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## **VAC and Permaculture in Viet Nam**

*Nguyen Van Man (Viet Nam)*

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### **The traditional agriculture of Viet Nam and the VAC system**

For millennia the Vietnamese people, in the process of building their agriculture have made efforts to learn from nature in the establishment of their sustainable agriculture system. This is both productive to man and suitable for the prevailing environmental conditions. The wisdom of the farmers is manifested with their saying, “watch the sky, the clouds, the wind, the rain and the soils” and to “grow the right plant on the right site”.

Another saying is, “A piece of land is a piece of gold.”

The most famous among these sustainable land farming systems is traditional rice field farming and the VAC system of agriculture.

The Vietnamese ricefield system has been developed with a wide range of technologies which include relay planting, mixed cropping, intercropping, cultivation of drought resistant and water-logging tolerant rice varieties, building terraces in the mountainous areas, building irrigation systems for supplying water and improving soil quality, using mulch and green manure (such as azolla and sesbania), combination rice growing and fish and duck raising.

The VAC system is established around the dwelling house. This is an ecosystem where gardening, fish rearing and animal husbandry are closely integrated.

VAC is an acronym of three Vietnamese words: VUON meaning garden or orchard, AO meaning fish pond, CHUONG meaning animal sheds.

In the home garden, various species of crops are grown under different farming technologies which include inter-cropping, mixed cropping, overlapping and multi-cultivation to make full use of the available resources. In the corner of the garden are grown some medicinal and spice plants. Around the garden are timber trees and rattans and even some tuber crops such as Convolvulaceae, Dioscorea.

Various kinds of fish are reared in the pond so that feed resources at all levels are used so there are tench at the top, roach at the intermediate level and tilapia at the bottom of the pond. Taros are planted around the fishpond and marsh lentils are grown over part of the water surface as pig feed. Dome gourd or loofah pergolas are constructed above the water. Near the fishpond there are pigsties and poultry coops.

There is an interaction in VAC. Some of the products from the garden and their residues are used for animal and fish feeding while the fishpond provides water and the litter/sewage from the animal pens is used for feeding the fish.

In the traditional agriculture of Viet Nam, the rice field provides rice and grain to the family while a wider range of food and foodstuffs; eg. vegetables, fruits, meat, fishes and eggs come from VAC. Some vegetables, fruits and tuber crops from VAC can be stored and serve as reserved supplies for the farmer.

The VAC products which are not used can be sold at the local market for cash. The income from VAC is generally 50 to 70% of the total income of the farmer's family.

The traditional Vietnamese village as is commonly seen in the deltas were always eco-based units. Around the village there is a belt of bamboo for both protection from wind and as a shelter belt. It also provides the village with construction materials for housing, furniture, baskets and many handicrafts.

Inside the village, all the households have individual VAC systems which create a sound environment and a peaceful atmosphere.

With their ricefield farming system and their VAC ecosystem, a sustainable, self-sufficiency in food and a moderate cash flow into and out of the household has been provided. Local communities in their village have had their own regulations for the protection of their production, eg. the careless herdsman have to pay fines for damage caused to the rice paddies, fruit trees and the natural resource such as the local forests and water sources.

There are also regulations concerning festivities such as wedding and burial ceremonies. For instance, the newly-weds have to contribute building materials, mainly bricks, for the construction of roads or wells at the village. At the birth of a child, the parents have to plant trees; cash cropping varieties such as cinnamon, anise and canarium to create assets for their descendants.

There are long standing customs and regulations in the village which are more operational than state legislation because "King's laws can hardly beat down village rulings" as a popular saying goes.

It can be said that the package of agricultural land farming technologies of Viet Nam was inspired and developed through the wisdom of the farmers who, by their nature, laid emphasis on land use sustainability. Local knowledge and the correct management of communes and villages has continued the blossoming of the VAC system.

## **VAC recent history and its linkage with permaculture**

With the modern development of the agricultural co-operative, the traditional family economy had become neglected. With the advent of collectivisation private gardens became unproductive. Many specially selected and protected fruit trees disappeared and many of the time-honoured techniques of the farmers were also forgotten.

In the last few years, a new policy for the Vietnamese Government has again seen the full promotion of the family-based economy. In 1986 the National Association of Vietnamese Gardeners (VACVINA) was established.

The main objectives of VACVINA are:

- To promote a large VAC movement all over the country.
- To introduce appropriate technologies to increase farmers' income, eradicate famine and alleviate poverty. Priority has been given to children and women and ethnic minorities.
- To protect the environment and set up a sustainable agriculture system.

The Association is a NGO and its members are working as volunteer activists, many of whom are retired civil servants. VACVINA began its activities with only 100 household members and some dozens of activists. By 1996 the association was working with its network spread to 250,000 members in all 53 provinces of the country.

When VACVINA was established, there was in Viet Nam almost no research in horticulture, in VAC or in fruit production. We had to collaborate with scientists, horticulturalists to investigate, evaluate collect and analyse the experiences and knowledge of the traditional farmers of different areas. It was only then that we could design and propagate the new VAC models and advance appropriate technologies for different regions. Today the VAC system is in use from the deltas to the mountains and along the coastline of Viet Nam. Cities and towns have not been excluded.

As early as 1988, UNICEF began to grant its assistance for the implementation of a nutritional VAC program to help poor families improve their diet. This was particularly aimed at pregnant women and children under five years of age.

1989 marked a new step in the development of the VAC movement and VACVINA activities. With the assistance of QSA, a VAC project was implemented in Bavi, Son Tay Province, to help the Dao ethnic minority and the project was further assisted with the arrival of permaculturist Rosemary Morrow from Australia.

That year many permaculture training courses were held for VACVINA staff and members. It was found that VAC and permaculture are closely related and the dissemination of PC knowledge to VACVINA members did not meet with any difficulty. The PC concept, ethics and principles have enlarged the view and knowledge of VACVINA members, making them more confident in their struggle for better habitat, for a better and more peaceful livelihood, for the protection of our planet and for a sustainable future.

VACVINA has three centres for research and teaching in which the main subjects are VAC and PC. With further assistance from QSA, VACVINA has been involved in a number of field projects in which PC and VAC principles have worked hand in hand for the benefit of the recipients.

One of these projects has been implemented at the coastal area of Quang Binh Province in the central part of Viet Nam where violent typhoons and strong, dry winds destroy villages and crops with blinding sand dunes which are being swept inland from the coast.

About 80% of the residents were considered poor and malnutrition prevailed in 60 to 70% of children. The project was implemented at two communes where over 28,000 ha of land had been destroyed by the sand which had been destabilised with the destruction of vegetation by continuous bombing raids during the war. Some 156 families were selected as 'pilot families' to start the project.

After local discussion meetings and training workshops for problem solving and the dissemination of VAC technologies, farmers were helped to establish windbreaks for the protection of their villages and ricefields using tough, drought-tolerant Australian casuarinas as well as indigenous trees species such as *Excoecaria* spp., wild agaves and local dune grasses. All can grow on virtually sterile soil.

The land was allocated to households which had the labour force and the willingness to work under the guidance of a team selected by the local VACVINA for future incomes from the trees and crops to be established. Along village roads, plantations of timber trees and fruit crops such as coconut, custard apple, jujube trees were established.

Members were encouraged to produce appropriate seedlings and planting material for the establishment of home gardens and for the replacement of missing trees in windbreaks and along commune roads. Most households, when starting VAC gardening, began their work with pig and chicken raising as well as digging farm ponds for fish rearing then later turning to fruit and tree crop cultivation.

VACVINA created interest groups and teams for the exchange of labour. Poor farmer households were assisted with "revolving loans" for the establishment of their VAC system. They were also trained on how to make farm manure, compost, the use of green manure and carrying out "organic farming" with success.

Beside specific VAC systems in each household, there were two other demonstration centres, one in each commune for the dissemination of VAC technologies at the project area and for the production of seedlings and planting materials. Local VACVINA members were also trained as teachers and the pupils in two communal primary schools and one kindergarten also received training within school gardens.

The kindergarten has particularly benefited from their gardens with improved nutrition with more eggs, fruits, vegetables, fish and meat in their daily diet.

After more than three years of project implementation, the results obtained are encouraging. First there have been changes in the landscape and the environment for the better with the formerly sterile, shifting sands re-covered with greenery. With

the community now creating a cash income from produce, the percentage of poor households has been reduced to 10 to 15% of the local population. Most of these are found to be households of old people who have a limited labour force. The perceptions and knowledge of local farmers has also improved.

Of greater relevance is the fact that the beneficial effects of the project were not confined to within the boundaries of the two communes. They have become centres for the further expansion of knowledge. Other communities come to be trained. Bill Mollison, the man considered to be the world leader in PC concepts, was very satisfied with the results when he visited recently.

Another project was implemented on two other communes in the mountains in North Viet Nam. These communes are mainly populated by ethnic minorities and it is noteworthy that two thirds of Viet Nam is hilly and it is here that around 60 ethnic minorities reside.

Due to deforestation and the prolonged effects of war, barren hills and valleys take up around 10 million hectares. The degradation is still continuing and water resources are also constantly being polluted or are drying up. The Hmong people still practice the primitive slash and burn method of agriculture to grow rice and now opium.

A pilot project to improve the living conditions of the Hmong was implemented in communes far away from any towns or services. The living conditions were of a very low standard with many people affected by chronic malaria and basic food production techniques were underdeveloped.

When the growing season arrived, most of the labourers in the families would leave to find land to grow their rice and opium. They would live in the fields until after the harvest was brought in six months later.

Only old people and children would remain in the villages so there were no home gardens and only a few pigs and chickens were kept to roam around the houses. Without care, they succumbed to diseases or were taken by wild animals.

Beside introducing VAC technologies to the villages, there has been an attempt to replace the cultivation of opium poppies with other cash crops.

The project was established in a number of steps. The first step was to help the households to improve their animal rearing, to construct sheds for the pigs and chickens. Later they began growing vegetable, tuber crops, maize, pulse and fruit trees around their homesteads and even on nearby hillsides.

In collaboration with the local authorities such as the chairman of the communal peoples committee and the heads of the villages, the elders of the villages comprising some 60 families, some were selected as pilot families.

Soon other developments followed such as the creation of village food security funds (a kind of rice bank) to provide loans in kind to needy households. The water supply was improved with the establishment of piping and water tanks, the provision of health care facilities, the provision of teaching materials to two primary schools in the communes, the establishment of two cultural centres equipped with TV and

video. The project also included the building of check dams and a small hydroelectric power station for both water and electricity supply.

The project also contributed to the upgrading and expansion of the local road network. Nearly four years after it started, big changes have taken place in the communes. Most of the 314 households in the project area now grow home gardens and there is a small surplus which is sold on for cash.

The animals are now protected from harm in pens. Fish farming, new to these people, has also been introduced. The area for fruit tree growing has increased. Until 1995, some 21,500 fruit trees including longan, plum, persimmon, grape and orange have been planted. Some 20,000 Shan tea seedlings, a precious tea species for mountainous areas, have also been established on the formerly denuded hillsides. The areas under opium cultivation have nearly disappeared.

Social activities have been organised at the two cultural centres and a better understanding of national problems has been promoted and this has helped them participate effectively in the mainstream development of all aspects of the VACVINA system.

Health problems such as childhood malnutrition, opium smoking and especially malaria are gradually declining. A number of authorities and organisations have collaborated with the communes to create this "participatory rural development model".

The success of these communes has attracted the interest of many other communities who are experiencing similar problems. Slowly, the message is going around that forests need protection and restoration and that sustainable development is the only sensible long term alternative. In a neighbouring province, over 10,000 hectares of barren hillsides and after three years, produces thousands of tons of vegetable and fruit products.

VAC development in the 1980's began its popularity in the deltas but soon spread through all of Viet Nam with a million households establishing home gardens and tens of thousands of hectares of formerly unproductive lands being restored.

Since 1990 the VAC extension work has been closely linked to permaculture concepts, ethics and principles. Planners and policy makers in many provinces and central agencies have paid due attention to the development and application of VAC technologies for sustainable land use. In particular the Department of Education and Training has issued its decision to promote VAC and permaculture in all schools.

VACVINA, with the assistance of Rosemary Morrow, has held many training courses and in 1995, a large program was initiated to train VAC and permaculture teachers for all provinces.

On the occasion of its tenth anniversary, VACVINA received a letter of congratulations from the General Secretary of the Vietnamese Communist Party. In its 8th Congress, the Communist Party has laid strong emphasis on the development of a sustainable agriculture system in the country.

## **Perspectives and challenges**

With the recent formal backing of the Party and the Government, the further progress and success of VACVINA and permaculture projects in Viet Nam is assured and it is expected that there will be a slow turning away from monoculture to a much more diverse land use and sustainability.

However, some leaders are not yet convinced that it is necessary to have sustainable development and a number of them are not aware of the negative effects of the development of a conventional energy-based monoculture.

Legislation has been enacted in regards to land conservation but its enforcement is no easy task. Natural resources in particular, natural forests, mangroves in the deltas, are all still being destroyed. Forrest products and biodiversity in such areas is still open to destruction and abuse.

Sound economic and social development in harmony with natural resources conservation often requires a traditional wisdom to look not only at the present needs and short-sighted demands of greed but also at the long-term future and the living conditions of the generations still to come.

Naturally there are big challenges that we have to cope with while struggling for industrialisation and modernisation.

The struggle for a sustainable development is continuing and VACVINA, with the support of the people, will work at the front line together with many other active and progressive institutions to achieve its goals and visions.