# HUMAN ECOLOGY FARMING

## Human Ecology Process of Black Pepper

In Mr. Hoang Van Phuoc's Garden in Lam Trach commune, Bo Trach district, Quang Binh province

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## Introduction

This writing aims to document a process of nurturing and caring for ecological black pepper by farmer Hoang Van Phuoc in Lam Trach commune, Bo Trach district, Quang Binh province. More importantly, this document will be further compiled as part of a curriculum to share an eco-farming system and methods of nurturing and caring for black pepper with moral producers and consumers who respect, are grateful toward and who nurture nature.

## A journey to eco-farming (1997–2016)

After years in the army, the soldier Hoang Van Phuoc returned to his homeland in Lam Trach commune, Bo Trach district, Quang Binh province in 1980. Everyday hardships and difficulties during the post-war period had pushed him to work as a forest logger from 1990–1995. As forests became depleted day by day due to crazy deforestation, he found himself unable to continue in the job and came up with an adventurous decision that has completely changed his life – plant forest with some neighbours in an area near the village which is located on the other side of a barren hill. Unfortunately, after a very short time, his neighbours gave up as they were afraid of stepping on mines (cluster bombs dropped by the USA during the American War). Mr. Phuoc, however, with a very strong determination, decided to stay alone on the mine laden land for its reclamation, because he wanted a more stable livelihood for his family and also because he wanted to silently redeem himself for the mistakes he had made during the years of working as the logger.

In 1997, in a public meeting on forming groups for gardening, animal raising and credit-saving in Lam Trach commune, Mr. Phuoc chose the gardening group, then attended training courses on eco-farming techniques of cultivation on slope land and gardening organized by organized by TEW in Lam Trach commune. Study tours with other key farmers from an eco-farming network on biodiversity gardens in Yen Son village, Ba Vi commune, Ba Vi National Park and some other places made him more confident and passionate about cultivation on his mine land. He understood and listened to the land's breath in transforming the mine land into spiritual land. He had cleared 6 ha of land (2 ha garden and 4 ha forest) with a total of more than 500 kg of mines scattering everywhere. All of the mines were removed by him and disposed of safely under the ground. During that time, Mr. Phuoc continuously communicated with and approached training programs, study tours, sharings and exchanges with key farmers from a gardening network facilitated by CIRD. CIRD had helped him understand more about the rights to nurture nature and people's responsibilities for the gift offered by the ecosystem on the land that he and everybody are living on based on the human ecology philosophy.

In addition, Mr. Phuoc has deeply understood the principles and criteria of eco-farming through sharings and exchanges within the key farmers network since 1997. "*Eco-farming is a cultivation method which is related to five fundamental characteristics of an ecosystem, namely: 1) Diversity; 2) Uniqueness; 3) Interaction; 4) Adaptability; and 5) Sustainability. These characteristics serve as a basic foundation to create life, endurance and differences of all living things. It reflects a moral behavioural culture of farmers towards the intangible values that have become belief and behavioural norms in their life. This is an interrelated lifestyle with the ecosystem. Farmers who engage in this method have nurtured five fundamental rights of a human livelihood which have become core values and daily behavioural norms in their life and the livelihood identity of the farmers: 1) the right to the*

*ecosystem (basic); 2) the right to nurture the ecosystem (unique); 3) the right to practice their wisdom and experience in the ecosystem (practical); 4) the right to self-reliance and self-determination in the ecosystem (holistic); and 5) the right to co-nurture the ecosystem with their neighbours (strategic). This cultivation method only exists in remote areas where ethnic minorities live deep in the forests that are less impacted by a so-called "civilized and modern" society. These communities have never ever lost themselves by running after new technology and speedy competitions in an immoral market economy towards living things. This cultivation method differs from organic agriculture and sustainable agriculture in its values and ten behavioural criteria."(Tran Thi Lanh, 2008)*


*Figure 1: Mr. Phuoc (third from left, first row) at the workshop on customary law-based forest co-governance in Vietnam and Laos (in HEPA)*

In order to help Mr. Phuoc practice eco-farming more effectively, HEPA Farmer Field School (FFS) has assisted him toward a better understanding of planning and system designing based on 10 criteria for human ecology, crops structure and interrelations between short-term, mid-term and long term species based on time, crop and the particular livelihood of Mr. Phuoc's family. Every year, CIRD invited him to take study tours for leaning and sharing experience within the nation-wide farmer network. Realizing that eco-farming is a human cultivation method towards nurturing nature, he decided to apply the method to his own garden to transform the land full of mines into a spiritual ecological livelihood garden. Earlier, he planted only acacia on the hill. Since having been advised by HEPA FFS, particularly Prof. Goeltenboth, he was aware that this kind of tree is not friendly to land and consumes much water. Added to that, the tree is characterized by a soft trunk which is easy to fall down in floods. At present, the acacia area has been gradually replaced by native tree species. Instead of mono-plantation, he plants different species on the same land. Acacia and native trees are planted at the top of the garden, followed by white latex trees such as

jackfruit, Muc, Tea, Huenh, Hoa Sua (*Alstonia scholaris*). Black pepper plants lean on these latex trees. He also plants green tea, ginger, turmeric, lemongrass, bean, sesame, peanut, onion, garlic, ginger, ginseng vegetable, vine spinach and sweet leaf mixed with black pepper. Followed garden plots designed at the same height for retaining water are lychee, edible yam, winged yam, papaya, banana, taro and cassava for animal husbandry.

*Figure 2: Practicing eco-farming in Mr. Phuoc's garden*

After 20 years since 1997 of working with TEW and CIRD, Mr. Phuoc has become one the key farmers of a network "Eco-farming in land use planning and livelihood security". Starting as a student in a class on eco-farming at HEPA FFS, after understanding the philosophy and long-term benefits of eco-farming, he has successfully applied the theory to daily life. Being a good example of success in practicing eco-farming, he has travelled to many places and participated in different workshops to share, exchange and guide other farmers of the network to practice eco-farming and become an eco-farming expert and activist, and currently a family and community entrepreneur. Benefits gained from his garden ecosystem have inspired and transformed ethnic youths from different countries world-wide, who visited his model for learning. Mr. Douglas, an environmental expert from Australia wrote "***From bombs to sustainability"*** (Douglas 2007) after his visit to Mr. Phuoc's garden. Joni – a young messenger who worked at SPERI and HEPA FSS as a volunteer was inspired to write "***From danger to diversity"*** (Joni 2010) after being stunned by Mr. Phuoc's story. ***"An outstanding ecological livelihood model"*** (Goeltenboth 2014) – exclaimed professor Goeltenboth, who has initiated a "*cultivation network for nurturing rainforest law*" and

organized *"Nature life",* who with some other German scientists have been pursuing and accompanying those who understand, listen to and nurture nature like Mr. Phuoc.

In the near future, Mr. Hoang Van Phuoc will be an *owner of a family enterprise* to *determine the formation of a transaction chain* for ecological black pepper. He would like to contribute to *enhance awareness and change of attitude of consumers* when they directly feel and experience the *journey and ecological process* of his black pepper garden.

***Figure** 3: Mr. Phuoc shares experience of eco-farming with prof. Goeltenboth*

**Preliminary evaluation of Mr. Phuoc black pepper based on 10 criteria for an ecological livelihood.**

Among the *five fundamental characteristics of an original ecosystem*, including: *1. Diversity; 2) Uniqueness; 3) Interaction; 4) Adaptability; and 5) Sustainability,* Mr. Phuoc's garden has achieved four criteria, while Diversity is not clearly shown, because as much as 80% of one-variety acacia is planted on the top of the garden.

Among the *five fundamental rights of a human livelihood, including: 1) the right to ecosystem (basic); 2) the right to nurture ecosystem (unique); 3) the right to practice wisdoms and experience on ecosystem (practical); 4) the right to self-reliance and self-determination on ecosystem (holistic); and 5) the right to co-nurture ecology with neighbours (strategic),* Mr. Phuoc has practiced four rights on his garden. Through observation and interview, it is shown that *the right to co-nurture ecology with neighbours* is not very clearly practiced.

Eco-farming philosophy is reflected by a system of indicators of a farmer's daily behaviours. They are: *1) Spiritual ecosystem (Worship Nature); 2) Farmers relate, inherit and nurture livelihood in ecosystem as a gift; 3) Farmers are responsible for their behaviors towards ecosystem through a system of unwritten behavioral norms (customs and wisdom); 4) Respect, listen, observe, design, plan, use and enrich resources created by sun, rain and wind energies in order to create products suitable to the fundamental features of ecosystem. 5) Dynamic between practice and learning lessons to enrich wisdom regained from experiences in order to nurture natural landscape and resources for inter-generations that presented equally to living things by ecosystem.* (Tran Thi Lanh 2008).

From practicing eco-farming gardening, Mr. Phuong has learnt valuable lessons. He notices that: 1) White latex trees are good as supporting poles for black pepper plants to lean on. In summer, they shades the black pepper (he compared the tree shadow to a silver cap), and in winter, their fallen leaves keep the black pepper humid by limiting evaporation and also produce rich nutrients for the plant. 2) The spiritual living black pepper supporting pole gives much higher quality black pepper than non-spiritual pole made of cement or brick. 3) Plant black pepper using eel tail-shaped branches (Chuong chuong, used to be long and bare branches lying closely to roots) makes the plant grow longer and stronger with high endurance due to its abundant roots. One year after planting, the plant produces more branches to give big fruits. If farmers know how to prune and take special care of the branches at the time when the big branches have more twigs, they can produce a big root (i.e. a root covered by branches, called a "plant in pants" by Mr. Phuoc). The "plant in pants" keeps the root humid to better nurture smaller braches on the top so that the plant can produce a fruitful crop with a long lifecycle. 4) Unlike eel tail-shaped branches, trunk branches often hold the pole tightly. Cutting these branches for planting can produce only small-sized roots, giving a shorter lifecycle to the plant with weaker vitality in comparison with ell tailed-shaped branches. 5) Also in the black pepper garden, Mr. Phuoc plants ginger, turmeric, peanut, ginseng vegetable, chilly, spring onion, chives and other spice plants to support the pepper's roots and the process of nutrients supplement between them. 6) Mixed planting is an effective solution for livelihood security which encourages flexibility in self-sufficiency of food and medicine for Mr. Phuoc's family.

***Figure** 4: Mr. Phuoc and Mr. Minh exchange experience of choosing black pepper branches*

**Process of planting ecological black pepper in Mr. Phuoc's gardern**

**1. Soil**

Soil for planting black pepper should be well-drained at a slope below 5% and not be flooded. It is necessary to nurture and enrich soil with manure prior to planting.

**2. Species and nursery technique**

Species: Native species in Lam Trach commune, Quang Binh province

Nursery technique:

1) Raise "eel tail-shaped branches (also called Chuong Chuong): These branches have 3-5 knots taken from splitting branches. Leaves must be removed prior to nursery, and the branches should be free from pests that are taken from healthy 4 year-old gardens;

2) Raise by trunk branches: Select strong branches with 3–5 knots and strong roots. The branches are cut at 20 cm from the ground and only splitting branches are taken. Remove younger section on the top of the branch. Prune leaves at the knots under the ground, only keep one or two knots above the ground with less leaves left to minimize evaporation. Plant branches directly in the garden, which are covered by dry branches to ensure the high survival rate. (Notes: it is necessary to dig holes added with lime for one day. Add manure in the dug holes 15 days before planting. Raise the branches until they produce roots, and then plant them in the garden. Soil must be porous and well-drained. The branches are put at 45 degrees position, at 5–7 cm intervals and 10 cm in rows. After 25-30 days of raising, when the branches start producing roots, they are ready to be planted. During raising process, do not keep the branches too long as they can sprout, and the roots are too long to pull out, adversely affecting the survival rate and growth of seedlings.

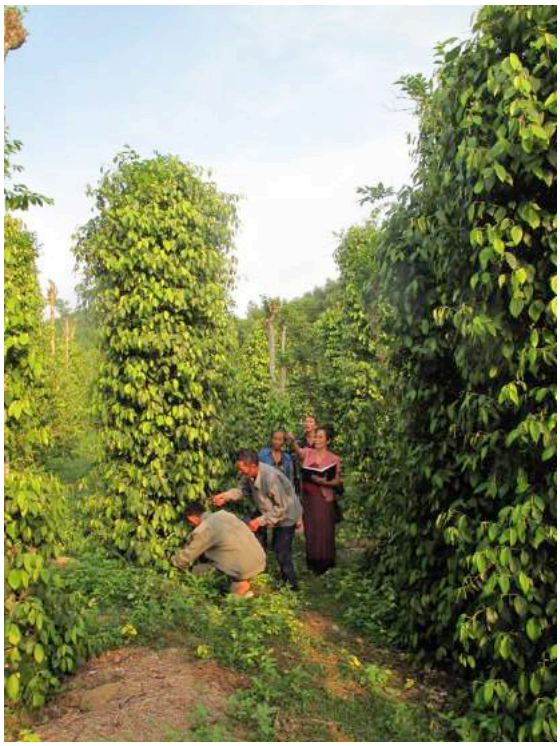


*Figure 5: Sharing nursery technique in Mr. Phuoc's garden*

**3. New planting**

When to start: Best in the beginning of July (Lunar calendar) when the raining season starts

Space of poles and density: For living poles like jackfruit, white latex trees, etc., space between poles is 2.5 m x 2.5 m at density of 1300–1500 poles/ha.

How to plant: Living poles trees are planted in the beginning of the rainy season. Carefully clear weeds and add manure to soil. It is possible to plant living poles one or two year before planting black pepper.

Dig holes: Dig one or two holes at both sides of a pole, at 10–15 cm from edge of hole to the pole so that the hole's center, where the black pepper to be put in, is 20–40 cm away from the living pole tree. The dimension of each hole is 40 x 40 x 40cm for one plant. Mix surface soil with 10-15 kg of decomposed manure. Treat soil in the hole before planting by adding manure and leave it expose to the sunlight within a week. Mixing manure and filling the hole must be completed at least 15 days before planting.

**3. Planting trees for shadow**

Planting black pepper leaning on living pole trees is beneficial as the plant can make use of the shadow of the supporting poles trees in summer and be kept warm in winter by fallen leaves of trees. It does not make sense if supporting poles are of cement and bricks.

**4. Caring**

Clean weeds frequently around the black pepper plant by hand to make sure no damage is caused to the roots. As for the pepper planted with eel tail-shaped branches, after the plant grows as long as 1.4–1.5 m on the pole, it has 2–3 fruits on branches, only nurture branches with fruits and take away branches without fruits. Dig a trench of 15–20 m depth around a pole and 20–25 cm away from the plant's root. Put the branches without leaves into the trench, except for the top of the branches with fruits and leaves to be tightened to the pole. Add manure to the plant only after roots come out from knots on the branches.


*Figure 6: Discussions on rainforest eco-farming*

## 5. Harvesting

Spread pads or large canvas right below the plants for harvest. Also, it is possible to harvest containers carried along.

## 6. Consumption

*Figure 7: A VTC 10 reporter interviews Mr. Phuoc on his black pepper product and sustainable livelihood of the family.*

Traders come to Mr. Phuoc's garden through different channels: 1) Make a phone call to buy young pepper (when pepper shoows sign of a good crop); 2) Come to the garden to buy fresh pepper after harvesting; 3) Come to the garden to buy dried pepper… . The trader's tricks are mysterious. Mr. Minh from Lien Trach commune told a story about a trader who came to his house and bought black pepper at VND 180,000 per kilo (using Mr. Minh's scale). Then he followed the trader who was going to a dealer 15 km from Mr. Minh's and learnt that he sold that pepper to a dealer at the same price, i.e. VND 180,000 per kilo. Both Mr. Minh and Mr. Phuoc could not understand why. Might their ecological black pepper planted in Lam Trach and Lien Trach communes be mixed with pepper of other origins by traders? Is that a big concern for pepper producers and consumers?

## 7. Mr. Phuoc's proposals

To continue to promote activities of the ecological gardening network and further extend experiments in ecological black pepper and Mr. Phuoc's model, especially at HEPA FFS;

*Figure 8: People happily listen to Mr. Phuoc's explanation on "Plant in pants"*

To establish a complex of ecological gardens covering Lam Trach, Xuan Trach and Lien Trach communes in order to make pepper products of Quang Binh Key Farmers Network a real brand with intellectual property right. Gardeners will become real owners of that brand who fully determine forms of transactions and benefit sharing in a market chain just between producers and consumers rather than passively depending on trading companies in terms of transactions, relations and market fluctuations. He believes that the key farmers network that has been working side by side together for 20 years to build an ecological process for pepper will certainly meet consumers who share the same philosophy of nurturing nature so that both forces will reaffirm each other's status, and justice will come back to real values of equality from a crazy market where both have been a sacrifice by immoral intermediaries;

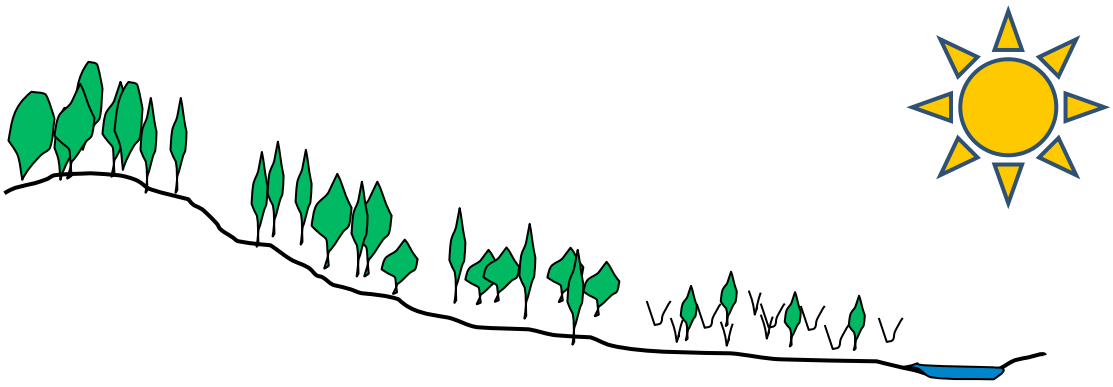
To continue sharing with farmers who are unconfident and are in crisis like he was 20 years ago before joining the key farmers network.

To have support from MECO-ECOTRA, CENDI and LISO Alliance in terms of consultancy and assistance in testing and registration for food quality and safety for black pepper products of the Quang Binh key farmers.

**Ecological transect diagram of**
**Mr. Hoang Van Phuoc ecological garden**

**Total area:**

**6 ha**



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| **Slope** | $>15^0$ | $8^0$ - $15^0$ | $3^0$ - $8^0$ | $< 3^0$ | Fish pond |
| **Type of soil** | Soil mixed with stone | Soil mixed with sand and gravel | Stone mixed with sand | Soil mixed with sand | |
| **Vegetation** | Chestnut, pine, Sen (*minosops elegin*), Lim (*erythropheum*); (native forestry trees) | Acacia chestnut, De (*cinamonmum*), Cong (*castanopsis cerebrina)* | Longan, lychee, pineapple, black pepper, jackfruit, banana, papaya | Cassava, tea, potato, ginger, turmeric, chilly, bean, peanut, onion, garlic, lemon, passion fruit, Vine Spinach, Chives, Edible yam, Winged Yam, Chinese knotweed, sweet leaf, ginseng vegetable, Spring Onions, sesame, etc. | |
| **Difficulties** | Very poor land | Poor land | Dry land | Dry land | |