coastal areas



The belt of *Casuarina equisetifolia* planted along the coast acts as wind break and hinder drifting sand

V: various fruit trees are grown (coconut trees, bananas, guava, custard apple, etc..) plus mulberry tube crops such as arrowroot, sweet, potato.

A: fish and prawns are raised in the brackish ponds and canals.

C: the most common livestock raised are buffalo, cattle, pig and poultry especially ducks.



VAC Model in coastal sandy areas

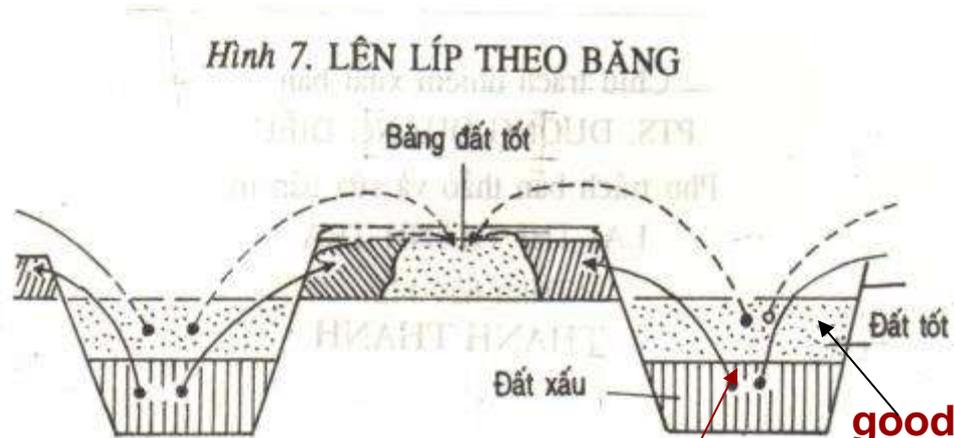
4. The VAC model in Mekong Delta



Drawing : VAC IN THE MEKONG DELTA

The Mekong delta has saline and aluminous alluvial and a wet and semi dry season. Farmers dig canals around and between their garden to achieve better drainage and to wash salt, alum from the soil.

Fruit trees are grown in the beds between the canals (coconut, longgan, rambutan, mangosteen, mango, citrus, guava, pineapple...).



saline and aluminous alluvial soil

good soil

Fish and prawns are reared in the canals with pigsties and poultry sheds situated beside the canals.



VAC in Mekong Delta region

III. VAC - TRADITIONAL & SCIENTIFIC BASIC

VAC in combination with gardening, fishing and breeding are long-standing traditions of Vietnamese people.

It had a sustainable scientific basic :

1. Technical application in VAC Eco-System is high biological intensive technique.

Plants are grown in the garden in a system of tiered cultivation in which various species are intercropped and overlapped, some trees are grown on the trellis.

Various fishes are raised following different water levels in pond, and make appropriate use of solar energy, surface water and land, less investment but high economic result.

2. The technique of VAC bases on recycle strategy

VAC principally bases on a recycle strategy, the by-products of one component can be used as input for the other ones in the agro-ecology system. Recycling of solar energy through photosynthesis of plants and of residues to make environment clean. Solar energy through photosynthesis is recycled under the form of energy containing in plant products, that are used as :

Food for people and cattle,

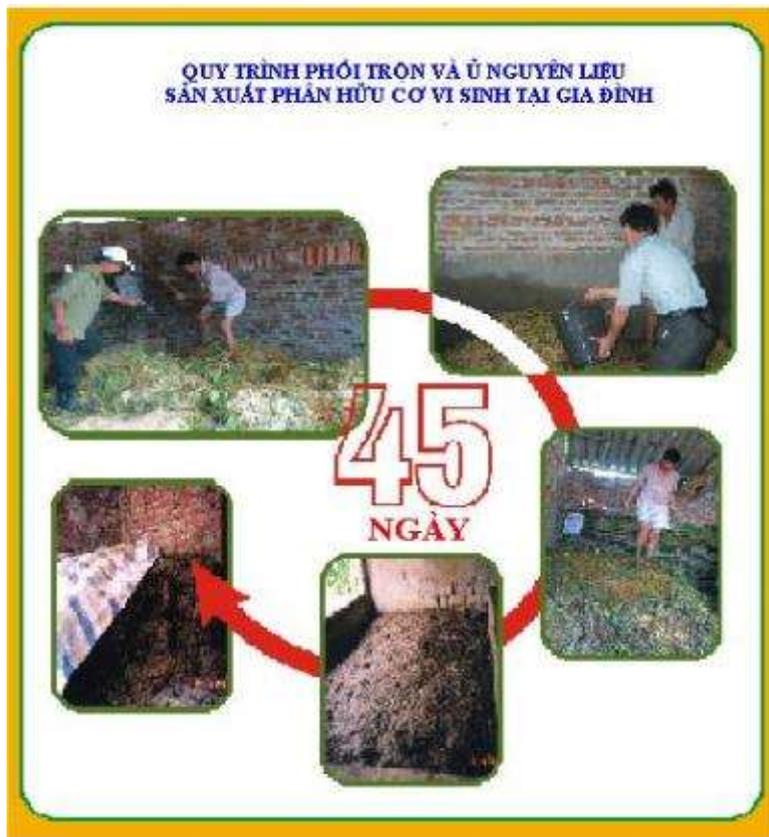
Firewood and materials for small-scale industry.

Wastes (rubbish, people and animal dung) are put into new productive process and they become useful products, ...

***VAC is one productive system without wastes
- a highest effective agricultural development
method in Vietnam***

V

Proper use of Chemical fertilizers by combining Bio-fertilizer



A



C

PROPER WASTE MANAGEMENT IN VAC



Turning waste
to energy (Biogas)

IV. Remarks & Recommendation

In order to support small-scale farmers, VAC development strategy would primarily focus on, among others:

- (i) Developing diversified models that make the best use of comparatively socio-economic advantages of the six ecological regions in Vietnam;
- (ii) advocating for changes in responsive policies for securing and increasing food security, protecting and restoring ecosystems, and easing farmers' access to transparent and competitive markets;
- (iii) building market-oriented capacity and skills of farmers and their entrepreneurship; (iv) facilitating shared learning of experience and providing technical support;
- (v) improving services for marketing, distribution, food-processing facilities

There should be positive policies and greater efforts to develop VAC for:

- ✓ ***Conserving biodiversity and traditional farming techniques in the face of intensive farming trends;***
- ✓ ***Coping with such issues concerning adverse impacts of climate change currently threatening sustainable agriculture development, e.g. losses of ecosystems & increased scarcity of water resources, salt water intrusion etc (pond in VAC acts as water reservoirs);***
- ✓ ***Addressing social issues concerning under-employment that keep rural communities under poverty.***

Thanks for Attention