



**Social Policy Ecology  
Research Institute  
SPERI**

ECOLOGICAL VEGETABLE  
CULTIVATION OF HMONG IN  
LONG LAN VILLAGE, LUANG  
PRABANG PROVINCE, LAOS

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"Promoting agroecology farming for self-reliant livelihood of local upland farmers through documenting the case of native eco-vegetables of the Hmong community of Long Lan village, Luang Prabang district, Luang Prabang province"

Organizations to financially support the production of this document



Luang Prabang district, Luang Prabang province, Lao PDR. It relates to community institutions in management of natural resources, agricultural practices, animal husbandry as well as the behavior of people towards natural ecosystems.

The document is also developed based on the lessons learned by the CHESH Lao Program (hereafter called CHESH Lao) of the Center for Human Ecology Studies of Highlands (CHESH), one of the predecessor organizations of the Social Policy Ecology Research (SPERI) and relevant partners involved from research, experimental application and support for sustainable development of Long Lan community based on cultural identities, ethnic knowledge and natural resources of Phou Sung from 1999 to present. These activities have been financially supported by ICCO - the Netherlands, and later Brot / BMZ - Germany, CCFD - France and NLI.











The above information was collected, analyzed and summed up on the basis of the CHESH Lao / SPERI's approach to promoting stakeholders participation such as Long Lan key farmers, village heads of Long Lan and communities in Kuang Si watershed area, members of YIELD-AGREE, Offices of Planting, Planning of the Luang Prabang Provincial Agriculture and Forestry Office (PAFO), Luang Prang and Xieng Nguen district of Agriculture and Forestry Office (DAFO), Pak Xuong College, Suphanuvong University, CHESH Lao and experts.

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**Growing cabbage in the swidden farm in Long Lan (Photo: CHESH Lao, 2017)**

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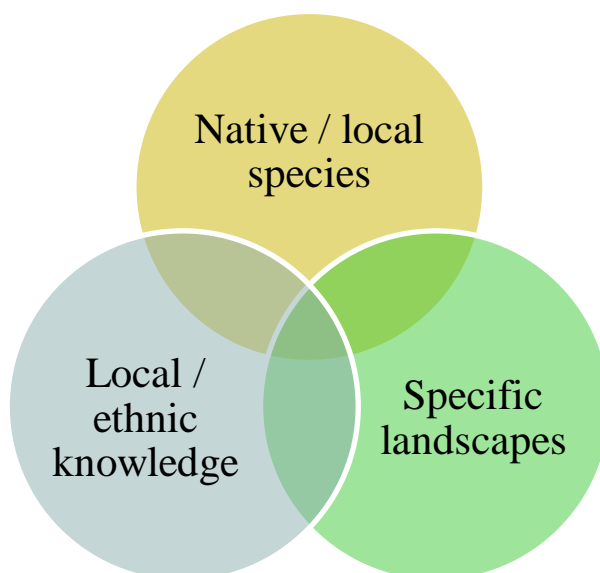
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## KEY MESSAGES OF THE DOCUMENT

At present, the livelihoods of many upland communities in Luang Prabang province in particular, northern Laos in general are facing challenges due to negative impacts from the market economy, commercial plantations such as rubber and high-tech application and abuse of chemical matters. Loss of land, depletion of natural resources, deeper dependence on the outside and other social and environmental implications are driving these communities into a dilemma

However, many other communities are well implementing solutions in stabilizing and improving their livelihoods, especially through the implementation of various types of agro-ecological farming such as in Long Lan. Therefore, the study of successful lessons in native eco- vegetable cultivation and market linkages in particular, natural resources management of Long lan in general will contribute to raising public awareness especially young farmers, officials and authorities at all levels of Laos regarding the value and solution of ecological farming, from which to learn and apply in a wider range.

The project on "Promoting agroecology farming for self-reliant livelihood of local upland farmers through documenting the case of native eco-vegetables of the Hmong community of Long Lan village, Luang Prabang district, Luang Prabang province" supported by ALiSEA is one amongst the above efforts of the CHESH Lao / SPERI.



Core interrelated dimensions in agro-ecological farming

This document provides information related to the process of agricultural transition of the Hmong ethnic group in Long Lan village from the traditional rotational cultivation to combining the cultivation of ecological vegetables on the basis of ethnic knowledge, specific landscapes and local native species with the aim to ensure the livelihood security.

## INTRODUCTION OF LONG LAN VILLAGE

Long Lan village is 45 km north-east of the UNESCO Cultural Heritage City of Luang Prabang. Long Lan is bordered by 12 neighbouring villages of different ethnic groups such as Laos Loum, Kho Mu, H'mong and Lu located around the foot of Phou Sung Mountain.

Specifically, the village is bordered to Kok Van, Bo He,

Huoi Luc, Tha Ui, Pha Deng (Luang Prabang district) to the north; Pha Vieng village (Luang Prabang district), Huou Man and Nam Bo villages (Phonxay district) to the east; Phu Khuang, Huoi Xa La village (Phon Xay district) to the south; and Na Don Khun, Na Tan, Densavang and Phonsavat village (Luang Prabang district) in the west).

Long Lan situates in the watershed of Phou Sung mountain, approximately 1,200 meters above sea level. This is a limestone and metamorphic rock mountainous area, which includes small valleys with flat land. The climate in this area is quite harmonious and cool with fog covered year around, and average temperature is 22°C. In places where is interspersed with rocks, the soil is crimson (brown), porous due to the accumulation of many decomposed biomass, the cultivative layer is greater than 50 cm. In the areas with reddish-brown and porous soils due to the weathered limestone, with cultivative layer is thicker than 70 cm. This is a suitable condition for the growth and development of many crops, especially vegetables.

At present, Long Lan is home to the H'mong families. These families belong to 7 clans including Zang, Ly, Ho, Tho, Mua, Song and Vang. In 2017, Long Lan has 74 households with 511 inhabitants (260 females). Among them, Zang clan, the first group of people set foot in Long Lan, has the majority (47.6%). This clan has made great contributions to the development of H'mong community here. The livelihoods of households in the village are mainly relied on upland cultivation, growing eco-vegetables, raising cattle and poultry as well collection of forest products.



## APPROACHES OF CHESH LAO / SPERI

*Livelihood sovereignty on the basis of the right to resources, the right to practice ethnic knowledge and culture, and native species.*

Since 1999, the CHESH Lao / SPERI has collaborated with various Laos partners, including the Project for Rural Development of Focus Area (PRDFA) of the Ministry of Agriculture and Forestry, Luang Prabang Province of Forestry and Agriculture Office and Offices of Agriculture and Forestry of districts such as Luang Prabang, Nam Bac, Nan and Xieng Nguen with the financial supports of ICCO, Brot / BMZ, CCFD and NLI to implement applied development researches in ensuring the rights to access to resources, practice cultural identities and local indigenous knowledge in agricultural cultivation and community management toward the self-reliance of livelihoods of Long Lan. This process has been implemented through the three main phases based on the capacity and increased needs of the community.

The period 2000-2002 phase focused on researches to develop a pilot model of community development based on cultural identity. Accordingly, CHESH Lao has carried out applied research on dialectical relationships between the ecosystem and traditional structure of the Hmong in Long Lan.

The period 2003-2005 phase mainly enhanced the capacity of the network of key farmers in sustainable community development based on cultural identity. In particular, the CHESH Lao has conducted applied researches on the relationships of (a) formal power system and traditional institutions and (b) the human-ecological structure through community based forestland allocation and traditional land use planning.

In the period from 2006 up to now, the CHESH Lao has focused on studies of the relationships between human-ecology-policy-economy in the agricultural system via ecological farming principles.

Elder Xay Khu Zang shared: “our villagers could find everything essential for their lives from our natural forest and land areas. In contrast, because of depleted land and forest, people's lives in Long Lan neighboring villages are very challenging and must be dependent on the outside.”



**Harvesting eco-veggies in Long (Photo: CHESH Lao, 2017)**



**Veggies mixed with corn in upland farm in Long Lan (Photo: CHESH Lao, 2017)**

# MAIN PRINCIPLES IN GROWING ECO-VEGGIES IN LONG LAN VILLAGE

*Farming on the basis of specific landscapes, native species, customary laws and ethnic knowledge*



**Hmong women in Long Lan harvesting eco-veggies (Photo: CHESH Lao, 2017)**

Ecological farming has been formed and developed along with the production process of human. This type of farming is the driving force, means and goal that require human to think for themselves, change and move towards a more sustainable development system, minimizing risks not only for farming but also household livelihoods. At the same time, it also contributes to management and use of natural resources in harmonious and sustainable ways for the next generations.

Experiencing many changes due to external factors, the H'mong people in Long Lan village have been searching, learning and experimenting to draw their experiences in cultivation as well as harmonious behavior with nature. These values are being practiced by farmers on the basis of respectful and natural-based production, without or to minimize the negative impacts on natural ecosystems. This has enabled people to harvest vegetables continuously for 10 months in a year with stable productivity which become a main source of income for families. This is the result of seven principles developed by Long Lan in accordance with the belief of nurturing nature, traditional customary law and local ethnic knowledge.

**First principle:** Maintaining the largest areas of land covered by natural forest to ensure the stability and sustainability of the production components.

**Second principle:** Eco-vegetable cultivation areas are located in the most favorable soil and climate conditions.

**Third principle:** Selecting vegetable varieties suitable most with the climatic conditions and soil conditions of each production area.

**Fourth principle:** Integrating farming and animal raising

**Fifth principle:** No using chemicals

**Sixth:** Practice fallow to restore the ecosystem and nutrients to the soil.

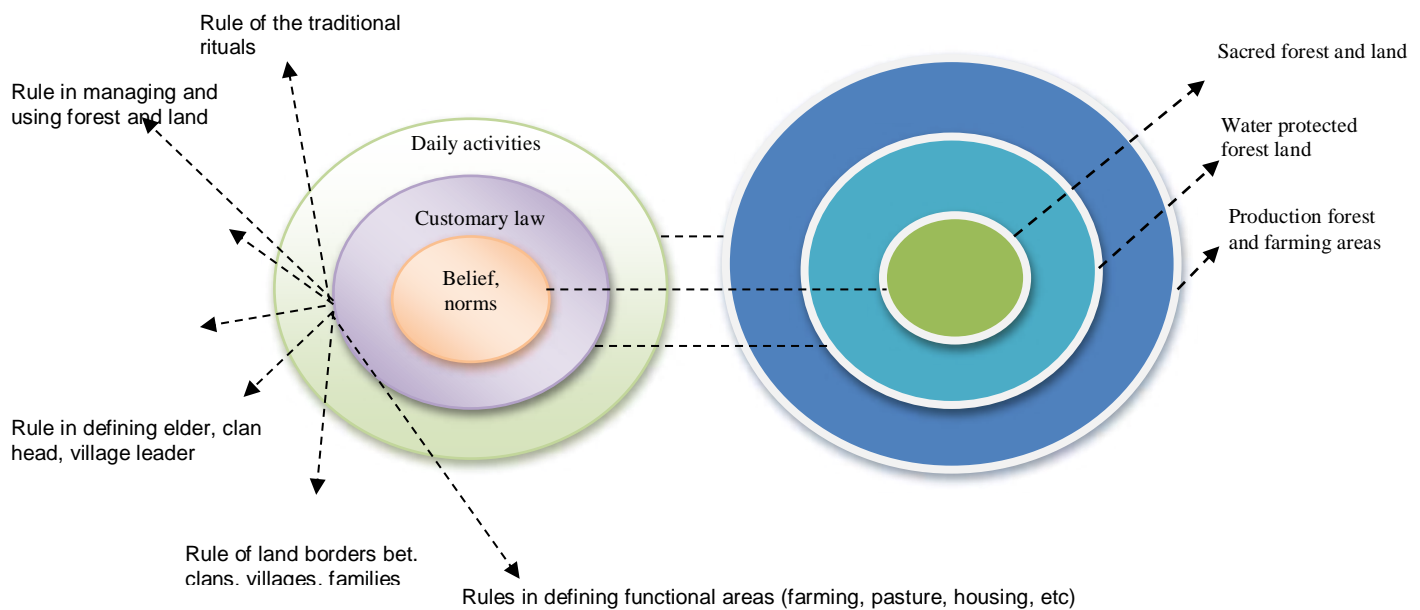
**Seventh principle:** Diversify species to ensure the safety of household income.



# LONG LAN FOREST AND LAND MANAGEMENT AND USAGE

*Natural resources are zoned for management and use on the basis of traditional 'No Song' traditional institution*

Community-based forest and land allocation program in Long Lan was carried out from 2004-2005. Accordingly, 66 households and Long Lan community were officially allocated 8,439.18 ha of forest and land to manage and use in a long term on the basis of customary law and statutory law. Following this, Long Lan has set up its customary law based community regulation to guide and manage all activities of community life and production. This regulation was timely adjusted through the festival 'No Song' to worship the nature's spirit which protects the village, animals and plants. Also, villagers discuss and engage in implementing all commitments which are institutionalized by the community regulation in natural resources management and production. For natural resources, this regulation is reflected in three main aspects including land boundaries, functional landscape zoning and distribution and use of land and forest resources.



*Human-ecology relations in natural resources management of Long Lan village (Source: CHESH Lao, 2010)*

In order to help manage and sustainably utilize natural resources, Long Lan village has zoned its land into different functional landscapes such as residential area (0.3% incl. housing and community pig raising), forest (78.21% incl. spirit forest, cemetery forest, water protected forest and community use forest), and production area (21.49% incl. upland farming, eco-veggies cultivation and cattle raising). Each zone is applied with specific regulations regarding the rights and responsibilities of people inside and outside the community to access, use and protect natural resources.

## LAND USE FOR ECO-VEGGIES CULTIVATION IN LONG LAN VILLAGE

According to statistics in 2017, the total natural area of the whole village is 8,439.19 hectares, which is divided into 3 main zones including: 26.25 hectares of residential area (community pig raising and houses); 6,600.54 hectares of forest (sacred forest, cemetery forest, protection forest, used forest); 1,812.4 hectares of productive land for raising cattles, growing eco-veggies and upland cultivation (see Table 1).

*Table 1: Land uses of Long Lan village according to functions*

No.	Zones	Area (ha)	Percentage (%)
<b>1</b>	<b>Residential area</b>	<b>26.25</b>	<b>0.3</b>
1.1	Housing	5	
1.2	Community pig raising	21.25	
<b>2</b>	<b>Forest area</b>	<b>6,600.54</b>	<b>78.21</b>
2.1	Sacred forest	1,132.49	
2.2	Water protected forest	2,888.61	
2.3	Community use forest	1,009.37	
2.4	Cemetery forest	4.37	
2.5	Community pastury forest	1,565.7	
<b>3</b>	<b>Production area</b>	<b>1,812.4</b>	<b>21.49</b>
3.1	Growing eco-veggies	88.75	
3.2	Upland cultivation	1,723.65	
	<b>Total</b>	<b>8,439.19</b>	

According to the community land uses, the land for ecological vegetable cultivation of Long Lan is 88.75 hectares, accounting for about 1% of the total natural area. This area is mainly distributed in four main production zones, including May (Phou Sung), Ca Xia, Po Phay and Long Lan. The average elevation of these areas ranges from 1,000-1,2000 meters. This is the karst and metamorphic rocks interspersed with many small valleys with relative flat land. The climate is harmonious and cool with the annual average temperature is 22°C. The soil is quite fertile composed of mainly basaltic red soil with relatively high iron content; so the cultivative layer is relatively thick which is suitable for growing diverse types of vegetable.

## SEASONAL CALENDAR OF LONG LAN

Through the long live and production process in the Phou Sung Mountain, people in Long Lan village have observed, experimented and learned a lot of productive experiences in accordance with weather, forest and soil conditions. This experience is reflected in the seasonal calendar, which includes cropping and livestock activities as well as harvesting of natural products over a certain period of time.

Activities	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Rain			x	xx	xx	xxx	xxxxx	xxxxxx	xxxx	xx	x	
Chayote		CBĐ	Đ	T	xx	xxx	xxxxx	xxxxx	xxxxx	x		
Rapeseed		CBĐ	Đ	T	CS	xxxxx	CBĐ	Đ	T	TH		
Dill		CBĐ	Đ+T	TH	T	TH	T	TH	T	TH		
Green bean		Cbđ	Đ+T	TH	TH			CBĐ	Đ	TH	xxxxxx	
Pumpkin				TT	CS	xxxxxx (lấy ngọn)					Quả	
Green mustard		CBĐ	Đ+T	TT	T	TH		xxxxxx		TH		TH
Bamboo shoots				T								
Bitter melon						T		TH				
Corn				T	CS		TH				TH)	
Upland rice		CBĐ	Đ			T		CS			TH	
Coffee		CBĐ				T				TH		
Rubber		CBĐ	Đ	ĐH		T	TH					
Melon						T	TH					
Raising cow		CS: Giving births (mostly in March and September)										
Note	CBĐ	Soil preparation										
	Đ	Slashing										
	Đ+T	Slashing and sowing / planting										
	T	Sowing / planting										
	ĐH	Digging holes										
	CS	Taking care										
	TH	Harvesting										
xxxxxx	Months for the most harvest											

In general, the organization of production calendar of Long Lan village for one year is closely related to the two weather factors, rain and sunshine. For vegetables, the planting season starts from April to May, and then carries out monthly care and harvest. With vegetables like coriander and dill, it takes about 45 days from sowing to harvesting, so in a year it can cultivate several times. For chayote vegetables, it is planted for only one time in April, then it is possible to regenerate every year (about 10 years to re-plant), then, its leaves should be harvested after 30-45 days. While, its fruits could be started harvesting at the end of July, early August until November.

# EXPERIENCES IN ECO-VEGGIES CULTIVATION IN LONG LAN VILLAGE

## CHAYOTE

*Hmong: Chi Thai; Lao: Phac Noi*

**Origin:** Chayote has been present in Southeast Asia for a long time. H'mong families in Long Lan village have planted chayote since their arrival in the Phou Sung mountain.

**Ecological characteristics:** Chayote is temperate, climbing, stalk divided into 3 to 5 branches. Chayote could be grown well in both sunshine and shadow.

**Cultivation areas:** Chayote is suitable for tropical monsoon, with average annual temperature of 12-17°C. Villagers in Long Lan plant chayote on frames under the canopy near the residential area or crawled on the ground in small valleys, above which natural forests lay at an altitude of about 1,200 meters.

**Techniques:** Planting season starts from May, when the rainy season comes. The seedling fruits are placed horizontally, covering 2/3 soil on the fruit, not covering the germ. If growing chayote for shoots, it is not necessary to make frame. Distance between seedlings is about 2 meters. If growing for fruits, it must make frame or sometimes chayote is intercropped with pumpkin.

**Harvesting:** Harvest time is from March to December. Young chayote branches are cut with a small knife, wrapped in bundles and put in baskets for storage. It branches can be harvested after 3 days from the latest harvest, and the fruit is about 2 weeks. The life cycle of the chayote can last from 5-10 years due to natural regeneration.

**Varieties selection:**

Pick big fruits with no pests which were germinated from the mother tree to plant immediately or to preserve on the ground.



Chayote frame in Long Lan (Photo: CHESH Lao, 2017)



H'mong women in Long Lan transporting eco-veggies to village (Photo: CHESH Lao, 2016)

# YELLOW FLOWER MUSTARD

*Hmong: Zuab nTsuag; Lao: Phac Cat Som*

**Origin:** Yellow flower mustard is local varieties which has only been grown and passed one generation to another by the Hmong people in Long Lan village but also in other parts of Laos and Vietnam.

**Ecological characteristics:** Yellow flower mustard is an edible green vegetable whose flowers are in yellow. It is one amongst the mustard family. It is an annual crop and often grows well in cool, well-drained and fine soil.

**Cultivation area:** Currently in Long Lan village, people mainly grow yellow flower mustard on upland fields in the valleys which are covered year round with the natural forests. These locations have altitudes over 1,000 meters above sea level.

**Techniques:** Growing season for the yellow flower mustard begins when the rainy season arrives (May). After slashing, burning and cleaning, seeds are sown on the ground without the need of hoeing. In the past, people often intercropped this crop with corn and opium, along with other types of vegetables. Currently, they mainly grow yellow flower mustard in the form of rotation between land plots. After sowing, people do not need to care (watering, weeding, fertilizing,...) until harvest.

**Harvest:** Yellow flower mustard can be harvested after sowing about 30 days. What is special about this vegetable is that it can be harvested continuously for a long time. The interval between harvesting is about 5-7 days depending on the weather conditions, humidity and soil quality of the cultivated area.

**Varieties selection:** Often, villagers select plots where have big fruit mother crops, cut their tops with fruits for drying, then extract seeds. Seeds are dried to a very dry, then put into a small cloth bag, leaving the place is dry, cool for preservation until next season.



Yellow flower mustard (Photo: CHESH Lao, 2017)



Young girl is bundling yellow flower mustard for selling (Photo: CHESH Lao, 2016)

# CORIANDER

*Hmong: Zaub nTxhwb; Lao: Phac Hom Pom*

**Origin:** Coriander which is grown by villagers in Long Lan is local varieties or newly introduced one that originates from Thailand.

**Ecological characteristics:** Coriander is a soft plant growing to 50 cm tall. The leaves are variable in shape, broadly lobed at the base of the plant, and slender and feathery higher on the flowering stems. The flowers are borne in small umbels, white or very pale pink, asymmetrical. It often grows well in cool, well-drained and fine soil.

**Cultivation area:** Currently in Long Lan village, people mainly grow coriander on upland fields in the valleys which are covered year round with the natural forests. These locations have altitudes over 1,000 meters above sea level.

**Techniques:** Growing season of the coriander begins in June, the middle of the rainy season. After slashing, burning and cleaning, villagers use hoes to lightly dig the soil before sowing. Seeds are then spread evenly on the ground without soil covering. Coriander can be grown from 2-3 crops per year depending on weather and soil conditions. After sowing, people do not need to care, watering, fertilizing ... In the period of 15-20 days if weeds are found, then will be removed by hands. Currently, some families in the village are experimenting with intercropping between coriander with upland rice and find that the yield and quality are better than that of the mono-growing.

**Harvest:** Coriander is normally harvested after 45 days since sowing. The people use their hands to up-root corianders, then tie them into bundles before putting into sacks. These sacks will be transported by horse or motorbike to village for selling.



Villager in Long Lan is harvesting coriander (Photo: CHESH Lao, 2017)



Coriander on the upland farm in Long Lan (Photo: CHESH Lao, 2017)

# DILL

*Hmông*: Zaub nTxhwb nyug; *Lao*: Phac Xi

**Origin:** Dill has been present in the Phou Sung mountain for a long time. This type of vegetable is grown and transmitted through many generations through the selection and preservation of seeds.

**Ecological characteristics:** Dill is an annual herb in the celery family Apiaceae. It is the only species in the genus Anethum. Dill is widely grown for its leaves and seeds which are used as a herb or spice for flavouring food. Dill grows well in cool climate with high humidity and fine soil.

**Cultivation area:** Currently in Long Lan village, dill is mainly grown in upland fields which situate in the valleys covered year round with the natural forests. These locations have altitudes over 1,000 meters above sea level. Normally, on the same piece of land, coriander is first planted then dill.

**Techniques:** Planting season of dill is around May, when it rains. After slashing, burning and clearing, seeds are be sown immediately, no need to do soil. The seeds are spread evenly on the ground without having to cover by soil. Previously, dill was intercropped with maize, opium and other vegetables. Currently, dill is not intercropped with opium, but maize and other vegetables or planted separately. Like other vegetables grown in Long Lan, there is no need for care, watering and fertilization for dill.

**Harvest:** Dill is possibly harvested after 20 days from sowing. Villagers often use small knives to cut the top or pull the roots, then tie them into bundles before placing into baskets. Right after harvesting, villagers could cultivate another new crop on that land.

**Varieties selection:** Seeds are often selected from the mother trees whose big and firm fruits. The selected dill is cut for drying before separating seeds. The seeds are then dried up under the sun before putting into a small cloth bag for preservation in a cool, dry place.



Weighting bundles of dill before selling (Photo: CHESH Lào, 2017)



Hmong women in Long Lan on the way to upland field to take care of vegetables (Photo: CHESH Lao, 2015)

# GREEN MUSTARD

*Hmong: Zaub nTsuab; Lao: Phac Cat Khieu*

**Origin:** Green mustard, also known as 'Cai Meo', is a one of native vegetable varieties of the Hmong people not only in Long Lan but also in Vietnam and Laos. This variety of vegetables is of long-standing origin and has been handed down during the nomadic shifting cultivation of the Hmong.

**Ecological characteristics:** Green mustard is a plant species of the Brassicaceae family. Green mustard has a large, small body, leaves are dark green or green banana leaves. Leaves and stems are often spicy, often used as a bitter soup, or made pickled salad. Green mustard usually grows well in cooler climates, spongy soils with high humidity.

**Cultivation area:** In the past, the Hmong people in Long Lan have been intercropped green mustard with maize and opium in the upland fields in the valleys that are covered all year round with natural forests. These locations have altitudes over 1,000 meters above sea level. Farmers are still growing here, but often intercropping with maize and other crops in a rotating manner between plots.

**Techniques:** Planting season for starts from May, when it rains. After slashing, burning and cleaning the vegetation, seeds are sown on the ground without the need of hoeing. Villagers do not need to take care, fertilize and watering until harvesting.

**Harvest:** Green mustard is harvested 20-25 days after sowing. Often, villagers pull up the tree, shake off the soil, and put it in the basket to transport home. After harvesting, villagers can continue the new crop with either the same or different species on the same land plot or let fallow.

## Varieties selection

Seeds are often selected from the mother trees whose big and firm fruits. The selected dill are cut for drying before separating seeds. The seeds are then dried up under the sun before putting into a small cloth bag for preservation in a cool, dry



Mustard greens grown in Long Lan village (Photo: CHESH Lao, 2017)



Hmong women in Long Lan on the way to harvesting vegetables (Photo: CHESH Lao, 2016)



# RADISH

*Hmông: Zaub nTug; Lao: Phac Cat Hua*

**Origin:** Radish has been grown by the Hmong family in Long Lan village in particular, the Phou Sung area in general for a long time. This vegetable is passed from generation to generation through seed selection and preservation.

**Ecological characteristics:** Radishes are annual or biennial brassicaceous crops grown for their swollen tap roots which can be globular, tapering, or cylindrical. This crop is a good plant and grows in cool climate, fresh soil and nutrient-rich soil.

**Cultivation area:** In the past, Hmong people in Long Lan have been intercropped radishes with maize and opium in the upland fields in the valleys that are covered all year round with natural forests. These locations have altitudes over 1,000 meters above sea level. Farmers are still growing here, but often intercropping with maize and other crops in a rotating manner between plots.

**Techniques:** The season of growing radishes starts in May after when the rain occurred. After slashing, buring and clearing, seeds are sown on the ground without the need for hoeing. Previously radishes were often intercropped with maize, opium and other types of vegetables. Currently, radishes are intercropped with maize and other vegetables or grown separately. Like other vegetables, it does not need to water, fertilize for radishes until harvest.

**Harvest:** Radishes are pulled up together with roots then placing into a basket before using horses or motorbike to transport to village.

## Varieties selection

Villagers often choose the mother radishes with their big and firm fruits. Then, they cut the branches with fruits for drying before separating seeds. Seeds are dried then put into a cloth bag for



Radish grown in a upland farm of Long Lan (Photo: CHESH Lao, 2016)



Villagers in Long Lan harvesting radishes (Photo: CHESH Lao, 2016)

# GREEN BEAN

*Hmong: Taum; Lao: Mac Thua Bo*

**Origin:** Green bean is not native crop, but it has been grown and adapted in the upland fields of families in Long Lan for a quite long time ago. After each harvest, families choose the seed to preserve for the next crop.

**Ecological characteristics:** Green bean is distinguished from the many differing varieties of beans in that green beans are harvested and consumed with their enclosing pods, typically before the seeds inside have fully matured. This practice is analogous to the harvesting of unripened pea pods as snow peas or sugar snap peas. Green bean is a crop that can be grown well in cool climates, spongy and nutrient-rich soil.

**Cultivation area:** In Long Lan, green bean is mainly grown in upland fields in the valleys that are covered year round with natural forests. These locations have altitudes over 1,000 meters above sea level.

**Techniques:** The period of fruit-growing is started in July, when the rain is the most. After clearing, burning, cleaning and seeds can be grown immediately without the need for hoeing. If the land is followed the previous crop, then soil is prepared to be porous before making beds. Bean seeds are grown in the grooves in rows and then filled with soil. Often, green bean is interwoven with corn. After 20 days of planting, people start to do weeding for the first time, but not watering and fertilizing.

**Harvest:** Green bean fruits are handpicked then placed into a basket before transporting to village. A bean plant can be harvested several times.

**Varieties selection:** Villagers choose big fruits for drying before separating the seeds. Seeds are then put into a cloth bags for preservation in dry and airy until next crop.



Green bean grown in Long Lan (Photo: CHESH Lao, 2017)



A man Long Lan making a trap to catch rats to eat the bean (Photo: CHESH Lao, 2017)

# CABBAGE

*Hmông*: Zaub Nom; *Lao*: Phac Kalampi

**Origin:** Cabbage has been recently grown in the Phou Sung area. It was first introduced by Hmong families in Ca Xia village who are now living in Luang Prabang. Then, cabbage is replicated by families in Long Lan village.

**Ecological characteristics:** Cabbage or headed cabbage is a member of the mustard family. It is grown as an annual vegetable crop for its dense-leaved heads. Cabbage is a type of vegetables suitable for cool weather conditions, high humidity and porous soil.

**Cultivation area:** In Long Lan, cabbage is usually mono-grown or mixed with other vegetables in rice or maize fields of families, mainly in Ca Xia area. Here people choose a piece of land, usually located at the lowest point, where the highest moisture content has and nutrients due to the accumulation and deposition of biomass flowing from above.

**Techniques:** Sowing season begins around July, when it is most rainy in the year. After clearing, burning, cleaning and seedlings can be planted immediately without the need for hoeing. If the land is followed the previous crop, then soil is prepared to be porous before making beds. First seeds are sown on the soil for producing seedlings. Then, villagers prune weak seedlings, leaving healthy ones. If seedlings are planted on beds, the seedlings must be selected and planted in the late afternoon. After that, it is not necessary to take care of or watering seedlings until harvest.

**Harvest:** Use a knife to cut the trunks to take heads placing into a basket. Then, villagers use horse or motorbike to transport baskets of cabbage to village.



Cabbage grown in Long Lan (Photo: CHESH Lao, 2016)



Cabbage is grown in small valley in upland rice of Long Lan (Photo: CHESH Lao, 2017)

# HMONG CUCUMBER

*Hmong: Dib; Lao: Mac Teng Hay*

**Origin:** Hmong cucumber also known as Meo cucumber is the gourd family of the Hmong not only in Long Lan but also in Vietnam and Laos. This species has been grown and handed down during the nomadic shifting cultivation of H'mong people.

**Ecological characteristics:** Cucumber is a widely cultivated plant in the gourd family, Cucurbitaceae. It is a creeping vine that bears cucumiform fruits that are used as vegetables. It is suitable for cool climates, soils are spongy and moist.

**Cultivation areas:** Hmong cucumber is often interwoven in upland rice or corn fields in valleys that are covered year-round with natural forests. These locations have altitudes over 1,000 meters above sea level.

**Techniques:** After preparing the land (slashing, burning and the vegetation), when it rains (around early May), villagers start sowing seeds. Pumpkin seeds are mixed with paddy or maize seeds, and are together put in a bag for sowing in the holes that have been poked. During the time when rice or maize not yet close their canopy, the cucumber can grow and produce fruits, limiting the spread of weeds. Villagers often take care of cucumber during the time of weeding.

**Harvest:** During the time villager take care of rice for the second time, cucumber fruits are harvested.

**Varieties selection:** Villagers often pick a big and yellow fruits which already turn into dark yellow in the field to take seeds after drying. Or they can hang whole fruits for preservation until the next crop.



**Hmong cucumber and its flower and fruit (Photo: CHESH Lao, 2017)**



**Hmong cucumber is intercropped with upland rice in Long Lan (Photo: CHESH Lao, 2017)**

# RAPSEED OR OILSEED RAPE

*Hmong: Zaub Noj Txiv; Lao: Phac Phuc*

**Origin:** Rapeseed, also known oilseed rape has been planted by Hmong families not only in Phou Sung mountain, Long Lan village, but Luang Prabang province for long time ago. Villagers preserve seeds for the next crop.

**Ecological characteristics:** Rapeseed is a bright-yellow flowering member of the family Brassicaceae (mustard or cabbage family), cultivated mainly for its oil-rich seed. Rapeseed grows to 100 cm high with lower leaves pinnatifid and glaucous and the upper leaves clasping the stem. The flowers are yellow.

**Cultivation area:** Rapeseed is often interwoven in corn fields and other vegetables in valleys all year round covered with natural forests. These locations have altitudes over 1,000 meters above sea level. Previously, people in Long Lan intercropped rapeseed with opium and other types of vegetables.

**Techniques:** Growing season for this vegetable begins in May, when it rains. After slashing and burning vegetations, seeds are sown without the need for hoeing. Seeds are evenly sown on the ground. Villagers often combine to do seedlings for corn and vegetable in the same time. They also do not use fertilizer and watering.

**Harvest:** Use a small knife to cut and bundle up the tops into bundles and put into a basket before transporting to home by horse or motorbike.

**Varieties selection:** Select vegetables which have big fruits, then cut fruits to dry for separating seeds. Seeds are then dried and put in a small cloth bag, leaving the place is dry and airy.



**Elder Xay Khu Giang in Long Lan visiting his rapeseed field (Photo: CHESH Lao, 2016)**



**Rapeseeds in upland fields of families in Long Lan village ( (Photo: CHESH Lao, 2016)**

## VALUES OF ECO-VEGGIES OF LONG LAN

**SOCIAL**

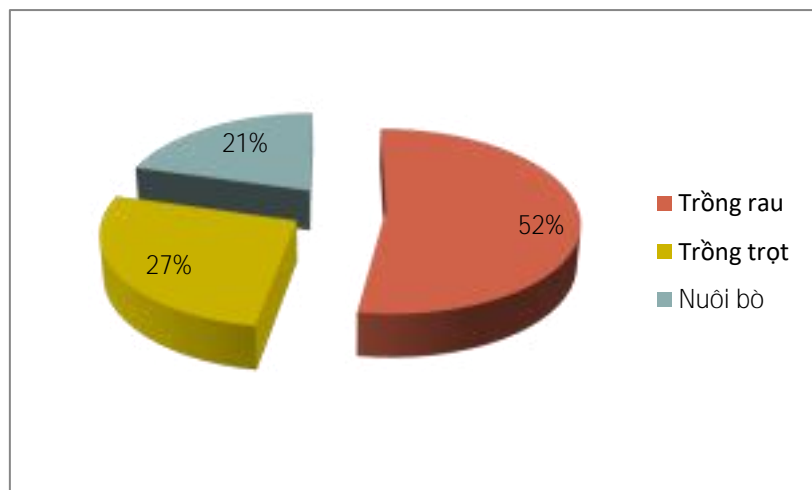
The survey in Long Lan showed that the time spent on growing vegetables accounted for 40-50% of total working days. At the same time the cultivation of vegetables can take place continuously about 9-10 months / year. In addition, this type of production does not require a lot of energy, it requires skill, so it is very suitable for women, aged people and children in supporting their parents to grow and harvest vegetables.

**NUTRITIONS**

Villagers in Long Lan are self-sufficient on diverse veggies, roots and fruits for their daily meals. On average, with two meals (breakfast and dinner), each time consumes about 1 kg of vegetables, one family will eat about 720 kg of different types of vegetables per year; so that, it is about 53,280 kg for 74 households in the village. If the average price of 1 kg of vegetables about 6,000 kip, the whole village will have to spend about 319,680,000 kip on vegetables.

**INCOME**

Eco-vegetables are playing a relatively large role in the income components of households in Long Lan. The figure below shows the important role of vegetables in household livelihoods in Long Lan. Accordingly, proportion from ecological vegetable cultivation accounts for about 52.57% of total household income.



**Contribution of eco-vegetables to families income in Long Lan in 2016**

Totally, Long Lan can produce about 450 tons of various eco-vegetables per year. If the average price of 1 kg vegetables is 4,000 kip, the entire village can earn approximately 1.8 billion kip per year; so that average income per household is over 24 million kip annually.

## KEY LESSONS LEARNT ON ECO-VEGGIES CULTIVATION IN LONG LAN VILLAGE

Through the history of moving, settling and living in the watershed area of Phou Sung, the H'mong people in Long Lan still preserve and practice many traditional cultural values and customary law related to their behavior to nature as well as local indigenous experiences in production and husbandry in harmony with the specific ecological, landscape, soil and climatic conditions.

It can be said that community regulations based on customary law of the Hmong people in combination with the law of Laos are promoting the strengths of each system from which to regulate and adjust relationships within and outside the community that relate to natural resources and productive farming. In this system, the village elders, heads of families, prestigious villagers and key farmers are playing a decisive role in maintaining the traditional values, structures and regulations. They are the center in regulating relations amongst families

and clans, contributing to the stabilization of life and the sustainable management of natural resources in the watershed area of Phou Sung.

The transition of traditional farming practices from shifting cultivation and rotational cultivation to small-scale ecological commodity production has been gradual, selective and adaptive under suitable conditions of climate, ecology, soil, native seedlings, traditional techniques as well as cultural practices of Hmong people. This has enabled villagers in Long Lan to be in the position of self-reliance and self-determination, instead of being passive, dependent from the outside. Then, they can create many initiatives to contribute gradually stabilize and improve their livelihoods, ensure the long-term sustainability of natural resources.



**H'mong woman in Long Lan on the way from her farm to home  
(Photo: CHESH Lao, 2017)**

Agricultural production of Long Lan is making three core values that ensure sustainable livelihoods of families. These values include: food, income, and accumulated long-term assets. In terms of the first value, households are basically still maintaining the rotation farming. This activity is helping families to be self-sufficient in terms of food. For the second value, Long Lan's agricultural activity has shown some indicators of effectiveness and sustainability related to livelihoods, environmental and social ecology. In spite of its small size, about 1% of the total natural area of the village, in addition to providing adequate nutrition on the spot, cultivation of ecological vegetables is the main source of income for the majority of households. At the same time, this type of production is also creating significant employment opportunities for villagers, especially women, young people and the elderly. For the third value, in addition to the cultivation of ecological vegetables and upland fields, community grazing in Long Lan village has shown significant effectiveness. Besides the cultural value, the activity of raising cattle in Long Lan is considered a significant source of capital and assets accumulated by the majority of households.

The people in Long Lan village have been maintaining a lot of experience related to techniques and solutions in agricultural production in general, local eco-vegetable cultivation and cattle grazing in particular. These experiences are the appropriate and harmonious combination of local ethnic knowledge in upland cultivation and newly adapted techniques to ensure the autonomy of solutions towards the sustainability of production system which does not harm the natural forest ecosystem, landscape characteristics and other natural conditions.

The case of Long Lan is a practical demonstration of traditional species, local knowledge and specific landscapes as the three most crucial factors that determine the sustainability of a naturally-occurring agricultural production system. It is the traditional farming - rotational swidden has been handed down for generations. In fact, in many places, local varieties have been replaced by exotic species, local knowledge and solutions are being overridden by modern technologies that have led to imbalances in the productive system and destroy of landscapes. The consequence is that agricultural farming systems are dependent on external influencing conditions rather than sustaining themselves by internal energy flows. Long Lan has been effectively promoting the application, testing and adaptation of these three specific elements over time to adapt to the changes in and out of the overall ecosystem including the agro-ecosystem.