



Agroecology and
Safe Food System
Transitions

SCOPING STUDY REPORT

Potential of Sơn La Province as flagship site for
agroecology and safe food system transitions in
Vietnam

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1. Introduction

The Agroecology and Safe food System Transitions (ASSET) project is a five-year regional project funded by the *Agence Française de Développement* (AFD), the European Union (EU), and the *Fond Français pour l'Environnement Mondial* (FFEM). The overall objective of the project is to harness the potential of agroecology to transform food and agricultural systems into more sustainable systems, notably safer, more equitable and inclusive, in Southeast Asia (SEA). The project intervenes in four countries (Cambodia, Laos, Myanmar, and Vietnam).

The project is structured in two operational components and six sub-components (Fig. 1).

Flagship sites are pilot administratively managed territories where efforts and resources are concentrated to support and document agroecological and safe food system transitions. They are seen as key instruments of the sub-component 2.1 “Knowledge production and support to innovations”.

ASSET project will support innovations and knowledge production in four flagship sites, one per country. Fourteen potential flagship sites have been pre-identified during project feasibility, with four potential sites in Cambodia and Laos respectively, three potential sites in Myanmar and Vietnam respectively (Fig. 2).

The present report describes the potential of Son La Province as flagship site for agroecology and safe food system transitions in Vietnam.

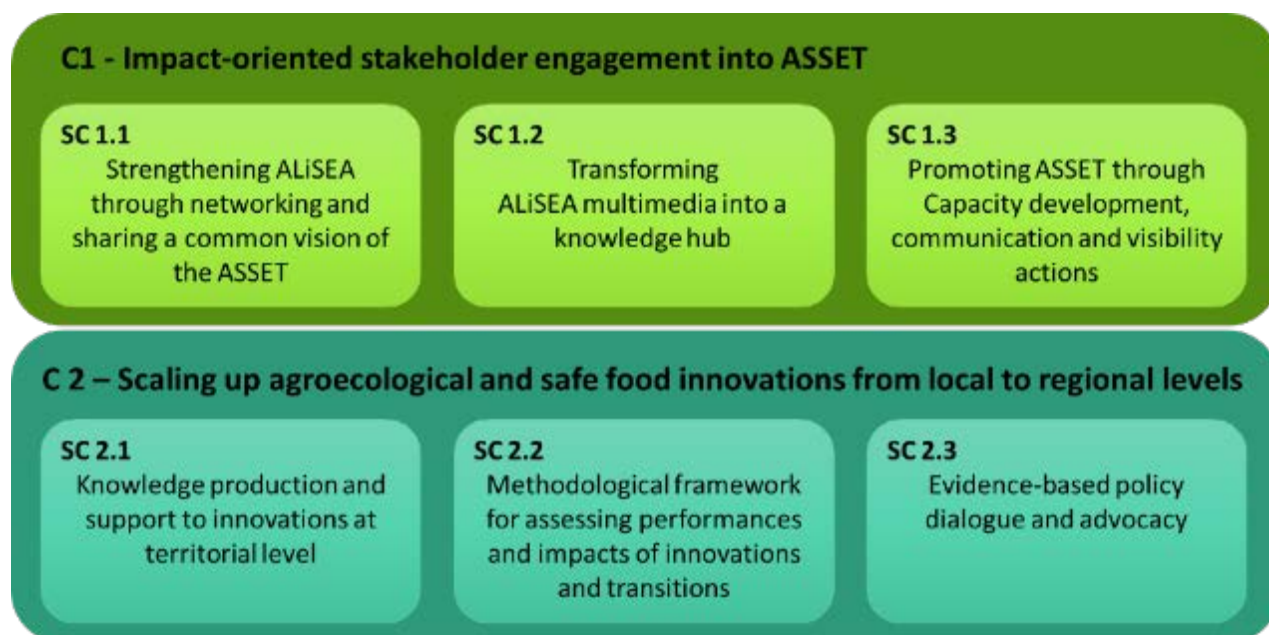


Figure 1. ASSET project structure



Figure 2. Potential flagship sites in the four targeted countries

2. Scoping study process

2.1 Scoping study methodology

Scoping study in Son La Province followed a 5-step process:

- **Step 1: Data preliminary collection and field studies preparation (Aug 2020 – Jan 2021)**
 - o Preliminary list of projects and actors established using online platforms e.g. ALiSEA online library, CIRAD Open library, ACIAR website, Google and Google scholar etc.
 - o Preliminary list of projects and actors completed during a participatory workshop organized in Hanoi on 11 November 2020 to map the initiatives and actors related to agroecology and safe food systems in the different pre-identified sites(14 participants)
 - o 32 projects and initiatives pre-listed (Annex 1) and mapped (Figure 3)
 - o 21 online interviews conducted with project managers and key informants to get additional information and documents about pre-identified projects (Annex 2)
 - o 13 projects described using common description forms template (Annexes 3 to 16)
- **Step 2: Field study (26 – 29 January 2021)**
 - o Meetings and field visits organized in four sites: Son La Province capital, Thuan Chau, Mai Son, and Moc Chau districts, where most of the projects were identified.
 - o 46 stakeholders met: 23 public institutions, 9 cooperatives, 8 companies, and 6 projects (Annex 17)
 - o Notes from interviews and field visits are presented in Annexes 18 to 48
- **Step 3: Restitution to Son La Province (26 March 2021)**
 - o Scoping studies preliminary results and identified knowledge gaps were presented to Son La Department of Agriculture and Rural Development (DARD), Agriculture Extension Service Center (AESC), and Crop Production and Plant Protection (CPPP) Department
- **Step 4: Restitution at the occasion of the Vietnam consultation workshop (31 March 2021)**
 - o Scoping studies preliminary results incorporating feed backs and adds-on from Son La Province officials were presented to the 38 participants of the consultation workshop
- **Step 5: Data analysis and reporting (Nov 2020 – May 2021)**
 - o Several loops of data analysis and consolidation incorporating feedbacks from participants of the consultation workshop
 - o Final scoring and note attribution to the site

2.2 Scoping study team

- 1 French Msc student (Clémence de Villiers, ISTOM) involved in data preliminary collection
- 11 experts from 6 institutions (Table 1) involved in field study, data analysis and reporting



Figure 3. Participatory mapping of main identified projects in Son La Province

Table 1. List of experts who participated to field study in Son La Province

N°	Expert name	Expertise domain	Organization
1	Le Thi Thanh Huyen	Animal Scientist	NIAS
2	Dinh Khanh Thuy	Animal Scientist	NIAS
3	Trong Hieu Do	Agronomist	NOMAFSI
4	Le Khai Hoan	Agronomist	NOMAFSI
5	Pham Cong Nghiep	Socio-economist	CASRAD
6	Pham Thi Hanh Tho	Socio-economist	CASRAD
7	Hoang Minh Huy	Policy specialist	IPSARD
8	Hoang Thanh Tung	Policy specialist	VAAS
9	Nguyen Ngoc Mai	GIS specialist	VAAS AGI
10	Pascal Lienhard	Agronomist	CIRAD
11	Mélanie Blanchard	Animal Scientist	CIRAD

3. Site brief description

Table 2. Sơn La Province at a glance

Total area (km²)	14,000
Forest area (ha)	636,000 (45 %)
Agriculture area (ha)	367,000 (26 %), 96% rainfed 80% steep slope
Population (millions hab.)	1,25
Main ethnic group	Thai (55%), 12 groups in total
Population density (hab/km²)	89
Rural population (%)	86
Poverty rate (%)	33
Main economic sector	Agriculture (44% GDP) ~12,900 billion VND (2019)
Main cultivated crop	Maize (110 000 ha)
Main farmers sources of income	Maize, fruits, vegetable Pigs, poultry

3.1 Location

Sơn La Province is located in the northwest mountainous region of Vietnam (Figure 4). The national road No 6 provides easy access from Hanoi to the eastern districts of the Provinces (e.g. 4-5 hours drive from Hanoi to Van Ho and Moc Chau Districts, 7-8 hours drive up to Sơn La capital).

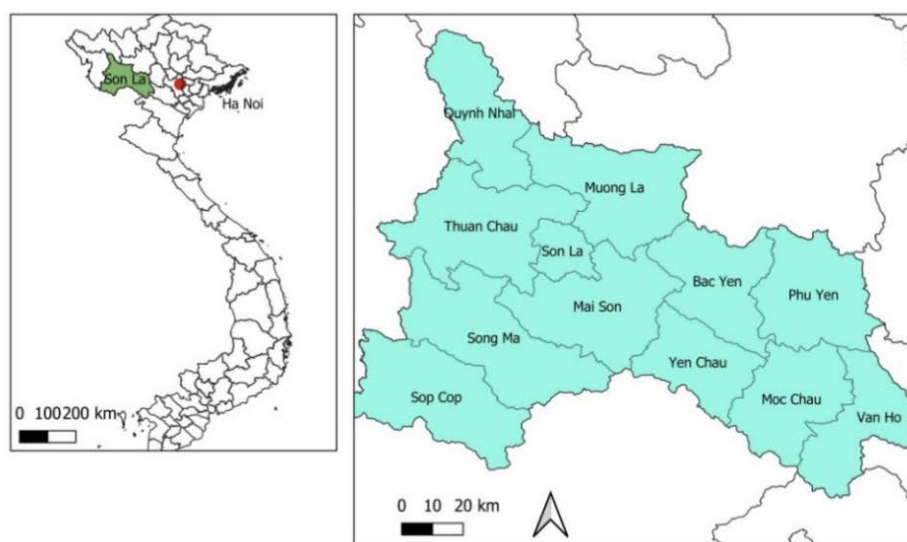


Figure 4. Sơn La Province location map

3.2 Biophysical characteristics

Sơn La Province covers a total area of 14,000 km² including 26% of agricultural land (about 370,000 ha) and 45% of forest land (Hoang *et al.*, 2017). Sơn La Province is characteristic of north-western mountainous regions, with mountains and plateaus covering 75% of the province, from 100 to 2900 m asl (Nguyen X.H. and Pham A.H., 2018), 80% of arable land being under steep slopes (Hoang *et al.*, 2017), with 67% above 15°. About 96% (307,000 ha) of cultivated area is rain fed (SFRI, 2016).

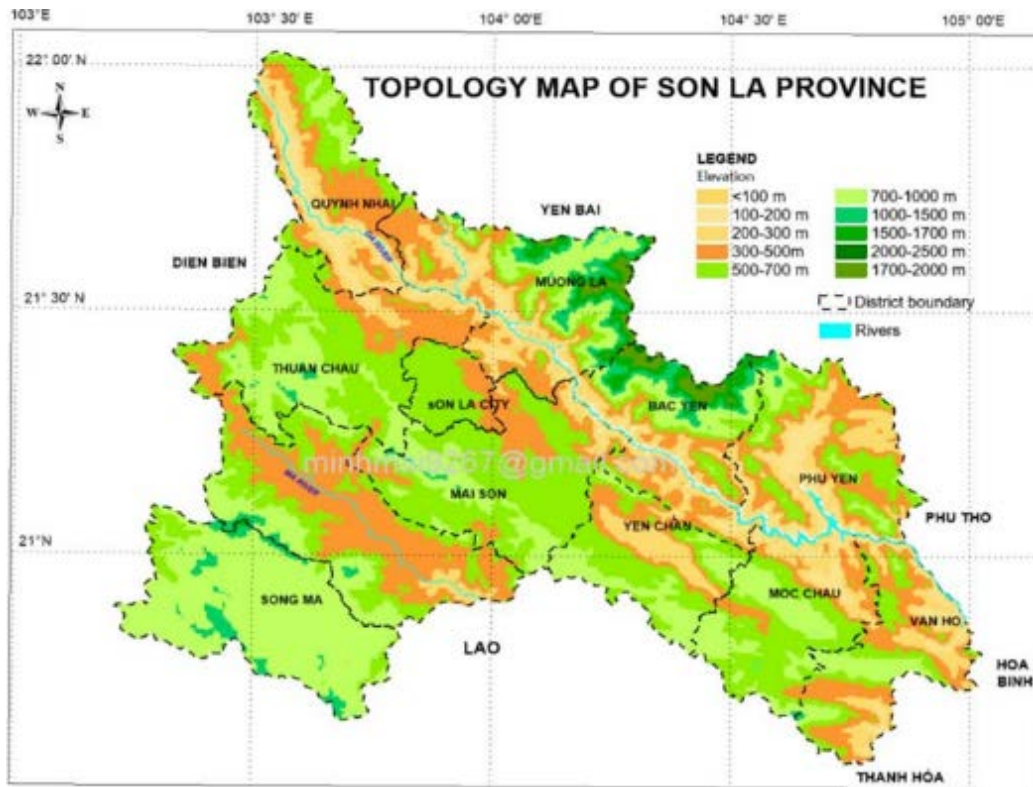


Figure 5. Sơn La Province topographic map (Nguyen Ngoc Mai, 2020)

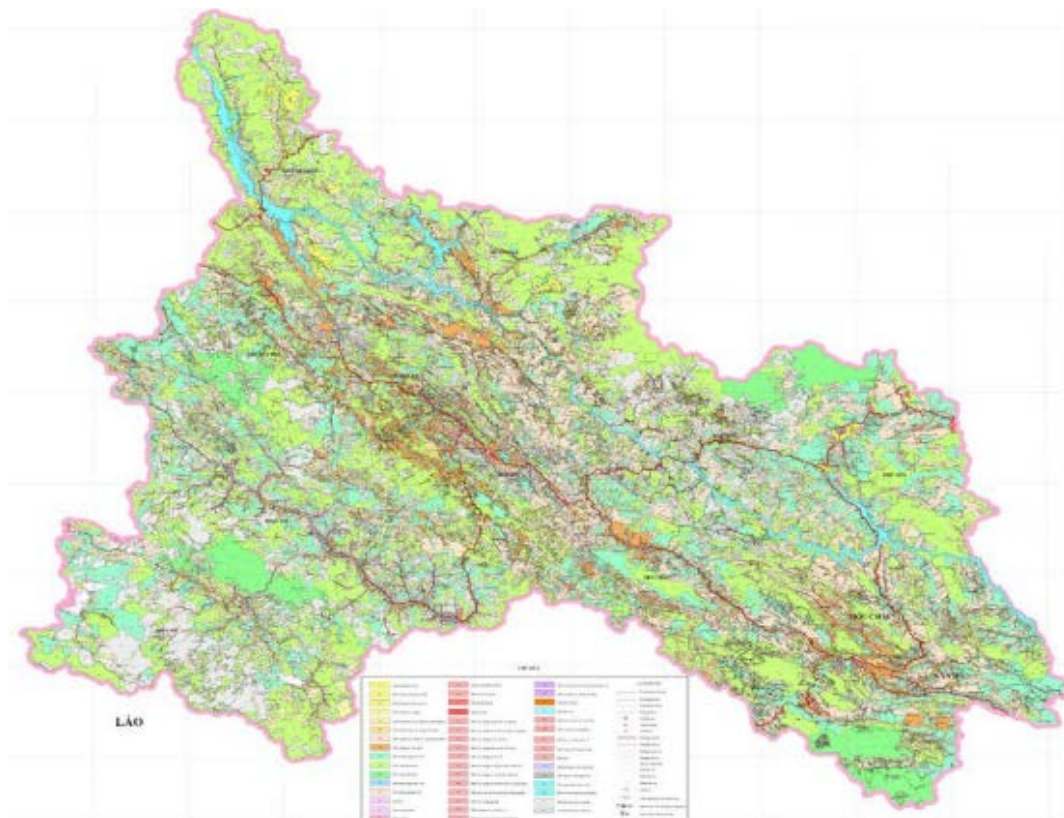


Figure 6. Sơn La Province land cover map (Nguyen Ngoc Mai, 2015)

Climate in Sơn La is both tropical and mountainous with two distinct seasons: a rainy and hot season from April to September (with temperature of 27.4°C in May), and a dry and cooler season from October to March (with temperature of 14.4°C in January). This climate allows the cultivation of both tropical and temperate crops (e.g. temperate fruits, vegetable). Total mean annual precipitation is of 1400 mm, with 215 rainy days/year. Rainfall is mostly concentrated from April to September, this period accounting for 69% of the annual precipitation.

Many farmers continue to grow on slopes, even above 25° (Nguyen X.H. and Pham A.H., 2018). Soil erosion and decreasing yield are severe environmental and economic issues in the region (Zimmer *et al.*, 2017).

3.3 Population characteristics

Sơn La Province has a total of 1,2 million inhabitants. It ranks first in the population in the Northwest region. Mean population density is 89 Person/km² (GSO, 2020). The population has grown by 15% over the last decade, and the majority (86%) lives in rural areas. Sơn La city is the main urban area with 106,000 inhabitants. The migration rate has also increase between 2009 and 2019 (from 2.4 ‰ to 3.9 ‰). There are 12 different ethnic groups in Sơn La Province, with a majority of Thai people (55%), Kinh (18%), H’mong (12%), and Muong (8%; Douxchamps *et al.*, 2019).

3.4 Socio-economic data

The average income per capita in Sơn La has increased from 802,000 VND in 2010 to 1.6 million VND in 2019. Households income comes from different activities, including crop and livestock production, forest non-timber products (FNTPs) and plantation. Cash crops provide the highest contribution to households’ income, followed by livestock (Tiemann, 2019). Data in 2013 show the difference in income from cash crops per altitude (Figure 7). In the lowlands (<800 m asl), vegetable, plum and sugarcane provided the highest income, followed by maize monocrop and paddy rice (Staal *et al.*, 2016). By contrast, Shan tea and cassava provided the highest income in the highland (>800 m asl). Upland rice brought the least income in this area, but remains a key staple crop for Upland dwellers.

Regarding livestock production, the mean income from chicken, cattle and pig production was of 4.7, 2.5, and 1.3 million VND / household / year respectively (Staal *et al.*, 2016). Non-timber forest products (NTFPs) provide an important source of income, especially for the H’Mong and Dao people who live in high-altitude areas, at low investment costs, which is crucial for poor families (Tiemann, 2019).

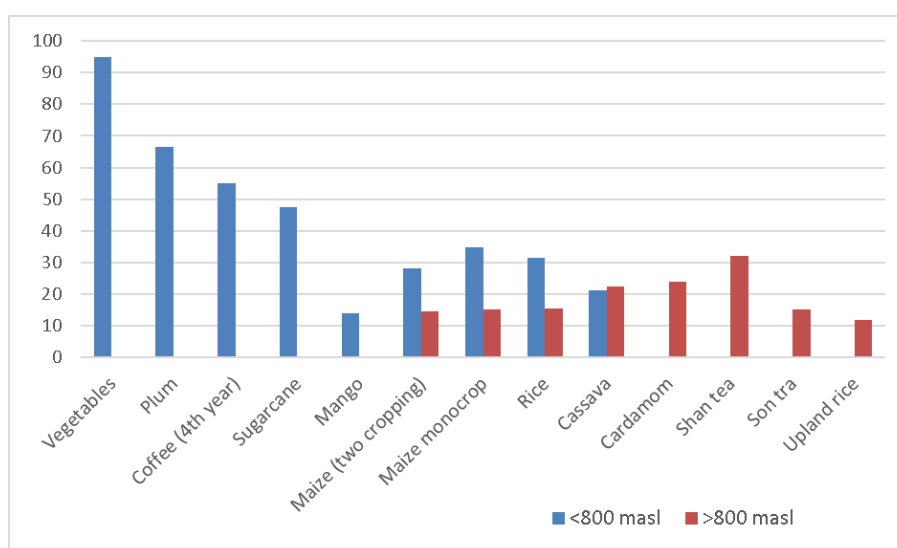


Figure 7. Income from main cash crops according to altitude (in millions VND/ha; Staal *et al.*, 2016)

The province has a high poverty rate (33%), the second highest of Vietnam, just behind Dien Bien Province (GSO, 2019). Thai and Muong experience poverty rates of 31.8% and 25.5% respectively. The Hmong group is amongst the poorest in the province with a poverty rate of 64% (Cowatersogema, 2018 ; GSO, 2019).

3.5 Main past-recent transformations

Trends in crop production: the boom of maize cultivation, and the recent partial shift to fruits and industrial crops

Maize in Sơn La Province was promoted in the late 1990s by the government and local extension services by providing seedling and cultivation techniques (Duteurtre *et al.*, 2016). Maize cultivated area boomed the following years (Figure 8) and its production increased twelvefold between 1995 and 2015 – from 50,000 to 650,000 tonnes (Figure 9). It reached its peak in 2012 with more than 160,000 ha (>45% of Province agricultural land) of maize cultivated mainly in Song Ma (30,710 ha), Mai Son (29,970 ha), Phu Yen (26,850 ha), Muong La (17,840 ha), Thuan Chau (16,250 ha) and Van Ho (14,970 ha) districts. The majority of the production (over 80%) was processed into animal feed outside the province. Maize production represented (and still represents) an important contribution to the provincial economy with maize ranking first in volume and value among the exported commodities in 2015.

The maize boom has had very important consequences for land cover, land use and smallholder livelihood in the Province. Over the past two decades, it has led to a shift in agricultural land use (related decrease in upland rice cultivation), agricultural expansion (forest and fallow conversion), a generalization of ploughing practices on slopes, and increased use of herbicides and chemical fertilizers. With the shift to intensive hybrid maize monoculture, agricultural productivity has increased considerably while rural poverty has receded. However, in the mid-2010s a growing number of farmers were confronted with land degradation (e.g. soil erosion, chemical pollution), crop losses (drought in 2012), and economic issues (excessive production costs, decrease in maize productivity and price – competition with maize imported from the US, increased indebtedness). In 2015, maize requested farm gate price in Sơn La was about 250 USD/tonnes (4-5 million VND/tonne), much higher than maize imported price (190 USD/tonne; Son La DARD, 2021).

In line with the government agriculture restructuring plan (MARD-ARP, 2015), the province has been supporting since 2016 the shift from “low economic profitability” crops (e.g. upland rice, maize, and cassava) to fruit and industrial crops cultivation in all districts (program “change of land use for growing fruit tree in the uplands” according to the Document 121 – TB/TU issued on 30/11/2015). Consequently, the fruit cultivation area in the Province has increased by about 50,000 ha over the past five years (Figure 8), with an increase notably in longan, mango, Son Tra apple and plum plantations (Table 3). Vegetable production has also boomed during the past five years (Figure 9), notably in the eastern districts (e.g. Van Ho, Moc Chau) closer to Hanoi.

Trends in livestock productions: The rise of chicken, cattle and milk productions

Chicken population has been multiplied by 3.5 over the past two decades to reach about 7 million heads in 2019 (Figure 10). Cattle population has also tripled during the past two decades to reach 280,000 heads in 2019 (Figure 11).

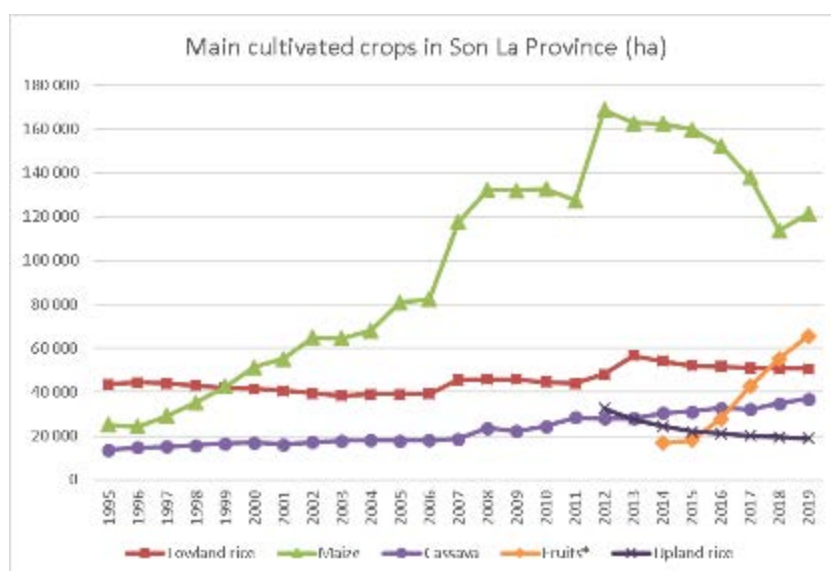


Figure 8. Change in cultivated area in Son La Province (GS0, 2019)

Table 3. Past recent change in fruit and industrial crops cultivated area

Cultivated area (ha/Year)	2014	2015	2016	2017	2018	2019
Mango	3 440	3 695	4 133	7 796	11 580	15 176
Orange	371	408	580	1 049	1 411	1 802
Son Tra Apple			7 067	9 975	11 365	12 221
Longan	7 569	7 900	8 495	11 590	14 659	16 685
Litchi	241	237	241	253	278	262
Banana	2 031	2 260	2 482	3 190	3 907	4 921
Pomelo	255	293	420	1 078	1 714	2 198
Plum	2 784	2 965	4 054	6 702	8 383	9 751
Apricot	233	251	295	350	482	609
Passion fruit		5	86	552	1 390	2 023
Total Fruits	16 924	18 014	27 853	42 535	55 169	65 648
Rubber	6 459	6 178	6 206	6 039	6 039	5 879
Coffee	11 296	16 897	17 287	17 600	17 128	17 840
Tea	4 003	4 123	4 290	4 508	5 008	5 474
Sugar cane	5 240	5 492	6 300	8 039	9 451	8 770

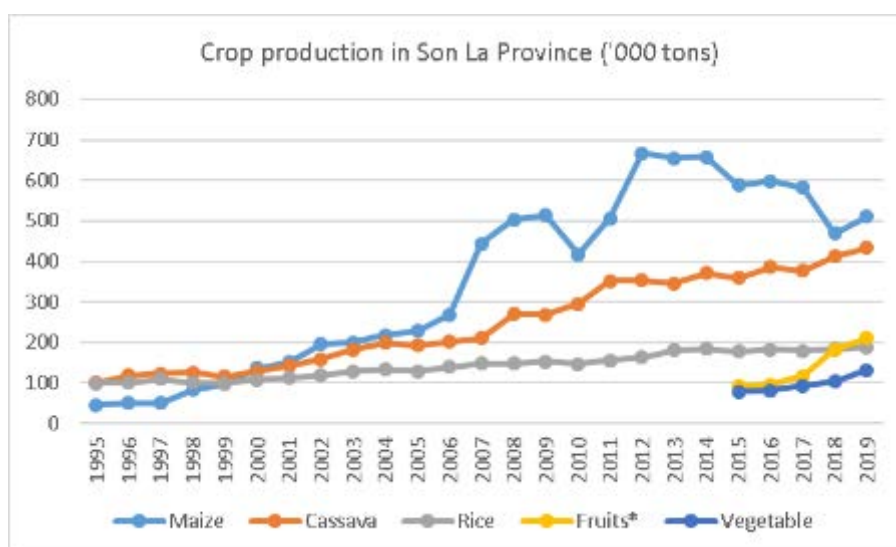


Figure 9. Change in crop production in Son La Province (GS0, 2019)

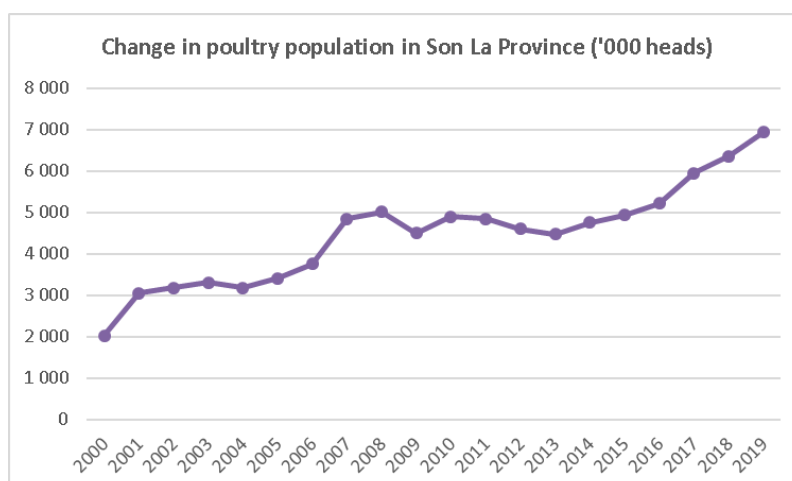


Figure 10. Change in poultry population in Son La Province (GSO, 2019)

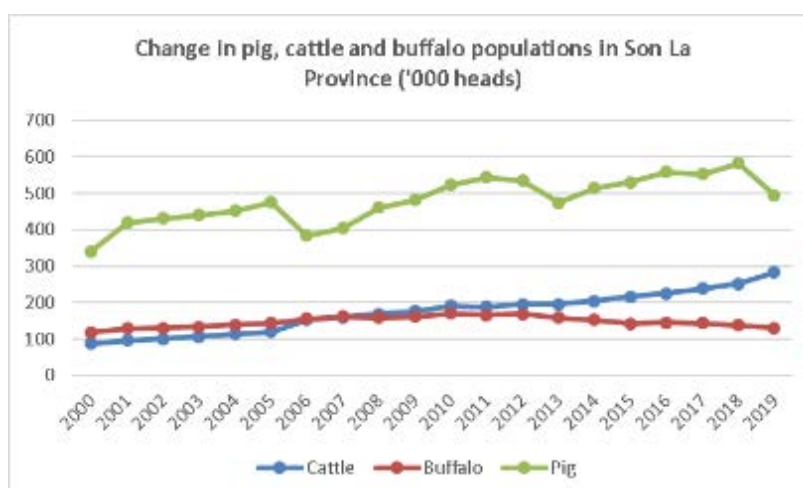


Figure 11. Change in pig, cattle and buffalo populations in Son La Province (GSO, 2019)

Table 4. Changes in live-weight meat production (in tonnes) in Son La Province (GSO Son La, 2019)

Live-weight meat production (t)	2015	2016	2017	2018	2019
Buffalo	4,686	4,858	4,820	4,975	5,145
Beef	4,564	4,462	4,815	5,380	5,577
Pork	35,105	38,944	45,644	47,535	46,565
Chicken ('000)	9,874	10,456	11,196	11,941	12,733

Buffalo population has been slightly decreasing since the early 2010's with the development of motorization for lowland rice land preparation. But the province still accounted for 130,000 buffalo heads in 2019 (Figure 11), the third largest of the northern region (GSO, 2019).

Pig population has also been increasing during the past two decades (multiplied by 1.5) but in a less steady way as compared to cattle, due to epidemic disease episodes, the latest related to African Swine Fever (ASF) occurring in 2018 (Figure 11). Milk production has boomed in Moc Chau district doubling between 2012 and 2016 to reach 75,000 litres/year (GSO Son La, 2019).

A recent and strong focus on value chains development

During the maize boom period (in the 2000s), different Sloping Agricultural Land/ Soil Conservation Technologies (SALT) have been tested and promoted with farmers to reduce soil erosion and land degradation in maize cultivated sloping areas. These models included intercropping systems, reduced tillage with mulching, mini-terraces, forage grass strips or maize canes strips.

Since 2015, sloping agriculture is no longer a priority and provincial authorities have been focusing their support on the development of priority value chains through four main levers: support farmers access to inputs and knowledge, support farmers organizations, support local processing of agricultural products, support agricultural products certification and increased visibility.

Support farmers' access to inputs and knowledge: priority crops (e.g. fruits and industrial crops) seedlings and fertilizers are subsidized; model farmers are supported by farmers unions; training for farmers capacity building are organized by provincial and district agricultural service centres and sponsored by the private sector (agro-chemical companies). There are, in the Province, 50 establishments both producing and trading fruit seedlings, and 54 establishments only trading fruit seedlings (DARD, 2019). For livestock systems, low interest credits are proposed for priority livestock systems (e.g. cattle), technical models development & capacity building are supported (e.g. raising cattle in stalls, silage production, and forage technology); free vaccination campaigns are organized (e.g. cattle vaccination against foot and mouth disease, twice a year)

Support to farmers organizations: the number of registered cooperatives has been multiplied by six during the past five years, shifting from 101 in 2015 to 615 in 2020 (GSO Son La, 2021). Being organized in a cooperative is a prerequisite for farmers to receive supports from the province (e.g. subsidized seedlings and fertilizers).

Support to local processing of agricultural products: Son La Province succeed over the past decade in attracting agricultural product processing companies to establish in Son La Province.

Regarding fruit processing, there are currently more than 500 fruit processing units and four majors companies: Nafood (passion fruit) in Moc Chau district, Doveco in Mai Son, TH True Milk and Korean IC Food Group in Van Ho. Fruits are processed into wine (e.g. plum, banana, Son Tra apple), jam (e.g. plum), juice and concentrate (e.g. passion fruit), or dry fruits (e.g. banana, jack fruit). 19/5 cooperative in Moc Chau district produces for instance wine with a capacity of 200 litres of wine/day, and consumes 200 tonnes of plums/year; Viet Phap Wine Co., Ltd. in Yen Chau town, consumes 500 tonnes of banana to produce 4,000 litres of banana wine/year, and dry bananas 3 tonnes/year; and Bac Son Co., Ltd. produces Son tra wine in Bac Yen district (Son La DARD, 2021). However, most of farmers' fruit production is still sold to collectors in bulk without any processing.

For tea processing, various key stakeholders according to district. In Moc Chau district, Moc Chau Tea Company is processing and selling MC Shan Tuyet tea. In Van Ho district, there are seven processing facilities for tea, facilitating transport and storage (Zimmer *et al.*, 2020). Factories produce 3 types of tea, black (exported at 99%), green (95% goes on the domestic market) and Oolong. The factories predominantly export their production (70%) and only 30% goes to the Vietnamese market. In Thuan

Chau district, Thu Dan tea company is producing black, Oolong tea. It has a total of 350 ha and connect with 400 households in the region to grow tea. Tea production is 300 tonnes/year. They export 100% of tea products to Taiwan and Japanese markets.

Regarding coffee, Sơn La coffee Cie, Phuc Sinh, and Cat Que are the main processors and traders.

Sơn La Starch Processing Factory is in Mai Son district. The factory is formerly a State-owned organization and purchased by Fococev JSC company since 2012. They invested a total of more than VND 60 billion to upgrade equipment and install a biogas digester. In 2012-2013, Thuan Chau, Bac Yen and Mai Son districts were the main production areas of the company. In 2016, they mainly grew cassava in Bac Yen, Thuan Chau, Muong La, Phu Yen district due to the crop restructure in Mai Son district, and turned to Song Ma and Sop Cop districts since 2017. Currently, the factory doesn't focus on developing the production area, but purchasing cassava according the free market mechanism. The factory purchases fresh root from around 80 local traders from Mai Son (accounting for 30 per cent of the total purchase) and 20 traders from different districts within the province (70 per cent) (Interviews, 2021)

There are also other processing companies for rubber, sugar cane, and macadamia.

Support to agricultural products certification and increased visibility: the Province supported the national strategy to engage farmers into quality standards (VietGAP, GlobalGAP, Organic, Safe products) by paying certification fees during the first year(s). VietGAP is necessary to sell outside the province, whereas GlobalGAP/Organic are necessary to export (national/international). There were in 2019, 75 cooperatives (about 1,200 ha) under VietGAP. Since 2019, the province started developing organic farming models, total of 245 ha including 40 ha fruit trees, 20 ha tea, 5 ha vegetables, and 180 ha paddy rice (DARD, 2020). Certified products are increasingly sold in supermarkets in Hanoi (such as Fivimart, Metro, VinMart) and also in other Vietnamese provinces. In some districts, the production is organized to follow export procedure e.g. 228 ha were granted 25 codes (?) by the Center for Plant Quarantine allowing fruit export to Australia and America including (DARD, 2021):

- 153 ha of Longan (16 codes), 10 cooperatives and 2 companies cooperating with farmers;
- 41 ha of Mango, 5 cooperatives and 1 company in Mai Son and Yen Chau districts to organize;
- 27 ha of Plum (2 codes), 2 cooperatives;
- 6 ha of avocado, 1 cooperative.

The promotion of high-tech agriculture

High-tech methods and tools have been promoted in agriculture during the past years, including the use e.g. of new varieties with high quality, disease resistance, and different growth cycles (including two varieties of late and early ripen longan, four varieties of avocado, red dragon fruit, green grapefruit, Queen Custard Apple, crispy persimmon, etc.).

Water saving irrigation system (2,345 ha notably in Moc Chau, Mai Son, Phu Yen, Bac Yen, Soc Cop districts and Sơn La city) and greenhouses production (~50 ha) have been supported for the production of vegetable, fruits (notably strawberry in Moc Chau and Mai Son districts), flowers, tea and coffee.

Tourism and agro-tourism

Tourism is seen by local authorities as one of the future economic pillars of the province and a new livelihood pathway to be supported. Its current contribution to the provincial growth development is still limited (0.53% of provincial GDRP in 2019; GSO Sơn La, 2020). But the province welcomed, in 2019, 2.6 million visitors, a 45% increase as compared to the last five years. Informal household businesses such as homestays, restaurants, guesthouses accounted for 91.2% of the total sector revenue, and 8.8% of the revenue came from formal private companies. 6 local tour operators and 162 accommodation establishments (mostly in Moc Chau district) were found in Sơn La in 2019. Hospitality

facilities have recently grown with two additional 3-star and one 4-star hotel. New recreation sites include Pha Luong and Happy Land. It is estimated that the sector employed around 4,800 people in 2018, of which 1,720 employees are located in Moc Chau (Cowatersogema, 2018).

Moc Chau has become an emerging tourist destination for the domestic tourist market due to the uniqueness of its highland landscape and climate. Moc Chau district has experienced a rapid increase in investment in tourism since 2014 when it became a National Tourism Area. It is estimated that Moc Chau has contributed to around 82% of the sector’s total revenue and has registered a growth rate of around 40-45% in recent years. Van Ho district has also experienced a rapid growth in tourism, though it presents less potential for growth compared to Moc Chau (Cowatersogema, 2018).

In the last few years, the private sector has also invested in agro-ecotourism models combining landscape beauty (e.g. fruit trees blooming, tea landscape) with local delicatessens such as tea, honey, dairy milk, vegetable and strawberries. This might not only help to diversify tourists experience but also generate numerous jobs for local people, especially ethnic women (Cowatersogema, 2018).

3.6 Agricultural systems

Current crops and cropping systems

Globally, rice (lowland and upland), maize, and cassava remain the main cultivated crops (Figure 12). Tea, coffee, sugar cane and vegetable are the main cash crops, while fruits are expected to play an increasing role in the coming years in households income generation, at least for farmers close to main roads.

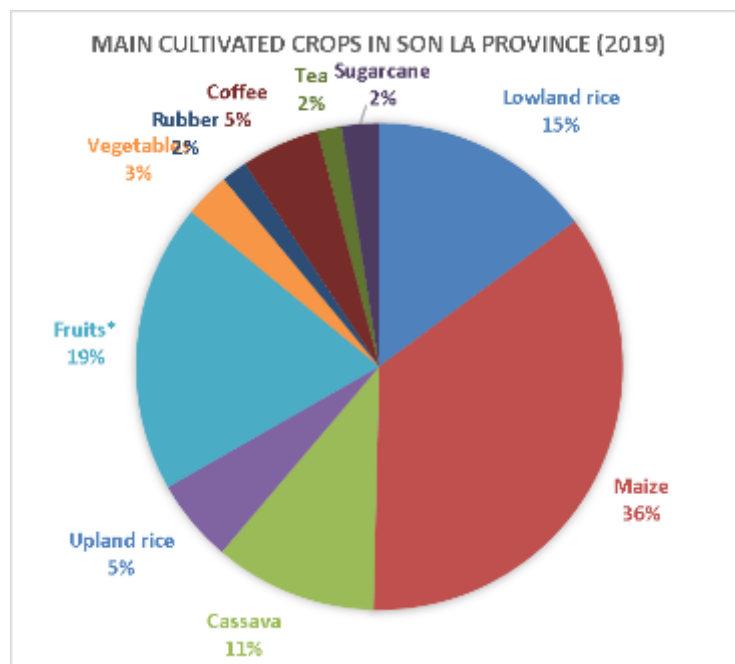


Figure 12. Main cultivated crops in Son La Province in 2019 (Son La statistic Office)

Cropping systems are different according to elevation (below or above 800 m asl, Figure 7) and districts with (DARD, 2020):

- Vegetable production area (about 11,000 ha in 2020) concentrated in eastern districts (Moc Chau, Van Ho, Yen Chau, and Mai Son) with Hanoi as main export market;
- Sugarcane (about 8,500 ha in 2020) mainly concentrated in Mai Son and Yen Chau districts;

- Cassava (about 37,000 ha in 2020), mainly concentrated in Thuan Chau, Song Ma, Mai Son, Quynh Nhai, Phu Yen, and Bac Yen districts;
- Tea (about 5,600 ha) concentrating mainly in Moc Chau, Van Ho, and Thuan Chau districts;
- Coffee (about 17,800 ha), mainly in Mai Son, Thuan Chau districts: and Sơn La city;
- Rubber (about 5,900 ha) concentrated mainly in Muong La, Thuan Chau, Van Ho, Yen Chau, Quynh Nhai, and Mai Son districts;
- Fruit trees (about 73,000 ha), in which: longan is concentrated mainly in Song Ma, Mai Son, Yen Chau, and Moc Chau districts; Plum is concentrated mainly in Moc Chau, Yen Chau districts, and Sơn La city; Mango is concentrated in Yen Chau, Muong La and Mai Son districts.

Focus on fruits production: There are currently 148 enterprises and cooperatives growing fruits in the province (Son La DARD, 2021) including: 30 cooperatives in Yen Chau district, 21 enterprises and cooperatives in Moc Chau district, 20 cooperatives in Song Ma district, 17 enterprises and cooperatives in Mai Son district, 16 cooperatives in Bac Yen district, 11 enterprises and cooperatives in Van Ho, 10 cooperatives in Thuan Chau, 6 cooperatives in Sop Cop, 5 cooperatives in Muong La; 5 enterprises and cooperatives in Quynh Nhai district; 4 enterprises and cooperatives in Phu Yen district, and 3 enterprises and cooperatives in Sơn La city. Some fruits brandings have been established e.g. Yen Chau mango (geographic indication), Song Ma longan, Muong Thai orange (Phu Yen district), Mai Son custard apple (*Na*), Moc Chau avocado, and Son tra for Muong La, Bac Yen and Thuan Chau districts. The province has developed 35 safe fruit chains for a total area of about 550 hectares (460 ha under VietGap certification, 90 ha under safe product certification).

Livestock systems:

Poultry and pigs are the main cash products (Table 4) but dairy (in Moc Chau district) and beef cattle play also an important role in farming systems.

Most of livestock are raised in smallholders' farms. However, there are in the province many large livestock farms, which are presented as favouring the relationship between businesses and smallholder farmer through economic contracts, giving farmers a better access to market and to new techniques in livestock production. There was about 2,000 concentration livestock farms/ enterprises in the province in 2020 (Son La DARD, 2021), including:

- 269 buffalo and 594 beef farms concentrated in Muong La, Song Ma, and Phu Yen districts;
- 1,128 pig farms concentrated in Van Ho, Mai Son, and Yen Chau districts;
- 6 chicken farms concentrated in Muong La and Quynh Nhai districts.

In addition, the province and districts supported VietGAP certification or equivalent to:

- 3 pig farms (Chieng Hac Livestock Company Limited, Minh Thuy Private Enterprise, Loc Phat Livestock Joint Stock Company BLLT) accounting for 81,000 pigs / 4,363 tonnes produced;
- 2 chicken farms (Vietnam My Agricultural Service Cooperative, Dong Tam High-Tech Agricultural Development Investment Cooperative) accounting for 18,000 chickens or 27 tonnes;
- 5 bee cooperatives (Ong Sơn La Center, Moc Chau Veterans Service Cooperative, Nam Phuong Agricultural Cooperative, One Thanh Co., Ltd.).

3.7 Market systems

Agricultural systems partial shift from maize to fruits and vegetables also led to changes in market systems. The development of fruits and vegetables value chains in Sơn La Province are considered as pilot emerging cases of market innovation in Vietnam.

In 2020, the whole province has 144 safe supply chains for agricultural and aquatic products, of which: 21 chains of safe vegetables (about 140 ha, production of about 6,000 tonnes/year); 90 safe fruit

chains (mango, longan, plum, passion fruit, avocado, orange, pomelo, strawberry etc. about 1,700 ha, production of about 15,000 tonnes /year); 1 coffee chain (16 hectares, about 130 tonnes /year); 5 tea chains (about 430 ha, 6,500 tonnes /year); 3 safe pork chains (about 4,400 tonnes /year); 2 safe chicken chains (18,000 chickens, production of 27 tonnes /year); 5 safe honey chains (6,790 beehives, production of about 650 tonnes /year); 17 aquaculture chains (2,600 cages raised on Sơn La and Hòa Bình hydropower reservoirs with the capacity of about 1,000 tonnes /year).

Market innovations in Son La Province include improved product provision, and structural market innovations which allows the small producers /cooperatives and entrepreneurs to access the high-end market nationally and globally. It mainly concerns fruit and vegetable products (organic, VietGAP, safe), pigs, beef and dairy cattle productions. These innovations are supported by both local government and development projects.

3.8 Women, youth and ethnic minority situation

Agriculture is an essential source of income for most ethnic people in Sơn La province. Ethnic women have fewer options for income generation as compared to men because of their roles as wives and mothers who have to take care for health and welfare of family members. They rarely worked as hired labor. They rely on their husband’s earnings from waged labours and other non-farming activities. There are strong social stigmas regarding women migrating for work. Therefore, migration is increasingly popular in ethnic minority areas, but mostly for men.

Ethnic minority women rarely participate in the agricultural market systems. They rely heavily on traders except for tea, vegetable and some fruit productions. They are little engaged in semi-processing, marketing or other post-harvest value added activities. This combined with poor or non-existent storage facilities, results in farmers selling their products right after harvest, which can create seasonal over-supply and lead to low farm gate prices.

Although ethnic minority farmers were encouraged to switch from staple crops to higher value cash crops such as fruits, and industrial crops, many of them consider this transition as highly risky due to lack of relevant production skills, information on which varieties to produce, and access to inputs required for these non-traditional crops. Extension services currently support engagement into hi-tech farming. However, this latter requires very high investment that go beyond the financial and technical capacity of ethnic minority households (Cowatersogema, 2018).

4. Status against selection criteria

4.1 Site relevance regarding targeted challenges

Sub-criteria	Score
1.1 Challenge #1: Agriculture systems connected to urban areas: Feeding booming cities through safe and fair food circuits	3
1.2 Challenge #2: Rice-based systems in lowlands: Sustaining rice production as the cornerstone of food and farming systems	1
1.3 Challenge #3: Crop-livestock-forest in rainfed uplands: Preserving uplands from social and environmental degradations	2.5

Scoring options: 0. Not relevant; 1. Little relevant; 2. Relevant; 3. Highly relevant.

Due to its topography (75% mountainous, 80% of arable land under steep slopes), current land cover (45% forest land), and population (ethnic minorities), the preservation of upland crop-livestock-forest systems (challenge 3) appears as a high-ranking priority in the Province. However, the absence of clear

local objectives and policy to reduce the impacts of annual crop-based sloping agriculture (e.g. maize, cassava, upland rice) on soil erosion and land degradation is a constraint to tackle this challenge.

Agricultural product value chains development and support for increased connections with national and international markets is the main current development strategy in the Province. Farmers engagement into quality management (e.g. VietGAP, Global GAP) seems to be mainly motivated by the opportunity for new markets, but still, an increased and better connection of local agricultural systems to urban areas (challenge 3) seems highly relevant.

Lowland paddy area covers about 50,000 ha in the Province. Rice is maybe not any longer the cornerstone of farming systems but still remains an important component of household livelihood strategies. However, issues related to rice-based systems sustainability in lowlands (challenge 2) were not expressed by local authorities.

4.2 Opportunity for change and for impact

Sub-criteria	Score	Remark
2.1 Local perceptions of agricultural and food systems limits	2.5	<i>0 is eliminatory</i>
2.2 Level of interest from local authorities	2	<i>0 is eliminatory</i>
2.3 Level of interest from producers	2.5	<i>0 is eliminatory</i>
2.4 Level of interest from other market system actors	2	
2.5 Potential for market innovations	2.5	

- Local perceptions of agricultural and food systems limits

Scoring options:

0. Limits are perceived by producers or local decision makers but not by both.

1. Limits are perceived and acknowledged by producers and local decision makers but solutions and/or levers are not yet identified

2. Limits are perceived and acknowledged by local stakeholders, solutions and/or levers are identified but not yet mentioned in local rural and agricultural development plans

3. Limits are perceived and acknowledged by local stakeholders, solutions and/or levers are identified and mentioned in local rural and agricultural development plans, with set objectives and related strategy

The limits from previous agricultural development strategy (i.e. support to maize production development in the 2000's) are well perceived: decreasing maize productivity and profitability, increasing impacts on the environment.

Current issues related to agricultural development are also well stated (Son La DARD, 2021):

- Agricultural production is not really sustainable, vulnerable to natural disasters, epidemics and market fluctuations; the productivity, quality and competitiveness of some agricultural products are still low.
- The post-harvest preservation and processing of agricultural products is still low, especially deep processing. Most of the agricultural products for consumption and export are in the preliminary and raw production form, therefore, the added value is very low.
- Investment in infrastructure development has not met the requirements of agricultural restructuring of the province, especially the transport and irrigation systems of some concentrated agricultural raw material areas.
- Farm economy develops slowly; forms of association in production are still weak, and ineffective.
- Forest development under programs and projects are still limited, the efficiency is low. Illegal clearing and destruction of forests for shifting cultivation, violating the boundaries of shifting cultivation; violations of the regulations on forest fire prevention and fighting are still happening.

- Although the application of technical advances to production and mechanization in agricultural production has been improved, it has not been widely applied, only in some stages, not yet applied throughout the whole production process.

DARD report (2020) described the main lessons learnt after the last 5 years (2015-2020) agricultural development plan as follow:

- There is a need for consensus from different socio-political organizations at all levels and press agencies to mobilize people to change their farming practices and the structure of plants and animals towards the development of the market mechanism.
- The selection and determination of the development of a number of agricultural products suitable to the natural conditions of the province has dramatically increased productivity and quality (especially fruit trees), bringing about high economic efficiency.
- Expand forms of association of developing households into commodity production areas; linking cooperatives with businesses to promote the strengths of each type in the sustainable agricultural product chain. In which attention is paid to developing agricultural cooperatives; cooperatives help households in organizing production management; at the same time, it must attract enterprises to associate with cooperatives to support them to continue bringing science and technology into production and investment in agricultural processing for export and increased added value.
- Mobilization and efficient use of resources for the investment of development, making best use of the local advantages of cassava, in association with actively attracting investment resources from all economic sectors to create favourable conditions for the development;
- Outscaling the efficient models in order to supplement and improve the mechanisms and policies to suit the actual situation in the locality.

However, the potential limits from the current agricultural development strategy (support to fruit sector development) are not discussed e.g. Investment costs to shift from annual to perennial cropping systems and supporting mechanisms? Profits and return on investment of fruit tree plantations in a context of decreasing prices? Water, pesticides, and plastic use for fruit and legumes production?

A score of 2.5 was therefore applied.

- Level of interest of local authorities

Scoring options:

0. Limited interest of local authorities for the project and project objectives

1. Some interest but no resources identified to support the project implementation

2. Local authorities are interested and plan to allocate human resources for the project

3. Local authorities are interested and plan to allocate both human and financial resources for the project

Local authorities are interested and willing to allocate human resources for the project.

- Level of interest of producers

Scoring options:

0. Limited interest from farmers for AE and SFS innovations

1. Some farmers interested but implementation of AE systems rely on external support (project)

2. More farmers interested. Some of them are implementing AE systems without external support

3. Many farmers interested in the same location (village/village cluster. district). Farmers are organized to support the AE and SFS development process (cooperative, association, committee)

Some farmers and local entrepreneurs are already implementing AE practices without external supports (e.g. organic pomelo, organic tea/coffee, safe vegetable). Many farmers are organized into

cooperatives, but the way these cooperatives are operating can still be improved. In addition, farmers motivation for engaging into quality practices is still uncertain. Score of 2.5 applied.

- Level of interest of other market system actors

Scoring options:

0. Beyond producers, no off-takers (e.g. traders, processors, service providers, wholesaler, retailer, consumers)

1. Some off-takers but passive

2. More off-takers, including active ones

3. Many off-takers, including active ones. Existing (or under-construction) local platform supporting increased linkages between market systems actors

The motivation of market system actors others than producers was difficult to assess and appear highly variable between value chains and actors. Premium for quality product exists (e.g. +10 to 30% higher selling price for VietGAP in average, variable premium for organic) but only 75 cooperatives out of 615 currently under VietGAP standards (12%).

- Potential for market innovations

Scoring options:

0. Limited possibilities of market diversification, market extension, complementary products development and placement; 1. Some possibilities but little explored yet; 2. Possibilities under exploration (existing feasibility studies) up to pilot testing – small scale initiatives are in place

3. Market innovations are existing. New and/or complementary products are already placed, and certification, labelling and quality management mechanisms are in place. Actions are taken to gain in visibility and efficiency.

Geographic indications have been successfully tested (e.g. Moc Chau safe vegetable) but still remain limited. OCOP (One commune One Product) existing strategy but with limited impact so far. Online sales supported by the Province but poor implementation so far. Some successful models of agro-ecotourism with tea and strawberry (but niche market). Score of 2.5 applied.

4.3 On-going innovations and dynamics related to agroecology and safe food systems (ASSET)

Sub-criteria	Score
3.1 Technical innovations	2
3.2 Organizational innovations	2
3.3 Institutional innovations	2

A total score <3 is eliminatory

A synthesis of the main on-going innovations and innovation types identified in Son La Province is presented in Table 5.

Table 5. Main on-going innovations and innovation types in Son La Province

Dynamics/innovations	Type of innovation		
	Technical	Organisa-tional	Institu-tional
1. Support to fruit and industrial crops development in sloping areas	++	+++	+++
2. Support to large ruminant increased /permanent raising in stall	++	++	+++
3. Support to dry season vegetable production	+	+++	+++
4. Support to Agro – ecotourism development		+	++
5. Promotion of sloping agricultural land technologies	+++	+	
6. Support smallholders adaptation to climate change	+	++	++

- *Technical innovations: AE practices (OA, AF, CA, SRI, AECF, crop-livestock etc.), on-farm and on-station experiments, post-harvest processing, waste management, bio-products, innovative agricultural machinery etc.*

Scoring options:

0. No initiatives/projects working on technical innovations

1. Existing technical innovations but not aligned/relevant regarding flagship main targeted challenges

2. Existing technical innovations that are relevant with flagship challenges but the level of adoption/adaptation by farmers is low

3. Existing relevant technical innovations that are applied and visible in outstanding sites

Sloping Agricultural Land Technologies (SALT): SALT technologies have been designed for the purpose of reducing agriculture-related soil erosion on sloping lands to limit negative externalities downstream, but also to increase sustainability of farming systems. Sơn La Province has a long history of interventions including SAM (2003-2005) and ADAM projects (2009-2013), ACIAR-funded maize projects (2010-2014 then 2015-2020), CIAT-led cassava project. Alternative land management practices promoted includes (Yadav et al., 2021):

- the development of mini terraces
- water harvesting techniques such as the practice of digging ditches to channel run-off water
- agronomic and agro-forestry technologies such as reduced burning of crop residues, minimum tillage, retention of plant stubble, establishment of contour hedgerows or grass strips; as well as intercropping, relay cropping and rotational cropping with:
 - annual food crops such as peanuts, rice bean, black bean, cassava, mung bean, H'mong bean, pumpkin, etc.
 - forage crops such as oat, Guinea grass and Elephant grass,
 - perennial crops such as tea, coffee
 - tree crops such as various varieties of plum, peach, nectarine, persimmon, longan, mango, lemon, and rubber.

These projects also developed training material (videos, manuals), and capacity building facilities (demonstrations sites, farmer field schools). According to PT Sen (2018), about 3,000 ha of SALT technologies including 370 ha of intercropping systems were reported in 2008 in Mai Sơn, Mộc Châu, Sông Mã and Thuận Châu districts in Sơn La Province.

But many farmers reverted back to traditional practices after project support ended, and despite recurring efforts, the dissemination of such practices has remained low (Zimmer *et al.*, 2017) for multiple reasons including (PT Sen 2018; Yadav *et al.*, 2021):

- higher labour requirements in a context of increased labour shortages and decreased maize productivity and profitability;
- lack of secure markets for secondary crops;
- no clear policy/long-term supports to insure farmers long-lasting commitments;
- animal free roaming after maize harvest threatening relay crops;
- specific challenges (e.g. crops competition in intercropping systems, rodents increased pressure in mulch-based systems, low soil fertility, insufficient water).

However, in Northwestern Vietnam farmers are still highly dependent upon maize, which is grown as a monoculture on steep slopes, providing a somewhat reliable and secure source of income. The question of maize production sustainability is still at stake, as well as the question of SALT technologies potential contribution to maize improved sustainability.

Agroforestry (AF): Agroforestry systems have also been supported by various partners e.g. ICRAF, NOMAFSI, CIRAD, VNUA. The AFLI (Agroforestry for livelihoods of smallholder farmers in northwest Vietnam) project has notably tested different AF models in 2 communes in Mai Son district: Had lot (60 HHs) and *Co noi* (24 HHs) including notably:

- Son tra- forage grass strips,
- Acacia - mango - forage grass strips,
- Longan - maize - forage grass strips,
- Shan tea - forage grass strips,
- Acacia - longan – coffee – soybeans – forage grass strips,
- Teak – plum – coffee – soybeans – forage grass strips,
- Macadamia – coffee – soybeans.

Despite positive results regarding AF systems profitability (Figure 13), impacts on soil erosion prevention, fertilizers and nutrients losses reduction (Figure 14, 10-30T of soil retained/year/ha as compared to maize monocropping), AF systems adoption is still limited (about 50 ha of model farmers). Labour requirements for the cut& carry of forages, distance from field to animals stalls, and access to plant material (forage cuttings) seem to be the main constraints for adoption.

AgroEcological Crop Protection (AECPP): many farmers engaged in organic farming (fruits and vegetable or using biocontrol products (EM, Trichoderma, traps); some appeared sensitized to systemic approaches linking soil health with plant health (e.g. organic pomelo producer in Tuan Chau district). These innovations appear little project or DARD-driven. Most farmers explained that they took the information on internet (Youtube). Some benefitted from experts from VNUA university.

Composting: composting models supported in 12 districts and cities. 13,000 tonnes of organic fertilizer produced from composted material. Test with compost. Initial results show that plants grow and develop well, product quality is improved, the selling prices of some crops increase by 10-30% compared to conventional products.

Other technical innovations including the use of e.g. new varieties with higher quality, better disease resistance, and different growth cycles (late vs early ripen) have also been mentioned but their adoption status is not known.

- *Organizational innovations: Participatory land use planning, farmer's access to market and services, farmers interactions with consumers, private and public actors, quality management, etc.*

Scoring options:

0. No initiatives/projects working on organizational innovations

1. Existing organizational innovations but not aligned/relevant regarding flagship main targeted challenges

2. Existing organizational innovations that are relevant with flagship challenges but the level of institutionalization and/or autonomy of the organizations and platform that emerged is still low, fragile, and highly dependent on external/project support

3. Existing relevant organizational innovations. The organizations and/or platforms are operational and autonomous (or have a strategy towards autonomy)

There is a strong support and trend for farmers organizing into *cooperatives* to favour access to inputs, knowledge and markets. However, this process is still recent (> 2015) and many of these cooperatives need to be strengthened.

Farmers Field Schools (FFS) have been supported by ACIAR since 2012 (Nicetic, 2015) as a new way to promote SALT technologies. But FFS are expensive to run (Yadava *et al.*, 2021).

Profitability analysis of agroforestry systems compared to maize monoculture

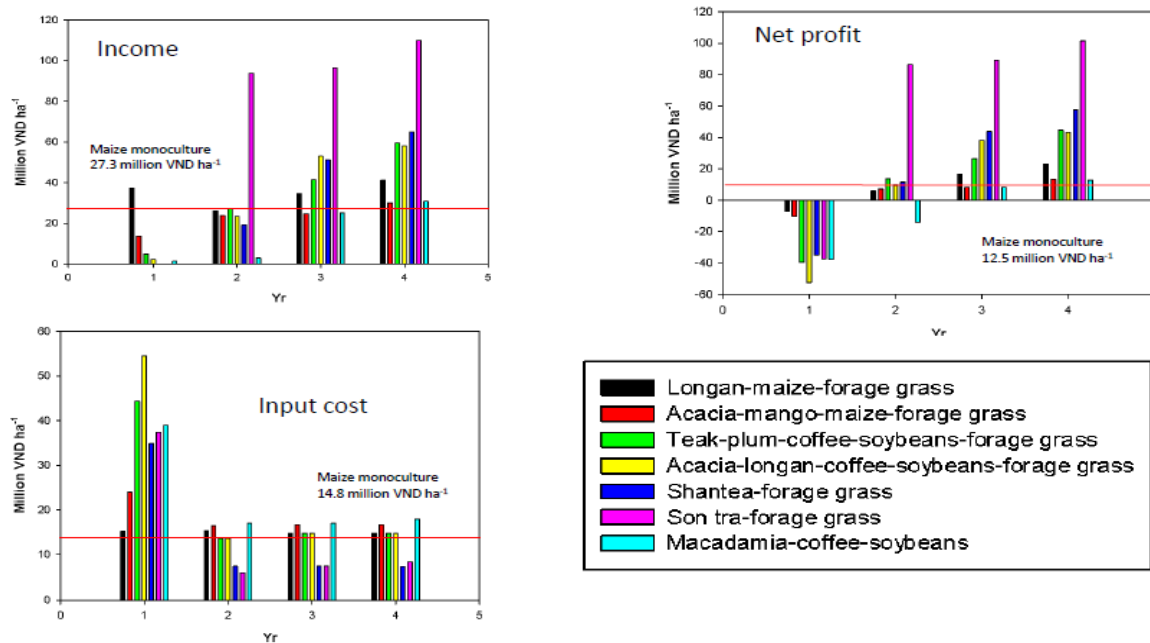


Figure 13. Profitability analysis of agroforestry systems (Icraf, 2019)

Soil erosion control

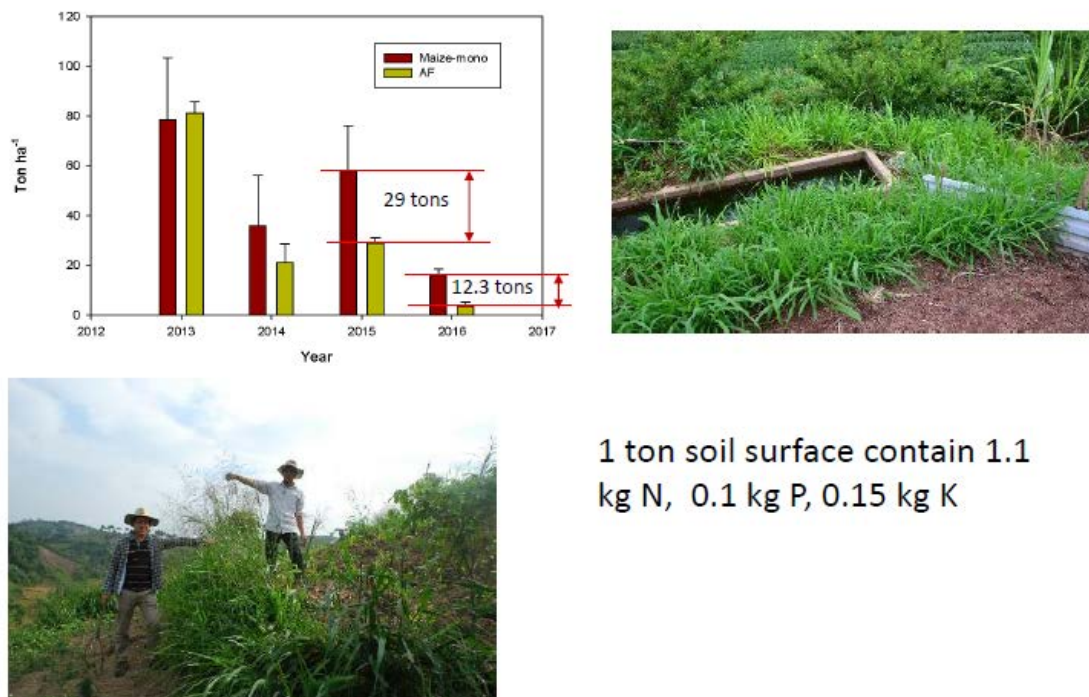


Figure 14. Soil erosion control under agroforestry systems (Icraf, 2019)

- *Institutional innovations: Access to inputs (seeds, bio products, machinery), visibility of AE products (branding, certification, marketing), sensitization campaigns, local entrepreneurship, policy dialogue mechanism, Incentives etc.*

Scoring options:

0. No initiatives/projects working on institutional innovations
1. Existing institutional innovations but not aligned/relevant regarding flagship main targeted challenges
2. Existing institutional innovations that are relevant with flagship challenges but that are still under way and highly dependent on external/project support
3. Existing relevant institutional innovations that led to the definition of new policies and/or support mechanisms. Supports for the enforcement/application of these policies are set or planned

Existing institutional strategy for value chain development (branding, certification, promotion of local products in national fairs) and incentives (subsidized inputs for priority value chains) but policies related to quality management (production, waste management, processing and packaging) can still be improved.

Policies and incentives related to livestock systems development are still unclear (e.g. animal feed need assessment and feeding systems development strategy, animal health management).

Several existing Public private partnerships (PPP): companies sign contracts with groups of farmers; before that, the companies and the local government agreed on what activities and how they are carried out in the locality. During the implementation, the companies can recruit the local technical staff or grass-root mass organizations to work with the producers. This is locally considered as an appropriate approach to build relationships among the value chain stakeholders. But limited information so far about PPP efficiency to support smallholders livelihood improvement.

A lot a research-development projects (see next section) but the involvement of local authorities/officers in these projects is still limited. Therefore, the awareness and knowledge of local authorities on the contribution and the introduced innovation of these projects are still limited, and result in limited out-scaling of the innovation after the project ending. The innovations introduced by R-D project are rarely reported by the local authorities in Province region so far. In general, governmental officers and local authorities are knowing more provincial and national programs such as 135, 35A. Initiatives related to Safe food systems are mainly know by local authorities through the governmental programs e.g. supporting the establishment of brandings/ certifications.

4.4 Opportunity for partnerships

Sub-criteria	Score
4.1 Number and diversity of potential partnerships	3
4.2 Flagship accessibility	2

- *Number and diversity of potential partners that could be associated through the intervention*

Scoring options:

1. Local decision makers, farmers, and research institutions are the main partners
2. The partnership could involve other stakeholders but who have little leverage power on the transition process
3. The partnership could involve other stakeholders with potentially high leverage power (e.g. consumers groups, private company)

There are many projects and a diversity of stakeholders involved in the field of agroecology and safe food systems in Son La Province (Figure 15) including the private sector (farmers groups, processing companies).

DARD appears as a key and central partner. Partnerships with AFLII (Agroforestry), Li-Chan (Livestock systems), and ACIAR projects (maize, temperate fruits, and vegetable) should be possible.

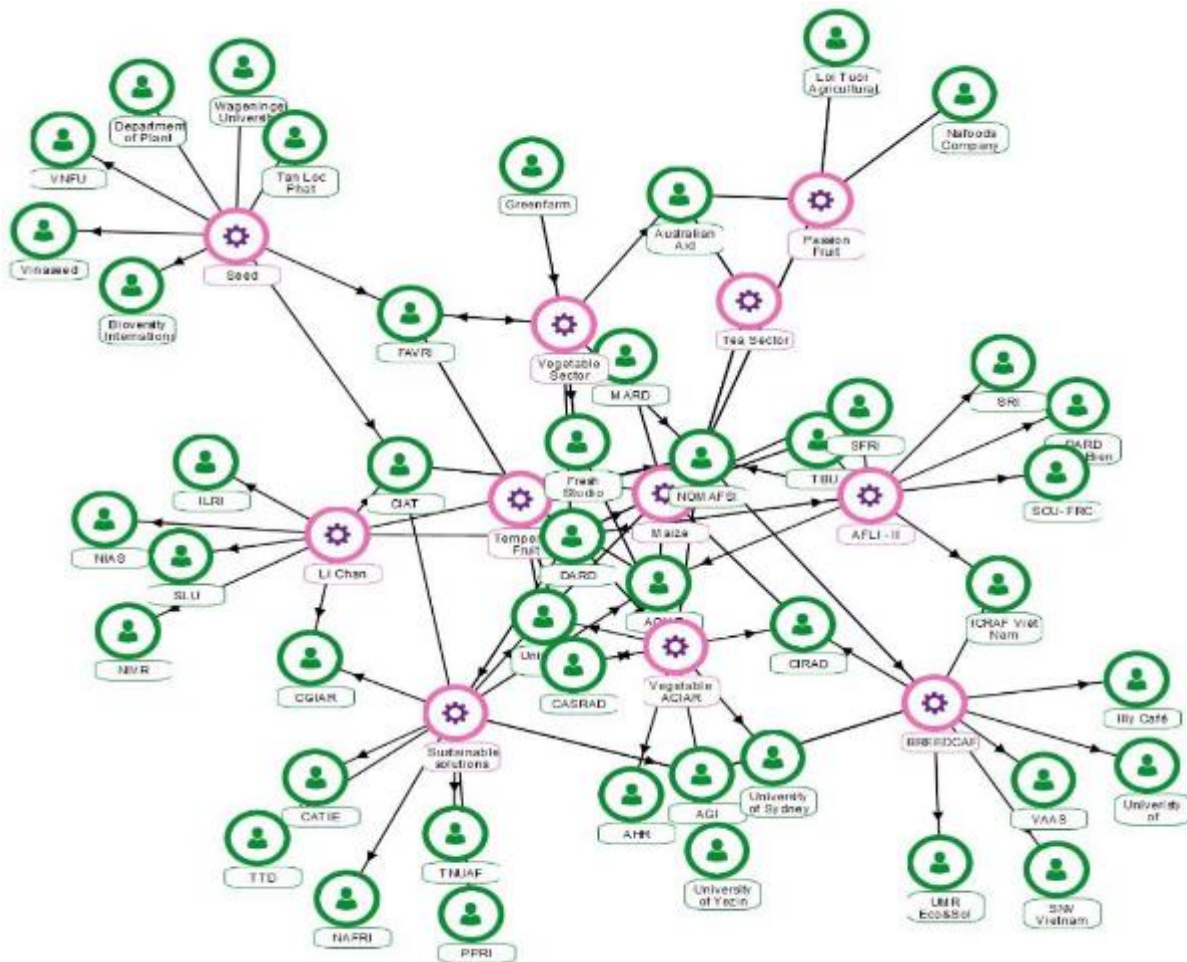


Figure 15. Mapping of the main stakeholders intervening in Sơn La province (De Villers, 2021)

- *Flagship accessibility: the accessibility of the site may affect the frequency and cost of interventions, as well as the opportunities for strengthening and improving the connections to market.*

Scoring options:

0. The flagship is at more than 8 hours driving distance from national capital and cannot be reached by air transportation; 1. The flagship is at more than 8 hours driving distance from national capital but can be reached by air transportation; 2. The flagship is at more than 4 hours but less than 8 hours driving distance from national capital; 3. The flagship is at less than 4 hours driving distance from national capital

4.5 Opportunity for co-funding of field activities

Criteria	Score
5. Opportunity for co-funding of field activities	1

Scoring options:

0. The opportunities for co-funding of field activities are limited to null
 1. Other initiatives would agree to contribute to the funding of joint-activities (e.g. training, workshops, exchange platform etc.); 2. Other initiatives would agree to support the funding of out-scaling activities but below a maximum total contribution of 50,000 euros/year; 3. Other initiatives would agree to support the funding of out-scaling activities beyond a contribution of 50,000 euros/year

This aspect was difficult to assess at that stage. But opportunities of co-funding activities at minima with Sơn La DARD and ACIAR projects.

4.6 Local expertise/champions that can be mobilized to support the transition process

Criteria	Score
6. Local expertise/champions	2

Scoring options:

0. Little to no local experts to support the transition process

1. Some local experts/champions but not available or interested to support the transition process

2. Some local experts/champions interested and ready to engage but having limited recognition/leverage power

3. Some local experts/champions interested and ready to engage, having strong experience in exchanging with other stakeholders and benefiting from a good recognition/reputation at local level

Some experienced farmers and/or cooperative leaders that could be mobilized in farmer-to-farmers (F2F) or training of trainers (ToT) processes

4.7 Existing data and knowledge

Sub-criteria	Score
7.1 Current land cover and land use, LULC changes and land use trajectories	1
7.2 Local food systems	1
7.3 Agricultural value chains and quality	1,5
7.4 Local livelihoods and livelihood development strategies	1
7.5 Situation of youth, women, and ethnic minorities	0,5
7.6 Local policies and rural development strategies	2
7.7 Agricultural extension facilities and strategy	1
7.8 Actors and investment in the agribusiness sector	1,5
7.9 Performance and impact of conventional agricultural systems	0,5
7.10 Performance and impact of innovative AE and SF systems	1

Scoring options:

0. Data not existing or available;

1. Data existing, available but partial and/or fragmented

2. Data existing, available; recent and comprehensive review of the situation

See literature review.

- Local policies and rural development strategies

1. Resolution No. 258/2008 dated 12/12/2008 of The Provincial People’s Council on policies to support the development of large cattle keeping in the period 2009-2015.

2. Decision No. 3067 /2013 dated December 17, 2013 of the People's Committee of Sơn La province on regulating policies to support the application of good agricultural practices in agriculture, forestry and water. products in the province of Sơn La.

3. Resolution No. 88/2014 dated September 17, 2014 of the Provincial People's Council on issuing specific policies to encourage enterprises and cooperatives to invest in rural agriculture in the province in the period of 2015. – 2020

4. Decision No. 3551 /2014 dated December 24, 2014 of the People's Committee of Sơn La province promulgating the regulations on criteria for large fields in Sơn La province by 2020.

5. Resolution No. 17/2016 dated December 14, 2016 of the Provincial People's Council on policies to support the development of cooperatives growing fruit trees and medicinal plants under the canopy of fruit trees in the province in the period. 2017 – 2020

6. Resolution No. 57/2017 dated July 21, 2017 on supporting the development of crops, animals, aquatic products and processing and consuming safe agricultural products in the province for the period 2017-2021.

7. Resolution No. 28/2017 dated 15/3/2017 of the Provincial People's Council on support levels for the improvement of complex gardens and fruit tree gardens in Sơn La province

8. Resolution No. 76/2018 dated March 27, 2018 of the People's Council of Sơn La province on policies to support the development of production, processing and consumption of safe agricultural products and food in the locality from 2018 to 2021.

9. Plan No. 142 / 2019 dated 10/6/2019 of the People's Committee of Sơn La province on converting crop structure from rice cultivation land to other crops combined with aquaculture in the province Sơn La for the period of 2019-2020

10. Plan No. 241 /2019 dated 12/12/2019 of the People's Committee of Sơn La province on the development of the safe supply chain of agricultural and aquatic products in Sơn La province by 2020

11. Resolution 128/2020 dated Feb 28, 2020 of the People's Council of Sơn La on issuing policies to encourage investment in agriculture and rural areas in Sơn La province.

4.8 Intervention area and number of potential beneficiaries

Criteria	Score
8. Number of potential beneficiaries	2

Scoring options:

1. <500 ha and/or 500 smallholders

2. From 500 to 2,000 ha and/or smallholders

3. > 2000 ha and/or 2000 smallholders

Difficult to assess at that stage.

4.9 Environmental and social risks

The status of the Province regarding 5 main environmental and social risks are presented in Table 6.

Table 6. Main environmental and social risks in Son La Province

	YES	NO	Comments
1. Location: Does the site area include or is it in close proximity to:			
<ul style="list-style-type: none"> • A protected area 	X		<ul style="list-style-type: none"> • Ta Xua special-use forest biodiversity conservation area, in the area of Muong Thai and Suoi To communes (Phu Yen), Hang Dong and Ta Xua communes (Bac Yen) - 17 651ha • Xuan Nha Nature Reserve (22,000 ha) in Van Ho and Moc Chau districts • Copia Conservation Area, in Co Ma, Long He, Chieng Bom and Nam Lau communes, in Thuan Chau district (19 745ha) • Sop Cop Nature Reserve (in Song Ma and Sop Cop districts (18,709 ha) • Muong La Nature Reserve, in Hua Trai, Nam Pam, Ngoc Chien commune, in Muong La district (15,800ha)
<ul style="list-style-type: none"> • A sacred or cultural site 		X	<ul style="list-style-type: none"> • Historical and cultural relic of Que Lam Ngu Che - Temple of King Le Thai Tong To 3, Chieng Le Ward, Son La City • Tham Tat Tong scenic spot Ban Bo, Chieng An ward, Son La city Tat Tong cave relic is a natural rock cave located under a large mountain range running in the northeast-northeast direction of Son La city. This is a water cave located at the foot of a mountain range. • Historical site of Moc Ly Fort, in Moc Chau District (memory of Indochina war) • Scenic Cave of Bat Cave, in Moc Chau District • Historical relic of Na San fortress group in Chieng Mung commune, in Mai Son district (memory of Indochina war 1954)? • Relic of Ho Chieng Khoi scenic spot Ban Put, in Chieng Khoi commune, Yen Chau • Historic Sites of Co Noi Fork in Co Noi Commune, in Mai Son District (memory of Indochina war 1954) • Historical relic of Vietnam - Laos revolution Lao Kho village, Phieng Khoai commune, in Yen Chau district • Historical relic of Muong Bam tower in Ban Lao, Muong Bam com., Thuan Chau • Tang Me Ban Loi Cave Archaeological Sites, in Suoi Bang Commune, Van Ho District • Archaeological site of the ancient stone field Khac Khe Ho Hang Chu com., Bac Yen
<ul style="list-style-type: none"> • Wetlands, mangroves 		X	Xuan Nha Nature Reserve part of the watershed of the Ma river, one of the main sources of water for domestic use and irrigation for households in Thanh Hoa province.
2. Will the project require (land use)			
<ul style="list-style-type: none"> • A change in land rights (formal or traditional) 			Not relevant: flagship site not yet selected
<ul style="list-style-type: none"> • Economic losses for all or part of the target populations (including informal uses) 			Not relevant: flagship site not yet selected
<ul style="list-style-type: none"> • Increase deforestation 			Baseline: Forest cover of 42% in 2019 (Son La Statistical yearbook)
3. Site Context			
<ul style="list-style-type: none"> • Are indigenous peoples or traditional local communities present in the project area? 	X		12 different ethnic groups; Thai (55%), Kinh (18%), H'mong (12%)
<ul style="list-style-type: none"> • Are there any protected species or critical habitats in the project area? 	X		33 species of rare plants listed in IUCN 2010 red list, and of those species 11 species are as endangered, 19 species as vulnerable and 3 species as critical. 51 species are rare, some species have high conservation value such as the jet-black gibbon.
4. Is the project likely to cause			
<ul style="list-style-type: none"> • Loss or restriction of access to natural resources (water, timber, gathering) 			Not relevant: flagship site not yet selected
<ul style="list-style-type: none"> • Increases in Water requirements, Erosion risks, Flooding risks, waterborne diseases 			Not relevant: flagship site not yet selected
5. Have local changes due to climate change been taken into account in the project design?			Not relevant: flagship site not yet selected

5. Conclusion

5.1 Scoring results

Table 7. Recap scoring against selection criteria

Criteria	Flagship score	Maximum Score	Flagship score_%
1. Site relevance	6,5	9	0,72
2. Opportunity for change and impact	11,5	15	0,77
3. On-going innovations and dynamics related to AE and SFS	6	9	0,67
4. Opportunity for partnership	5	6	0,83
5. Opportunity for co-funding	1	3	0,33
6. Local expertise and champions	2	3	0,67
7. Existing data and knowledge	11	20	0,55
8. Number of potential beneficiaries	2	3	0,67

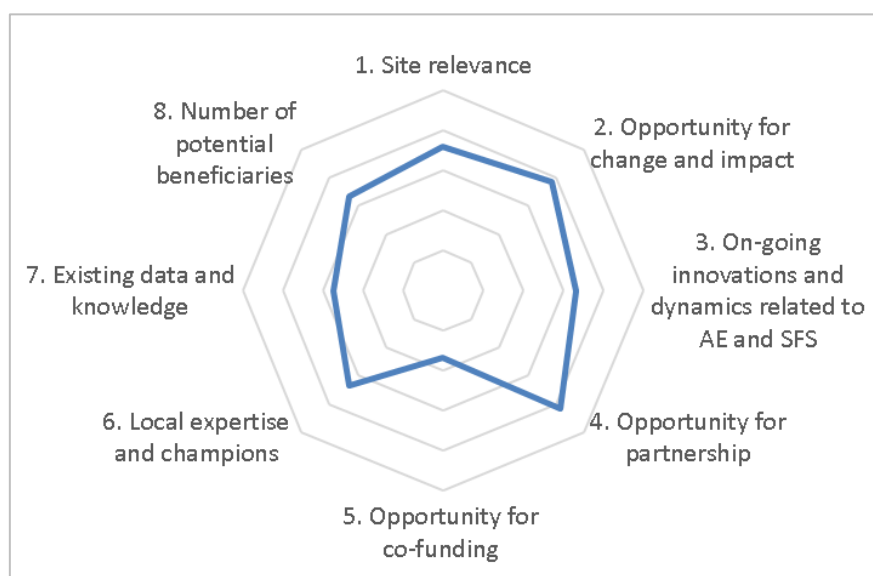


Figure 16. Spidergram representation of scoring for Son La Province

5.2 Site average note

Table 8. Site average note

Criteria	Coefficient weighting	Site
1. Site relevance	1	0,72
2. Opportunity for change and impact	5	3,83
3. On-going innovations and dynamics related to AE and SFS	4	2,67
4. Opportunity for partnership	1	0,83
5. Opportunity for co-funding	2	0,67
6. Local expertise and champions	3	2,00
7. Existing data and knowledge	3	1,65
8. Number of potential beneficiaries	1	0,67
TOTAL	20	13,0

5.3 Global assessment: Advantages and drawbacks for selecting the site as flagship site in Vietnam

Main advantages

- Possibility tackling simultaneously two main challenges:
 - uplands preservation from degradation
 - food circuit safety improvement (fruits, vegetable, meat)
- Many on-going initiatives (> 30 projects) and visible on-going transformations (at least near main roads)
- High potential for diversified partnership: DARD, research institutions, NGOs, processing companies, farmers' cooperatives, Tay Bach University
- Possible co-funding of activities with ACIAR

Main drawbacks

- Distance from Hanoi : 5-8h drive
- No clear objectives/strategies:
 - For agricultural areas and communities distant from the roads
 - Fight against land degradation/soil erosion in sloping areas

6. Literature review

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7. Annexes

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Annex 1: List of the main projects and initiatives identified in Son La Province

N°	Project full name	Acronym	Main topic / objective	Main crop / livestock/ Ag. product	Implementing institution(s)	Project Partner(s)	Funding agency(ies)	Period
1	Vegetable Sector Development		Value chain development	Vegetable	GREAT	Van Ho PC, DARD, Greenfarm, FSI, FAVRI, NOMAFSI	AusAid	2019 - ?
2	Improving livelihoods in Myanmar and Vietnam through vegetable value chains	Vegetable project	Alternative to pesticide use, Value chain development	Vegetable	APR	CIRAD , DARD, FSI, NOMAFSI, YAU CASRAD, UQ, SU,	ACIAR	2017 - 2021
3	Sustainable cassava disease solutions in Southeast Asia	Cassava disease	Disease management	Cassava	CIAT	UQ, AGI, PPRI, NAFRI, TTDI, CATAS, KU, WASI	ACIAR CGIAR	2019 - 2023
4	Developing and Promoting Market-based Agroforestry and Forest Rehabilitation Options for Northwest Vietnam	AFLI-II	Agroforestry development, Value Chain development		ICRAF	SCU, DARD, FRI, NOMAFSI, TBU, VAFS	ACIAR	2017 - 2021
5	Improving maize-based farming systems on sloping lands in Vietnam and Lao PDR	Maize project	Sloping land agricultural systems improvement	Maize	UQ	CANSEA, MARD, NOMAFSI, SFRI, TBU, CIAT, CIRAD, NUoL	ACIAR CRP Livestock Program	2017 - 2020
6	Sustainable livelihoods and climate resilience through Climate Smart Agriculture (CSA) and Agroforestry (AF) best practices in the North-western Mountainous Region of VN	FAO CSA AF	Climate smart agri, Agroforestry development		FAO	NOMAFSI		2019 - 2021
7	Tea Sector Development		Alternative to pesticide use, value chain development	Tea	GREAT	Son La PC, Vinatea Moc Chau, Chieng Di Tea Co.	AusAid	2019 - ?

8	Food systems engagement?				CIAT		CGIAR A4NH program	
9	Project on Support for Farmers' Income Improvement through the Revitalization of Integrated Agriculture in Hilly Areas		Integrated agriculture development		JICA	????		
10	Strengthening the Voice and Capacity of Vulnerable Ethnic Minority Farmers in Climate Resilience in Northwest Vietnam	VOF	Sustainable natural resources managt, Ethnic minorities		ADDA	PanNature, FU, VNFU, TBU	CISU	2019 - 2021
11	Strengthening leadership, coordination and economic development of the temperate fruit industry in northern Vietnam	Temperate project	Value chain development	Temperate fruits	UQ	FAVRI, NOMAFSI, VAAS	ACIAR	2019 - 2021
12	Breeding Coffee for Agroforestry Systems	BREEDCAFS	Agroforestry development, Plant material selection	Coffee	CIRAD	NOMAFSI, AGI, VAAS, SNV, UoC, Illy Café	H2020	2017 - 2021
13	Livestock-led interventions towards equitable livelihoods and improved environment in the North-West Highlands of Vietnam	Li Chan	Livestock systems improvement	Cattle	CIAT ILRI	SLU, NIAS, NIVR, NOMAFSI, DARD	CGIAR	2019 - 2021
14	Agro-biodiversity conservation and development for poor communities in response to climate change - Son La province		Sustainable natural resources managt, climate smart agricult, Poor communities		SRD		Bread for the World, Manos Unidas	2018 - 2021
15	Technologically Enhanced Agricultural Livelihoods	TEAL	Post harvest processing improvement	Coffee	CARE	Dien Bien CCD, DARD, Private coffee Co.	Aus-DFAT	2017 - 2021
16	Integrated vegetable seed systems development – Vietnam	Seed	Improvement of farmers access to plant material	Vegetable	CIAT	Biodiv Intern., FAVRI, WUn,	CGIAR A4NH program	2019 - 2022

						Vinaseed, Tan Loc Phat, VFU		
17	Scaling Up of Biotrade Initiatives Within Phyto-Pharmaceutical Sector in Vietnam	BioTrade EU Project	Sustainable natural resources management	Pharmaceutical plants	HELVETAS CRED	Vietnamese SMEs, Cooperatives, sector assoc, local gov.	European Commission	2016 - 2020
18	The cooling chain for vegetables from Son La province to urban markets		Post harvest processing improvement	Vegetable	AHR FSI			
19	Market based approaches to improving the safety of pork in Vietnam	Safe Pork	Food safety improvement	Pork	ILRI	HUPH, VNUA, NIAS	ACIAR, CGIAR A4NH prog	2017 - 2022
20	Scaling Landscape Options through Provincial Engagement	SLOPE	Agroforestry development		ICRAF	DARD PAEC	CIFOR ICRAF	2020 - 2021
21	Agricultural product value chain development through geographic indication and certification	IG	Value chain develop, GI, Agricultural product certification	Mango, Plum, Coffee	IPSARD - RUDEC	DARD	DARD	
22	Son La Vietnamses government vegetable chain mark certification		Agricultural product certification	Vegetable		CASRAD		2019 - 2021
23	Economic empowerment for ethnic minority women through developing a clean bamboo shoot value chain in Van Ho district, Son La province	Bamboo	Value chain development	Bamboo	CRED	GREAT	AusAid	2019 - ?
24	Biomass valorization?	Biomass	Improvement of biomass use		VAAS		JICA	
25	<i>Son La Province masterplan for fruit development</i>		<i>Fruit industry development</i>	<i>Fruits</i>				
26	Safe vegetable center			Vegetable			JICA	2021 -
27	Beef Province	Beef province	Livestock systems improvement	Cattle			Vietnam Gov	

28	Rice extension project			Rice		NOMAFSI		
29	Zero hunger project		NSA model for poor communities					
30	Passion Fruit		Value chain development	Passion fruit	GREAT	Nafoods, NOMAFSI, Loi Tuoi Ag. Service Coop.	AusAid	2019 - ?
31	Community-based Tourism		Community-based Tourism		GREAT	Son La's PC	AusAid	2019 - ?
32	Developing value-chain linkages to enhance the adoption of profitable and sustainable cassava production systems in Vietnam and Indonesia	Cassava	Value chain development, Sustainable production systems development	Cassava				2016 - 2020

Annex 2: List of the on-line interviews with key informants (Aug- Dec 2020)

Nom	Organisation	Fonction	Projet	Area	Date
Pham Thi Sen	NOMAFSI	Senior Researcher	Légumes ACIAR	Son La	20-août
Dao The Anh	VAAS	Vice President		Vietnam	26-août
Sabine Douchamps	CIAT	Senior Researcher	Li-chan	Son La	27-août
Guillaume Duteurtre	CIRAD	Senior Researcher		Vietnam	31-août
Hai Thanh Hoang	Rikolto	Program Coordinator		Hanoi	01-sept
Oleg Nicetic	ACIAR - UQ	Senior Researcher	vegetable, maize, temperate fruits	Nord-Ouest	03-sept
Clément Rigal	CIRAD - ICRAF	Senior Researcher	BREEDCAFS, Ecoffee	Vietnam	04-sept
Huyen Tuyen	Alliance Biodiv-CIAT	Research Associate	AH4N Programme	Son La	04-sept
Le Anh Tuan	Aus4equality	Inclusive Business Advisor	GREAT Programme	Son La	07-sept
J.-C. Castella	IRD	Research Directeur		Vietnam	07-sept
Tan Loc Nguyen Thi	FAVRI	Researcher	Filière légume	Son La	09-sept
Linh Hoang Nguyen	CASRAD	Researcher	Filière légume	Son La	09-sept
Nguyen Thi Thanh Hai	NOMAFSI	Researcher	AFLli	Son La	18-sept
Tu Tuyet Nhung	PGS Vietnam	President of PGS Vietnam		Vietnam	21-sept
Mayu Ino	Seed to table	President of Seed to Table		Vietnam	28-sept
Pierre Ferrand	FAO	Agricultural Officer (Agroecology)	TAPE	Vietnam	01-oct
Ha Thi Lan Anh	Fresh Studio	Business Development Manager	Filière légume	Son La	02-oct
Mai Huong Nguyen	IPSARD- RUDEC	Deputy Director	Projets gouvernementaux	Vietnam	07-oct
Martina Spisiakova	APAARI	Knowledge Management Coord		Vietnam	12-oct
Nguyen Lan Giang	CRED	Director	Bamboo	Son La	14-oct
Dinh Thi Thuc Vien	CIAT	PhD Student		Son La	15-oct
Fed Unger	ILRI	Senior Scientist	Safe Pork	Nord	09-déc
Hung Nguyen Phi	NOMAFSI	Senior Scientist	Mais	Son La	10-déc

Annex 3: Project Description form – AFLI II

- Name of the project : Developing and Promoting Market-based Agroforestry and Forest Rehabilitation Options for Northwest Vietnam
- Project acronym : AFLI-II
- Documents or web page introducing the project / initiative :
<https://www.aciar.gov.au/project/FST-2016-152>
<https://reachout.aciar.gov.au/impacts-through-agroforestry-in-northwest-vietnam>
- Contact persons :
Name : Nguyen La Email : l.nguyen@cgiar.org Telephone :
Name : Nora Devoe Email : nora.Devoe@aciarc.gov.au Telephone :
- Project presentation :

The expansion of the mono-cropping systems through shifting cultivation and forest conversion has degraded forests and caused losses in yield and stable food supply for thousands of farmers in Northwest Vietnam. Moreover, lucrative markets for livestock feed is driving a transition to maize mono-cropping in this steep, sensitive terrains. As a result, the region is experiencing severe soil erosion.

One solution to the region's growing, interconnected challenges is the right mixture of forest rehabilitation and market-based agroforestry systems, which revitalizes the soil, forests, and performance of smallholder farming systems. Recognizing the potential of agroforestry, ICRAF Viet Nam, with support from the Australian Centre for International Agricultural Research (ACIAR) and the Research program on Forests, Trees and Agroforestry of Consultative Group on International Agricultural Research (CGIAR), is implementing a comprehensive agroforestry and forest rehabilitation research with local partners in Northwest Viet Nam.








- Main objectives :

This project aims to develop and promote market-based agroforestry options to improve livelihoods and enhance forest and landscape management. The specific objectives are to:

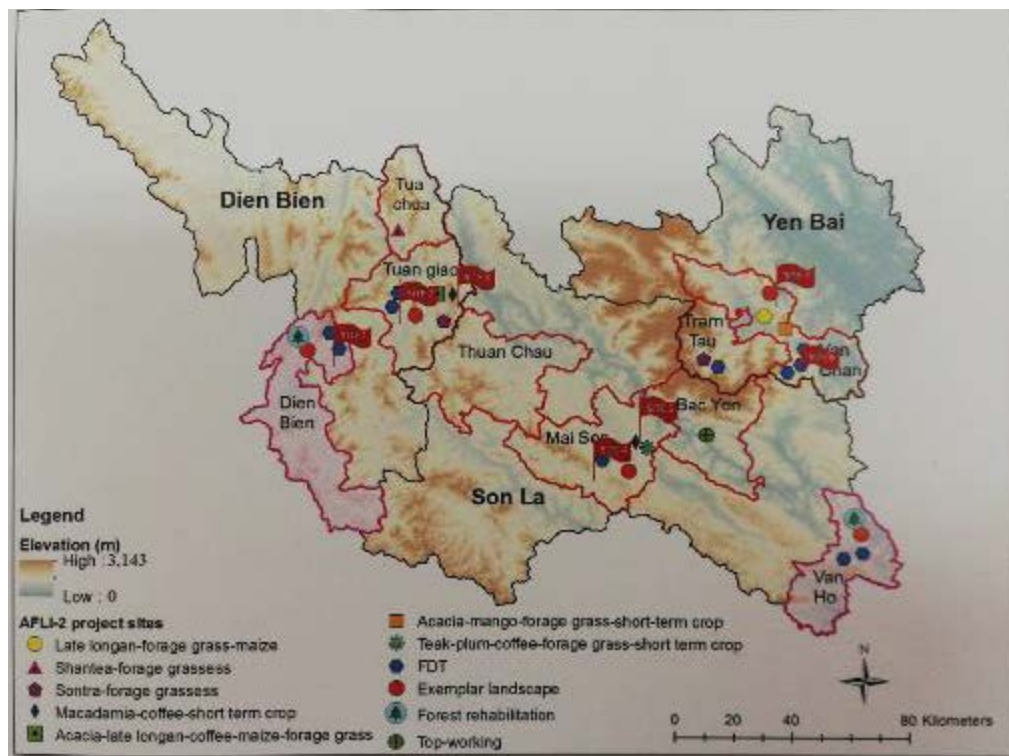
- Quantify and evaluate the performance of generic agroforestry options and tree species to underpin investment in promoting agroforestry. Understand the suitability of different agroforestry options in relation to different contexts and develop markets and policy to scale up adoption
- Understand the ecological and economic values of degraded forests and co-develop appropriate forest rehabilitation methods with local communities to enhance them.
- Understand drivers of land use change and develop cross-sector planning approaches for landscapes, integrating forests and agroforestry land uses.
- Develop local capacity for agroforestry, forest rehabilitation and integrated landscape management

- Main expected scientific results :

- Analysis of the interactions among components of multi-strata agroforestry practices (in terms of resource capture) and their long-term economic and ecological performance compared with simpler alternatives greatly enriching the growing body of agroforestry knowledge in the tropical world.

- Knowledge from participatory monitoring on the network of farmer demonstration trials enabling novel inference about the suitability of different agroforestry options over the range of contexts encountered in northwest Vietnam.
 - Suitability maps for various agroforestry options in three provinces, incorporating social, cultural, ecological and market aspects.
 - New knowledge on the economic and environmental benefits arising from alternative approaches to forest rehabilitation on degraded sites.
 - Greater knowledge on scaling up approaches for agroforestry.
 - Increased agroforestry research and teaching capacity by Tay Bac University lecturers, consequently helping to build the capacity of future agroforesters in the region
 - o Expected outcomes :
 - Increased productivity, income and farming systems' resilience, resulting from adoption of appropriate agroforestry systems, components and practices by farmers.
 - Increased research and extension capacity, resulting from formal and non-farm trainings, peer learning and mentoring, as well as capacity of women farmers to utilise agroforestry information.
 - Better targeting of policy incentives and rural development interventions at province, district and/or commune levels, consequently stimulating agroforestry investments by farmers.
 - Improved conditions of remnant natural forests, as a result of adoption of appropriate forest rehabilitation techniques by forest communities.
 - Increased livelihood opportunities for farmers and forest people from agroforestry products and sustainable extraction of non-timber forest products.
 - Improved capacity for integrated landscape planning by the Department of Agriculture and Rural Development and the Department of Natural Resources and Environment and other relevant stakeholders, leading to better programming of forest rehabilitation and agroforestation efforts in the focal provinces
-  Project starting date : April 2017
-  Project ending date : August 2021
-  Implementing institution(s) : World Agroforestry Center - ICRAF
-  Project Partner(s) :
- o Southern Cross University
 - o Vietnam Department of Agriculture and Rural Development - DARD
 - o Soils and Fertilizers Research Institute - SFRI
 - o Northern Mountainous Agriculture and Forestry Science Institute - NOMAFSI
 - o Tay Bac University
 - o Vietnamese Academy of Forest Sciences - VAFS
-  Budget : AU\$2,700,000
-  Funding agency(ies) :
- o Australian Centre for International Agriculture Research – ACIAR
 - o Consultative Group on International Agricultural Research- CGIAR
-  Localisation
- Country : Vietnam

State/Province	District	Village
Son La	Thuan Chau	
	Mai Son	
Yen Bai	Tram Tau	
	Van Chan	
Dien Bien	Tua Chua	
	Tuan Giao	



● Area of intervention

- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :

- Seeds and breeds
- Appropriate scale mechanization
- Bio-products
- Market / Labelling
- Land
- Credit / Finance

- Information
- Other :

- Promoting environmental protection :


- Alternative to pesticide use
- Sustainable natural resources management
- Resources use efficiency
- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies
- Other :

- Promoting safe food systems :

- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
- Improving food nutritional quality
- Setting up and promoting short and/or local food supply chains
- Standard setting and third party certification (public and private labels) / Branding
- Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
- Traceability / quality management along the chain / contractual arrangements
- Processing of agricultural products
- Other :

- Improvement of advisory / training systems :

- Development of training materials for farmers and field workers
- Reinforcement of agro-ecological curricula in education
- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 4: Project description form – BREEDCAFS

● Name of the project : Breeding Coffee for Agroforestry Systems

● Project acronym : BREEDCAFS

● Documents or web page introducing the project / initiative :

- <http://agritrop.cirad.fr/592828/>
- <https://www.breedcafs.eu>

● Contact persons :

Name : Pierre MARRACCINI Email : marraccini@cirad.fr Telephone :

Name : Clement Rigal Email : clement.rigal@cirad.fr Telephone :

● Project presentation :

- Main objectives :

Devise new ways of tree breeding, leading to productivity and sustainability for perennial tree crops :

- Address coffee adaptation to current and future climate conditions
- Provide a Bioinformatic toolkit
- Research Arabica F1 hybrids and Arabusta hybrids grown in the end-user environment

Improve sustainable coffee production and profitability at farmer and industry level :

- Assess the agronomic performance, profitability and cup quality
- Promote a large-scale production, distribution and use of elite Arabica Hybrids
- Develop a scaling-up plan of the novel BREEDCAFS breeding strategy that ensure dissemination beyond the timeframe of the project
- Manage, communicate and disseminate work carried out and project activities outcome

- Main expected / achieved results :

- Less resource intensive systems
- Less pesticides
- Price stability
- Improved living conditions of farmers/producers
- Higher productivity
- Stability of coffee supply
- Market growth
- Better regulation
- Avoid risks and production losses

● Project starting date : June 2017

● Project ending date : May 2021

● Implementing institution(s) : CIRAD

● Project Partner(s) :

- NOMFASI Northern Mountainous Agriculture and Forestry Science Institute,
- AGI agricultural genetics institute

● Budget : 4,200,00 €

Funding agency(ies) : Horizon 2020 of European Union

Localisation

Country : Vietnam

State/Province	District	Village
Son La	Mai Son	
	Thuan Chau	
Dien Bien Phu	Tuan Giao	

Area of intervention

- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :

- Seeds and breeds
- Appropriate scale mechanization
- Bio-products
- Market / Labelling
- Land
- Credit / Finance
- Information
- Other :

- Promoting environmental protection :

- Alternative to pesticide use
- Sustainable natural resources management
- Resources use efficiency
- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies
- Other :

- Promoting safe food systems :

- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
- Improving food nutritional quality
- Setting up and promoting short and/or local food supply chains
- Standard setting and third party certification (public and private labels) / Branding
- Participatory certification (Participatory Guarantee Systems) / Community supported agriculture


- Traceability / quality management along the chain / contractual arrangements
- Processing of agricultural products
- Other :

- Promoting :

- Gender equality
- Youth in agriculture
- Cultural diversity / ethnic empowerment
- Market / Value chain inclusiveness

- Improvement of advisory / training systems :

- Development of training materials for farmers and field workers
- Reinforcement of agro-ecological curricula in education
- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 5: Project description form – ACIAR Maize Laos and Vietnam

- Name of the project : Improving maize-based farming systems on sloping lands in Vietnam and Lao PDR
- Project acronym :
- Documents or web page introducing the project / initiative :
 - <https://www.aciar.gov.au/project/SMCN-2014-049>
- Contact persons :
Name: Pham Thi Sen Email: phamthisenprc@gmail.com Telephone :
Name : Michael Bell Email : m.bell4@uq.edu.au Telephone : +61 7 54601 140
Name : Robert Edis Email : robert.edis@aciarc.gov.au Telephone :
- Project presentation :

Maize cultivation is rapidly expanding in the northern uplands of Vietnam and Laos. This increasing demand for concentrate livestock feeds is supported by an expanding poultry, pig and cattle industries in China and South-East Asia.

This expansion is driving the transition of upland rice and maize production and cultivation onto sloping lands, including forest land.

Smallholder maize cultivation on sloping land is characterized by high rates of run-off, soil erosion and nutrient loss that quickly lead to declining soil fertility and maize yields. Many areas become completely unproductive in less than 10 years. The impact is further compounded by ethnic minorities in mountainous regions changing from semi-nomadic living and swidden agricultural production to more sedentary habitation requiring long-term use of the land.

Previous projects have developed a range of options to move from poorly managed maize monocultures to more sustainable diverse farming systems. These promising technical results have demonstrated that diversification from maize monoculture is desirable. But adoption farmers must see this diversification as an income earning opportunity, and not simply as an erosion mitigation practice.

❖ Main objectives :

- Evaluate the development of value chains for maize and complementary crops, forages and livestock to support more diverse and sustainable maize-based farming systems.
- Integrate complementary crops or forages/livestock into more diverse farming systems that can maintain profitability with lower levels of erosion and loss of soil fertility.
- Develop outreach models and advice for local government policy to support the adoption of more diversified maize-based farming systems on the sloping lands of Vietnam and Laos.

❖ Main expected / achieved results :

- Identification, adaptation and adoption of diversified and more sustainable farming systems that can maintain or improve profitability.
- Greater capacity developed across the two countries in three key domains :
 - Capacity of researchers in various fields, including agronomy, value chains and market linkages, practice change, systems thinking and approaches, English language, improved research methodologies and team work.

- Capacity of stakeholders in the private and public sector, including staff of DARDs and PAFOs, government extension personnel and private sector value chain actors, to become agents of change.
- Capacity of researchers in both Vietnam and Laos to share information regionally and participate in cross-border studies.

● Project starting date : February 2017

● Project ending date : December 2020

● Implementing institution(s) : University of Queensland

● Project Partner(s) :

- Conservation Agriculture network CANSEA
- Vietnam’s Ministry of Agriculture and Rural Development,
- Northern Mountainous Agriculture and Forestry Science Institute NOMAFSI,
- Soil and Fertilizer Research Institute,
- Tay Bac University,
- International Centre for Tropical Agriculture CIAT,
- Centre de Coopération Internationale en Recherche Agronomique pour le Développement CIRAD,
- National University of Laos

● Budget : A\$1,997,366

● Funding agency(ies) : Australian Centre for International Agriculture Research ACIAR

● Localisation

Country : Vietnam and Laos PDR

State/Province	District	Village
Son La (Vietnam)	Mai Son, Tuyen chau, Moc Chau, Van Ho	
Houaphan (Laos)		

● Area of intervention

- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :


- Seeds and breeds
- Appropriate scale mechanization
- Bio-products
- Market / Labelling
- Land
- Credit / Finance
- Information
- Other :

- Promoting environmental protection :

- Alternative to pesticide use
- Sustainable natural resources management
- Resources use efficiency
- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies
- Other :

- Promoting safe food systems :

- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
- Improving food nutritional quality
- Setting up and promoting short and/or local food supply chains
- Standard setting and third party certification (public and private labels) / Branding
- Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
- Traceability / quality management along the chain / contractual arrangements
- Processing of agricultural products
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 6: Project description form –Conservation agriculture for Maize

● Name of the project : Promote conservation agriculture in the northern mountainous region of Vietnam through maintaining and out-scaling farmers’ networks and reference sites previously established by ADAM project

● Project acronym :

● Documents or web page introducing the project / initiative :
<https://ali-sea.org/aliseaonlinelibrary/promote-conservation-agriculture-in-the-northern-mountainous-region-of-vietnam-through-maintaining-and-out-scaling-farmers-networks-and-reference-sites-previously-established-by-adam-project/>

● Contact persons :

Name : Dr PHAM Thi Sen Email : phamthisenprc@gmail.com Telephone :

● Project presentation :

In the northern mountainous region of Vietnam (NMR), where each year maize is produced in over 500,000 ha, cassava in about 120,000 ha and tea in over 90,000 ha, mostly on slopes, sustainable slopping land use has become a prime priority. Efforts have thus been spent for developing and promoting the adoption of farming practices of value for soil erosion control in the region. Under the AFD funded ADAM project (2010 – 2014), especially, farmers’ networks and reference sites have been developed in some locations to test and evaluate different CA (conservation agriculture) practices for maize and tea on slopes. Nevertheless, within the project’s short life span not much input could be spent for disseminating and promoting the adoption of practices. In 2015, after the project’s end, NOMAFSI with support from CANSEA and its own tight financial capacity continued to maintain some of the ADAM-established CA farmers networks and reference sites, including, (i) CA maize farmers network for single cropping maize slopping land in Moc Chau district of Son La province, (ii) CA maize farmers network for double cropping maize slopping land in Van Chan district of Yen Bai province, and (iii) CA and organic tea reference site in Phu Tho province, and used these three sites for demonstration and dissemination of CA practices.

❖ Main objectives :

- Maintaining and further developing the CA maize farmers’ network in Yen Bai province for maize-based systems on slopes
- Maintaining and further developing the CA maize farmers’ network in Son La province for maize-based systems on slopes, and
- Maintaining and further developing the CA and organic tea reference site in Phu Tho province for sustainable tea production, in order to tackle the challenge of sustainability and quality of the production.
- Communication and dissemination of practices widely among the target farming communities and extension network

❖ Main expected / achieved results :

The activities were implemented as required and were welcome by farmers and local officers. In general, the application of CA practices had good limited impacts on the yield and net income. Regarding maize systems: [...] except the grass strips, all the CA practiced selected by farmers increased the yield of maize and the gross return. However, on the total net return and per working day net

return the impacts were different between practices. This was because higher labour inputs were required for the application of CA practices and the increase in working days number were different between practices. Comparing two sites, Yen Bai and Son La, in Yen Bai the labour input was much higher, and this was due to smaller scale of households and plots, and all activities were implemented by hands, while in Son La such activities as ploughing, spraying herbicides... are implemented with small machines. The increase in labour requirement, as mentioned before is one of the main factors inhibiting the scaling-out of the adoption. Developing adapted mechanization should reduce the labour input and probably help the scaling-out of CA practices' adoption. Nevertheless, due to small scale of farms and plots, and because of complicated topography despite some efforts have been spent for this not yet any realistic options identified.

In addition to these socio-economic results and more globally, the activities implemented with the support of ACTAE-Cansea also allowed to:

- Get a good knowledge of alternative CA systems (DMC, rotation, intercropping, grasses,...) allowing technical and socio-economic advices in various growing conditions of mountainous areas;
- Establish farmers networks for promoting the adoptions of these practices - Link with other international / regional or even local R&D or extension programs
- Strengthen capacity building, communication and methodology

❖ Main lessons learnt :

Additional efforts should be done and priorities should focus on:

- Building capacity for farmers in safe use of chemicals (for the users, the food products and the environment)
- Strengthening Research for Development on agroecological control of pests & diseases (ACP approach)
- Developing CA and AE systems suitable for different contexts to gradually replace mono-cropping systems of maize or cassava on slopes ... as part of the 4 per 1000 program recently signed by MARD

🍌 Project starting date : April 2016

🍌 Project ending date : March 2018

🍌 Implementing institution(s) : Northern Mountainous Agriculture and Forestry Science Institute - NOMAFSI

🍌 Funding agency(ies) : ACTAE/CANSEA grant

🍌 Location
Country : Vietnam


State/Province	District	Village
Yen Bai	Van Chan	
Son La	Moc Chau	
Phu Tho		

🍌 Area of intervention

- Promoting agroecological systems

- Organic agriculture
 - Agroforestry
 - Conservation agriculture
 - System of rice intensification
 - Home garden / permaculture / integrated farming
 - Integrated Pest Management / Agroecological Crop Protection
 - Crop-livestock farming systems
 - Other :
- Supporting farmers access to :
- Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :
- Promoting environmental protection :
- Alternative to pesticide use
 - Sustainable natural resources management
 - Resources use efficiency
 - Biodiversity conservation
 - Waste reduction and recycling
 - Use of renewable energies
 - Other :
- Promoting safe food systems :
- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
 - Improving food nutritional quality
 - Setting up and promoting short and/or local food supply chains
 - Standard setting and third party certification (public and private labels) / Branding
 - Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
 - Traceability / quality management along the chain / contractual arrangements
 - Processing of agricultural products
 - Other :
- Promoting :
- Gender equality
 - Youth in agriculture
 - Cultural diversity / ethnic empowerment
 - Market / Value chain inclusiveness
- Improvement of advisory / training systems :
- Development of training materials for farmers and field workers
 - Reinforcement of agro-ecological curricula in education

- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 7: Project description form –Climate change and ethnic minorities

- Name of the project : Climate change and ethnic minorities in Northern Vietnam
- Project acronym :
- Documents or web page introducing the project / initiative :
<https://ali-sea.org/aliseaonlinelibrary/agroecological-zoning-for-extension-of-climate-friendly-agriculture-in-some-provinces-of-northwest-vietnam/>

- Contact persons :
 Name : Email : hanoioffice@adda.vn Telephone :

- Project presentation :
 - Main objectives :

Development objective:

Ethnic farming communities in remote mountainous areas of Son La, Dien Bien, and Lai Chau provinces in Northern Vietnam have improved access to information on climate change policies and gained influence on local policies and planning for natural resources, addressing climate change adaptation, food security, and poverty reduction.

Immediate objective :

By end of the project, local government, NGOs and farmer organizations in project areas are able to facilitate and develop development policies and planning in natural resources sector that enable communities to adapt regional and international strategies to climate change, reduce impacts on the environment and maintain sustainable livelihood alternatives.

- Main expected / achieved results :
- Main lessons learnt :

- Project starting date : July 2014
- Project ending date : June 2017

- Implementing institution(s) : Danish Agriculture Development Agency - ADDA

- Project Partner(s) :
 - Center for Nature and People Reconciliation – PanNature
 - Farmer Union of Son La Province
 - Farmer Union of Lai Chau Province
 - Fund for Woman Development of Dien Bien District

- Budget :
- Funding agency(ies) : Civil Society in Development - CISU

- Localisation
 Country : Vietnam

State/Province	District	Village
Son La		
Dien Bien	Dien Bien	
Lai Chau		

- Area of intervention

- Promoting agroecological systems
 - Organic agriculture
 - Agroforestry
 - Conservation agriculture
 - System of rice intensification
 - Home garden / permaculture / integrated farming
 - Integrated Pest Management / Agroecological Crop Protection
 - Crop-livestock farming systems
 - Other :

- Supporting farmers access to :
 - Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :


- Promoting environmental protection :
 - Alternative to pesticide use
 - Sustainable natural resources management
 - Resources use efficiency
 - Biodiversity conservation
 - Waste reduction and recycling
 - Use of renewable energies
 - Other :

- Promoting safe food systems :
 - Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
 - Improving food nutritional quality
 - Setting up and promoting short and/or local food supply chains
 - Standard setting and third party certification (public and private labels) / Branding
 - Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
 - Traceability / quality management along the chain / contractual arrangements
 - Processing of agricultural products
 - Other :

- Promoting :
 - Gender equality
 - Youth in agriculture
 - Cultural diversity / ethnic empowerment
 - Market / Value chain inclusiveness

- Improvement of advisory / training systems :

- Development of training materials for farmers and field workers
- Reinforcement of agro-ecological curricula in education
- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 8: Project description form –Improved market for counter-seasonal vegetable

● Name of the project : Improved market engagement for counter-seasonal vegetable producers in north-western Vietnam

● Project acronym :

● Documents or web page introducing the project / initiative :

- <https://aciar.gov.au/project/agb-2009-053>
- https://www.aciar.gov.au/sites/default/files/project-page-docs/final_report_agb.2009.053.pdf
- <http://cred.org.vn/wp-content/uploads/2018/07/Improved-market-engagement-for-counter.pdf>

● Contact persons :

Name : Gordon S Rogers Email : gordon@ahr.com.au Telephone :

Name : Howard Hall Email : howard.hall@aciar.gov.au Telephone :

● Project presentation :

Vietnamese love vegetables, but Hanoi's scorching summer temperatures mean local farmers cannot grow popular crops such as tomatoes, cabbage and beans. Instead, such produce is imported from China or brought in from the south.

The solution could be found in highland Moc Chau region, which is just four hours by road from Hanoi, sufficiently cool to grow temperate vegetables there in summer, and has 40,000 hectares of good farming land.

Project staff were working with research institutes, regional government and private sector organisations in Vietnam to train farmers to engage effectively with retailers in Hanoi.

86 project farmers from four villages in Moc Chau supplied more than 1,240 tonnes of accredited safe vegetables to retailers in Hanoi, in a new industry that benefits all sectors of the value chain.

Farmers could earn 300 million VND (AUD\$18,000) per hectare from accredited safe vegetables, which is 150% more than from conventional vegetable cropping, and 14 times more than the 20 million VND (AUD\$1,260) per hectare they could expect from growing maize or rice.

- Main objectives :

The project aimed to underpin the development of a knowledgeable and resilient smallholder-based supply system that can meet consumer vegetable requirements in a rapidly transforming retail sector. The project objectives create an effective and sustainable linkage between modern retailers and northern Vietnam vegetable suppliers, which could supply up to 50% of Hanoi's total consumption during a six-month supply window. The project targeted mainly temperate vegetables such as tomato, lettuce, brassicas e.g. cabbage, and sweet pepper.

Objective 1: Analyse consumer demand and alternative marketing channels to develop smallholder-based vegetable systems capable of delivering (now and in the future) from northern Vietnam.

Objective 2: Optimise production and postharvest systems to supply high quality, counter-seasonal temperate vegetables from highland North Vietnam to urban retail markets in Hanoi.

Objective 3: Implement and analyse the Farmer Business School approach as a means of enabling smallholder farmers to build knowledge and improve decision-making based on market and supply chain information.

Objective 4: Contribute to an enabling regional policy environment for counter-seasonal temperate vegetable production in the northwest highland region.

- Main expected / achieved results :

The project achieved a breakthrough in facilitating a new value chain for vegetables produced in the Moc Chau region of northwest Vietnam to modern retail markets in Hanoi. Before the project, all vegetable marketing from Moc Chau was either to the local markets or to Hanoi via traders, and unsafe production techniques were widely practiced.

The new value chain, involving 68 farmers in 4 groups in Moc Chau has established effective direct trading relationships and two-way communication between the farmers and with the supermarkets and specialty, high-quality vegetable stores in Hanoi. ACIAR project partners are still involved, but in a relatively minor way.

Direct marketing by farmers to the retail sector represents a completely new approach and market for local farmers and it's showing clear economic benefits. In the Tu Nhien village, 10 of the 38 farmers have built new houses as a result of the additional income they have received from growing high-quality vegetables and direct marketing to modern retail outlets (Ms Luyen, pers comm).

In 2016, the 68 project farmers (71% female and 10% H'Mong) in the Moc Chau villages of Tu Nhien, Ta Niet and An Thai, produced about 691 tonnes of certified high-quality vegetables on 22 ha of land. Participating farmers from the Tu Nhien village in Moc Chau earned an average net income of 300 million VND (\$A18,000)¹ per ha in 2015. This compares with an average net household income of 120 million VND (\$A7,560) per ha for non-project vegetable farmers in the village, which is an increase of 150% in net income.

In the neighbouring project village of Van Ho, H'Mong farmers have been producing vegetables for only one season, yet they have already recorded a net income from vegetables of 116 million VND (\$A7,300) per ha per year.

Alternative land uses such as growing maize or rice return a net income to the farmer of about 20 million VND (\$A1260) per ha per year, only 7% of the income they could make from certified high-quality vegetables.

● Project starting date : April 2011

● Project ending date : December 2016

● Implementing institution(s) : Applied Horticultural Research

● Project Partner(s) :

- Center for Agrarian Systems Research and Development - CASRAD
- Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement - CIRAD
- Fruit and Vegetable Research Institute
- Hanoi Agricultural University
- Northern Mountainous Agriculture and Forestry Science Institute - NOMFASI

● Budget : AUD 1,752,051


● Funding agency(ies) : Australian Centre for International Agriculture Research - ACIAR

● Localisation

Country : Vietnam

State/Province	District	Village/Commune
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Son La	Moc Chau	Van Ho
		Muong Sang
		Chieng Hac

 Area of intervention

- Promoting agroecological systems
 - Organic agriculture
 - Agroforestry
 - Conservation agriculture
 - System of rice intensification
 - Home garden / permaculture / integrated farming
 - Integrated Pest Management / Agroecological Crop Protection
 - Crop-livestock farming systems
 - Other :

- Supporting farmers access to :
 - Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :

- Promoting environmental protection :
 - Alternative to pesticide use
 - Sustainable natural resources management
 - Resources use efficiency
 - Biodiversity conservation
 - Waste reduction and recycling
 - Use of renewable energies
 - Other :


- Promoting safe food systems :
 - Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
 - Improving food nutritional quality
 - Setting up and promoting short and/or local food supply chains
 - Standard setting and third party certification (public and private labels) / Branding
 - Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
 - Traceability / quality management along the chain / contractual arrangements
 - Processing of agricultural products
 - Other :

- Promoting :
 - Gender equality

- Youth in agriculture
- Cultural diversity / ethnic empowerment
- Market / Value chain inclusiveness

- Improvement of advisory / training systems :

- Development of training materials for farmers and field workers
- Reinforcement of agro-ecological curricula in education
- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 9: Project description form –Vegetable value chains

● Name of the project : Improving livelihoods in Myanmar and Vietnam through vegetable value chains

● Documents or web page introducing the project / initiative :
<https://www.aciar.gov.au/project/AGB-2014-035>
<https://reachout.aciar.gov.au/accredited-safe-vegetables-help-vietnamese-farmers-earn-more>

● Contact persons :

Name : Gordon S Rogers

Email : gordon@ahr.com.au

Name : Bui Van Tung (NOMFASI)

Email :

● Project presentation :

Farmers in Northwest Vietnam are accessing a new path to market for their vegetables—via an accreditation program—to help them sell into high-value modern retail markets in Hanoi.

The vegetable sector is an important source of employment and income for the people of Moc Chau and Van Ho, Son La province. The region’s favourable climate and soil conditions are suitable for growing tropical, subtropical and some temperate vegetables.

With the development of supermarkets and food service market channels in Hanoi and other big cities, customers are now demanding high-quality agricultural products—especially ones from mountainous areas like Son La province—because customers believe they taste better and are more nutritious. Furthermore, customers want ‘safe’ vegetables which are grown using good agricultural production techniques and are managed to ensure the food is free of food-borne diseases and pathogens. However, in retail markets customers find it difficult to distinguish safe vegetables from vegetables that are not grown using sound practices or are not managed to maintain food safety.

The supply of vegetables to distant urban markets can be difficult. Vegetable production is small-scale, scattered and managed by individual farmers and small households, making it difficult for farmers to ensure continuity of supply. Moreover, widely practised farming methods don’t meet the safe standards demanded by city consumers, precluding produce from high-value markets.

Complicating the issue is the problematic connection between retailers and farmers, and in which contracts are often broken. As a result the local vegetable producers usually just sell their vegetables to the local markets or to Hanoi via traders.

- Main objectives :

The project helps Moc Chau and Van Ho farmers supply temperate vegetables such as tomatoes, lettuces and cabbages to Hanoi. The project centres around the Vietnamese Good Agricultural Practices (VietGAP) accreditation program. VietGAP provides guidelines on how to grow crops and manage them post-harvest to ensure food safety and improve product quality and traceability while supporting the health of producers, consumers and the environment.

- Main expected / achieved results :
- Main lessons learnt :

● Project starting date : March 2017

● Project ending date : February 2021

● Implementing institution(s) : Applied Horticultural Research

● Project Partner(s) :

- Centre de Coopération de Recherche Agronomique pour le Développement,
- Department of Agriculture,
- Fresh Studio Innovations,
- Northern Mountainous Agriculture and Forestry Science Institute NOMFASI,
- University of Queensland,
- University of Sydney,
- Yezin Agricultural University

● Budget : A\$2,078,074

● Funding agency(ies) : Australian Centre for International Agriculture Research ACIAR

● Localisation

Country : Vietnam

State/Province	District	Village
Son La	Moc Chau	Bo Nhang
	Van Ho	

● Area of intervention

- Promoting agroecological systems
 - Organic agriculture
 - Agroforestry
 - Conservation agriculture
 - System of rice intensification
 - Home garden / permaculture / integrated farming
 - Integrated Pest Management / Agroecological Crop Protection
 - Crop-livestock farming systems
 - Other :
- Supporting farmers access to :
 - Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :
- Promoting environmental protection :
 - Alternative to pesticide use
 - Sustainable natural resources management
 - Resources use efficiency
 - Biodiversity conservation
 - Waste reduction and recycling
 - Use of renewable energies

Other :

- Promoting safe food systems :

Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)

Improving food nutritional quality

Setting up and promoting short and/or local food supply chains

Standard setting and third party certification (public and private labels) / Branding

Participatory certification (Participatory Guarantee Systems) / Community supported agriculture

Traceability / quality management along the chain / contractual arrangements

Processing of agricultural products

Other :

- Promoting :

Gender equality

Youth in agriculture

Cultural diversity / ethnic empowerment

Market / Value chain inclusiveness

- Improvement of advisory / training systems :

Development of training materials for farmers and field workers


Reinforcement of agro-ecological curricula in education

Farmer exchanges of experiences and innovations across sites / farmer field schools

Innovation platforms

Strengthening public-private partnerships on agriculture/vocational training

Other :

 Project activity(ies) :

Training

Awareness

Advocacy

Technical support

Financial support

Support to local entrepreneurship

Market development

Value chain management

Reinforcement of organizational capacities / support to farmer organizations

Infrastructure construction

Networking

Research / Trials

Other :

Annex 10: Project description form – Inclusive agricultural value chain financing

● Name of the project : Inclusive agricultural value chain financing

● Documents or web page introducing the project / initiative :

<https://www.aciar.gov.au/project/AGB-2016-163>

● Contact persons :

Name : Howard Hall

Email : Howard.hall@aci.gov.au

Name : Alan de Brawn Email : alandebrauw@gmail.com

● Project presentation :

New technologies, markets and government priorities in Indonesia, Myanmar and Vietnam point to new opportunities to overcome long-standing challenges to agricultural finance. In all three countries, expanded mobile telephone networks and smartphone technology could provide new distribution channels for financial products at lower cost that address the unique needs of agriculture.

New technology will neither fully eliminate barriers to increased production nor improve resilience against shocks if farmers lack markets for additional output, or if financial providers lack enough information to assess potential clients, supervise loans and address risks.

By working throughout the value chain, information, relationships, institutions and market connections can be leveraged to maximise the efficiency and impact of financial services, also potentially minimizing risks to individual smallholders and small and medium enterprises. This approach dovetails with renewed government commitments to implement regulatory frameworks and create incentives to expand access to financial services, promoting financial inclusion and reducing poverty.

○ Main objectives :

The project's specific objectives are to:

- Increase understanding about the context and potential for agricultural value chain financing models and approaches.
- Develop a rigorous impact evaluation design for agricultural value chain financing models that will be implemented by partners.
- Increase knowledge about how to design and implement innovative and inclusive agricultural value chain financing models in target countries.
 - Enhance awareness and adoption of agricultural value chain financing models.

○ Main expected / achieved results :

- Households in targeted communities using newly available financial products able to either grow higher-value products or intensify their production.
- Participating farmers able to access markets for their products, contributing to increased incomes or reduced income variability.
- Farmers and agribusiness entrepreneurs with increased access to value chain finance.
- Increased awareness and knowledge among policy-makers and value chain practitioners on the opportunities and constraints for agricultural value chain finance. In order to enhance access to financial services and increase productivity and incomes, influencing policy design and leading to policy changes that further enhance access to agricultural value chain finance.

- Greater capacity among researchers in each national research partner organisations to conduct impact evaluation research at international standards, and among key leaders in each national research partner organisation to disseminate and communicate the results of impact evaluation research for policy.
- Project starting date : June 2018
- Project ending date : May 2022
- Implementing institution(s) : International Food Policy Research Institute - IFPRI
- Project Partner(s) :
 - University of Sydney,
 - Indonesian Center for Agriculture Socio Economic and Policy Studies - ICASEPS,
 - Myanmar Economic Association, Institute of Policy and Strategy for Agriculture and Rural Development - IPSARD
- Budget : AUD 1,970,250
- Funding agency(ies) : Australian Centre for International Agriculture Research - ACIAR
- Localisation : Vietnam, Myanmar and Indonesia
- Area of intervention
 - Promoting agroecological systems
 - Organic agriculture
 - Agroforestry
 - Conservation agriculture
 - System of rice intensification
 - Home garden / permaculture / integrated farming
 - Integrated Pest Management / Agroecological Crop Protection
 - Crop-livestock farming systems
 - Other :
 - Supporting farmers access to :
 - Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :
 - Promoting environmental protection :
 - Alternative to pesticide use
 - Sustainable natural resources management
 - Resources use efficiency

- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies
- Other :

- Promoting safe food systems :


- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
- Improving food nutritional quality
- Setting up and promoting short and/or local food supply chains
- Standard setting and third party certification (public and private labels) / Branding
- Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
- Traceability / quality management along the chain / contractual arrangements
- Processing of agricultural products
- Other :

- Promoting :

- Gender equality
- Youth in agriculture
- Cultural diversity / ethnic empowerment
- Market / Value chain inclusiveness

- Improvement of advisory / training systems :

- Development of training materials for farmers and field workers
- Reinforcement of agro-ecological curricula in education
- Farmer exchanges of experiences and innovations across sites / farmer field schools
- Innovation platforms
- Strengthening public-private partnerships on agriculture/vocational training
- Other :

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 11: Project description form – Safe pork

● Name of the project : Market based approaches to improving the safety of pork in Vietnam

● Project acronym : Safe Pork

● Documents or web page introducing the project / initiative :
<https://aciar.gov.au/project/ls-2016-143>

● Contact persons :
Fred Unger – ILRI Email: f.unger@cgiar.org

● Project presentation :

Food safety is a growing concern in Vietnam. Foodborne disease is a major public health problem and a barrier to smallholder farmers who wish to sell in high-value domestic and export markets. Most foodborne disease is due to livestock and fish products or vegetables sold in informal (wet) markets. Pork is the most widely consumed meat, and nearly all is sold in wet markets that have poor food safety standards.

Alternative market approaches to improving food safety aim to change practice in informal markets (e.g. through professionalising street traders rather than removing them). The project believes these approaches are the best bet for improving food safety in mass domestic markets, but much work is needed to adapt them to national contexts and engender support from the public and private sector. The proposed research builds on the extensive research and networks developed by the LPS/2010/047 PigRISK project, extending the ACIAR-supported research agenda from risk assessment to risk management and communication. As a result of PigRISK, the project partners have become the 'go-to' people for food safety in Vietnam.

Building on these achievements, there is opportunity to better manage these risks and understand and develop appropriate market-based approaches for improved food safety.

○ Main objectives :

This project aims to develop and evaluate market-based approaches to improving food safety, with the overall aim of reducing the burden of foodborne disease in informal, emerging formal, and niche markets targeting small- and medium-scale producers.

- Generate actionable evidence on the efficacy, feasibility and reach of current approaches for improving pork safety in Vietnam.
- Develop, pilot and test light-touch, incentive-based approaches to food safety, in close partnership with the private sector.
- Validate, with stakeholders, the theory of change developed by the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) for market-based interventions and identify steps towards scaling these in the Vietnamese context. Suggest strategies for enhanced engagement and benefit sharing for men and women in the pig value chain through improving the gender appropriateness of interventions.
- Build capacity in understanding food safety risk, its management and effective communication among stakeholders including key government partners, the private sector, academia, donors and media.

- Main expected / achieved results :
 - Greater understanding among policymakers, donors and the private sector of the potential for existing and novel food safety initiatives that improve food safety equitably and sustainably, and that are scalable.
 - Agreement on what will be needed to take promising approaches to greater scale. Improved understanding and communication of risk among academics, policymakers, the private sector and media.
 - Improved knowledge and understanding of gender dynamics in pork-borne disease risks and viable options identified for increased gender equity in foodborne disease risk management.
 - Improved capacity of researchers, students and partners.
 - Greater demand and higher prices for pork as food safety record improves and consumers are willing to pay more for quality, safe product.
 - Increased participation of women and the poor in smallholder pork value chains so they can benefit from the rapidly increasing demand for safe pork.
 - Reduced consumer concern about food safety.
 - Increased consumption of pork among groups with high levels of stunting and micronutrient deficiency and inadequate levels of animal-protein food consumption.

● Project starting date : October 2017

● Project ending date : June 2022

● Implementing institution(s) : International Livestock Research Institute - ILRI

● Project Partner(s) :

- Hanoi University of Public Health
- National Institute of Animal Sciences - NIAS
- University of Sydney
- Vietnam National University of Agriculture - VNUA

● Budget : AUD 2,000,000

● Funding agency(ies) : Australian Centre for International Agricultural Research - ACIAR

● Localisation : *not filled*

● Area of intervention


- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :
 - Seeds and breeds
 - Appropriate scale mechanization
 - Bio-products
 - Market / Labelling
 - Land
 - Credit / Finance
 - Information
 - Other :

- Promoting safe food systems :
 - Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
 - Improving food nutritional quality
 - Setting up and promoting short and/or local food supply chains
 - Standard setting and third party certification (public and private labels) / Branding
 - Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
 - Traceability / quality management along the chain / contractual arrangements
 - Processing of agricultural products
 - Other :

- Promoting :
 - Gender equality
 - Youth in agriculture
 - Cultural diversity / ethnic empowerment
 - Market / Value chain inclusiveness

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 12: Project description form – Cassava disease solutions

● Name of the project : Sustainable cassava disease solutions in Southeast Asia

● Documents or web page introducing the project / initiative :

<https://cassavadiseasesolutionsasia.net/>

● Contact persons :

Name : Howard Hall Email : howar.hall@aci-ar.gov.au Telephone :

● Project presentation :

Throughout South East Asia, cassava has become an important crop in terms of both rural livelihoods and economic development. It is estimated that over 2 million households are engaged in cassava production, with the crop cultivated to meet the rapidly growing regional and global demand for animal feed, starch-based products, ethanol and biofuel.

This project directly addresses the two disease threats, Cassava Mosaic Disease and Cassava Witches Broom Disease, which if left unchecked will continue to spread throughout the region devastating cassava production, the incomes of millions of smallholder farmers, and a multibillion-dollar industry. The project consists of a multi-pronged strategy involving breeding, surveillance, agronomy, and seed systems interventions, coupled with engagement with government institutions and agribusiness.

○ Main objectives :

Objective 1: Assess the opportunities, challenges and risks for the development of sustainable regional solutions for cassava disease management in mainland SEA including coordinated policy development, sustainable business and public-private funding models;

Objective 2: Enhance the capacity and collaboration between breeding programs in mainland Southeast Asia to develop new product profiles for commercially viable cassava varieties by identifying and incorporating known and novel sources of resistance to Cassava Mosaic Disease (CMD) and Cassava Witches Broom Disease (CWBD) into national breeding programs ;

Objective 3: Develop, test and deploy diagnostic protocols, tools, and information platforms fit for purpose in monitoring, surveillance, and certification applications; and

Objective 4: Develop and evaluate technically feasible and economically sustainable cassava seed system models for the rapid dissemination of new varieties and clean planting material to smallholder farmers in different production systems and value chains.

○ Main expected / achieved results :

- Enhanced farmer and industry stakeholder awareness of cassava disease and management options;
- Minimise yield losses through farmers having access to high quality planting materials;
- Adoption of new disease-resistant varieties of cassava; and
- Enhanced coordination between national agencies in disease surveillance, quarantine, and management, and sustainable business models for upstream research and development and downstream farmer entrepreneurs working in the seed system.

● Project starting date : August 2019

● Project ending date : June 2023

● Implementing institution(s) : Internal center for tropical agriculture – CIAT

● Project Partner(s) :

- Queensland university,
- Agriculture Genetics Institute - AGI,
- Plant Protection Research Institute - PPRI,
- National Agriculture and Forestry Research Institute - NAFRI,
- Thai Tapioca Development Institute - TTDI,
- Chinese Academy of Tropical Agricultural Sciences - CATAS,
- Kasetsart University

● Budget : A\$3,999,999

● Funding agency(ies) :

- Australian Centre for International Agriculture Research - ACIAR,
- CGIAR

● Localisation

Country	State/Province	District	Village
Vietnam	Son La		
	Dak Lak		
Laos PDR	Xaignabouri		
	Bolikhamxai		
	Champasak		
Cambodia	Otdar Mean Chey		
	Banteay Meanchey		
	Stoeng Treng		
	Kracheh		
	Tay Ninh		
Thailand			
Myanmar	Ayeyarwady		

● Area of intervention

- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :

- Seeds and breeds
- Appropriate scale mechanization

- Bio-products
- Market / Labelling
- Land
- Credit / Finance
- Information
- Other :

- Promoting environmental protection :


- Alternative to pesticide use
- Sustainable natural resources management
- Resources use efficiency
- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies
- Other :

- Promoting safe food systems :

- Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)
- Improving food nutritional quality
- Setting up and promoting short and/or local food supply chains
- Standard setting and third party certification (public and private labels) / Branding
- Participatory certification (Participatory Guarantee Systems) / Community supported agriculture
- Traceability / quality management along the chain / contractual arrangements
- Processing of agricultural products
- Other :

- Promoting :

- Gender equality
- Youth in agriculture
- Cultural diversity / ethnic empowerment
- Market / Value chain inclusiveness

 Project activity(ies) :

- Training
- Awareness
- Advocacy
- Technical support
- Financial support
- Support to local entrepreneurship
- Market development
- Value chain management
- Reinforcement of organizational capacities / support to farmer organizations
- Infrastructure construction
- Networking
- Research / Trials
- Other :

Annex 13: Project description form – VOF

● Name of the project : Strengthening the Voice and Capacity of Vulnerable Ethnic Minority Farmers in Climate Resilience in Northwest Vietnam

● Project acronym : VOF

● Documents or web page introducing the project / initiative :

- <http://www.adda.vn/index.php/en/du-an/329-tang-cuong-tieng-noi-va-nang-luc-cho-nguoi-nong-dan-thieu-so-de-bi-ton-thuong-ung-pho-voi-bien-doi-khi-hau-tay-bac-viet-nam>
- <http://www.adda.vn/images/News%20&%20Views%20no.%2038.2019%20UK.pdf>

● Contact persons :

Name : Email : hanoioffice@adda.vn Telephone :

● Project presentation :

The proposed intervention is to strengthen the voice and capacity of vulnerable ethnic minority farmers in climate resilience in Northwest Vietnam. The strategy has been refined into a holistic approach ensuring lasting improvements in living conditions, higher chances for participation and securing of equal opportunities for ethnic minority communities in the Northwest of Vietnam.

The objective is: "The resilience of vulnerable ethnic minorities to climate change in Northwest Vietnam have been strengthened through the promotion of climate-smart agriculture and their participation in the decision-making process."

The immediate objectives are to well-inform community farmer organizations and jointly engage in local decision-making processes, and all farmers should be able to effectively apply locally adapted CSA and profit from increased collaboration and partnerships with governmental and private actors. Results should be recognized by provincial authorities and shared and discussed at national and international level and venues in the Lower Mekong sub-region.

- Main objectives :

Objective 1. On 31 December 2030, at least 4 out of 6 farmer responsive groups (FRG) and 2 local NGO partners are increasingly influencing local and national decision making on rural development

Objective 2. On 31 December 2030, 6 climate-smart agricultural villages for demonstration and advocacy purposes have been established in Son La and Lai Chau provinces and at least 70 % of the 5.000 participating families in the two provinces have increased their income with at least 40 % from sale of PGS certified agricultural products

Objective 3. At the end of the project, results and achievements have been recognized by provincial authorities of the target area, broadly shared and discussed for upscaling at national level at different venues in the Lower Mekong sub-region

● Project starting date : January 2019

● Project ending date : December 2021

Implementing institution(s) : Agricultural Development Denmark Asia - ADDA

Project Partner(s) :

- PanNature
- Farmer Union of Son La and Lai Chau,
- Vietnam Famers Union - VNFU
- Tay Bac Univeristy - TBU

Budget : 4.000.000 DKK

Funding agency(ies) : Civil Society in Development - CISU

Localisation

Country : Vietnam

State/Province	District	Village
Son La		
Lai Chau		

Area of intervention

- Promoting agroecological systems

- Organic agriculture
- Agroforestry
- Conservation agriculture
- System of rice intensification
- Home garden / permaculture / integrated farming
- Integrated Pest Management / Agroecological Crop Protection
- Crop-livestock farming systems
- Other :

- Supporting farmers access to :

- Seeds and breeds
- Appropriate scale mechanization
- Bio-products
- Market / Labelling
- Land
- Credit / Finance
- Information
- Other :

- Promoting environmental protection :

- Alternative to pesticide use
- Sustainable natural ressources management
- Resources use efficiency
- Biodiversity conservation
- Waste reduction and recycling
- Use of renewable energies

Other :

- Promoting safe food systems :

Improving food safety quality in response to consumer health concerns (less pesticide residues, less bacterial contamination...)

Improving food nutritional quality

Setting up and promoting short and/or local food supply chains

Standard setting and third party certification (public and private labels) / Branding

Participatory certification (Participatory Guarantee Systems) / Community supported agriculture

Traceability / quality management along the chain / contractual arrangements

Processing of agricultural products

Other :

- Promoting :

Gender equality

Youth in agriculture

Cultural diversity / ethnic empowerment

Market / Value chain inclusiveness

- Improvement of advisory / training systems :

Development of training materials for farmers and field workers


Reinforcement of agro-ecological curricula in education

Farmer exchanges of experiences and innovations across sites / farmer field schools

Innovation platforms

Strengthening public-private partnerships on agriculture/vocational training

Other :

 Project activity(ies) :

Training

Awareness

Advocacy

Technical support

Financial support

Support to local entrepreneurship

Market development

Value chain management

Reinforcement of organizational capacities / support to farmer organizations

Infrastructure construction

Networking

Research / Trials

Other :

Annex 15: Project description form – LiChan

LI-CHAN: Livestock-led interventions towards equitable livelihoods and improved environment in the North-West Highlands of Vietnam

Li-chan is a project under the CGIAR Research Program on Livestock (Livestock CRP) that aims to provide research-based solutions to transition smallholder farmers to sustainable and resilient livelihoods and to more productive small-scale enterprises that will help feed future generations. Vietnam is one of four priority countries selected to consolidate research from different disciplines and translate it into a pilot with flexible combinations of integrated interventions from 2019 until end of 2021. *Li-chan* has been co-designed by both international and national partners.

OBJECTIVES

General objective:

To stimulate system transformation in targeted sites in North-West Vietnam through bundled livestock-based interventions, covering the areas of livelihoods, environment, equity, and market access to benefit highland farming communities.

Specific objectives:

- To intensify sustainably and equitably smallholder crop-livestock production in NW Vietnam by (i) identifying, testing and evaluating bundled livestock-based interventions, (ii) improving knowledge and skills in animal husbandry and (iii) increasing awareness of environmental degradation;
- To identify, facilitate and evaluate institutional innovations that stimulate local livestock product development, market linkages and effective service delivery for a sustainable commercialization, benefiting equitably all gender and ethnic groups in NW Vietnam;
- To identify and promote inclusive inter-sectoral environment and agriculture policy dialogue and interactions at different levels that address trade-offs and synergies and lead to more conducive and effective policy attention to smallholder crop-livestock smallholder systems in NW Vietnam.

Study Area

The targeted project site is the Mai Son district in Son La province. Mai Son offers a diversity of farm types, from



Project sites are located in Mai Son district in Son La province, in the North-West highland region of Vietnam

grazing and extensive systems to intensive farms with strong crop and livestock integration with a variety of socio-economic and ecological conditions. These can be categorized into three types:

1. Intensive system with good access to market and relatively better capacity for innovation;
2. Mixed crop-livestock systems; and,
3. Remote extensive systems with low access to market.

Selected communes for the project are Chieng Chung and Chieng Luong. The interventions tailored to three types of farming systems.

Expected outcomes

Farmers in Mai Son District, specifically ethnic minorities, men and women within the three types of farming systems have:

- Sustainably intensified crop-livestock smallholder systems;
- Commercialized livestock smallholder production;
- Benefited from policies that support sustainable livestock intensification (desk review and key informant interview).

Research areas and interventions:

- **Animal Genetics:** Farmer training on livestock breeds and breeding; Piloting of artificial insemination in project sites for one or more buffalo, cattle or pigs
- **Animal Health:** Farmer's training for animal health and biosecurity; Capacity building of animal health professionals (e.g. introduction of diseases, sampling, outbreak investigations, data recording and vaccin/drug use).
- **Feeds and Forages:** Gendered livestock feed assessment (G-FAEST) to decide on feed interventions; Piloting of improved livestock feeding practices in target sites including capacity development with farmers and support agencies; Participatory evaluation of improved livestock feeding practices; Study on seed supply systems.
- **Livestock and Environment:** Comprehensive Livestock Environment Assessment for Improved Nutrition, Secured Environment and Sustainable Development (CLEANED); Identification of optimal

nutrient management options at farm level; Capacity building of extension staff in nutrient management; Awareness raising on environmental issues (nutrients, greenhouse gases and water).

- **Livestock and Livelihoods:** Market research to assess potential demand for high value livestock products; Participatory identification of suitable value chain interventions at farm and market levels
- **Shared activities:** Baseline and characterization survey; Impact assessment; Communication.

Key partnerships

The project is funded by the Livestock CRP and co-implemented by International Center for Tropical Agriculture (CIAT), International Livestock Research Institute (ILRI), Swedish University of Agricultural Sciences (SLU), Vietnam National Institute of Animal Science (NIAS), National Institute of Veterinary Research (NIVR), Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI), Sub-Department of Husbandry, Animal Health and Aquaculture of Son La Province, Mai Son Agriculture Division, Mai Son Agriculture Service Center.

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Alliance



Annex 16: Project description form – GREAT projects

The Gender Responsive Equitable Agriculture and Tourism (GREAT) Program promotes gender equality and women's economic empowerment, with a focus on the ethnically diverse provinces of Son La and Lao Cai in Vietnam's north-west.

Funded by the Australian Government and delivered in partnership with the Government of Vietnam, GREAT is a four-year program (2017-2021) that works with the private sector, government agencies and NGOs to create opportunities for women within the agriculture and tourism sectors. These sectors have demonstrated strong economic growth and the potential to increase the economic participation of ethnic minority women.

GREAT has adopted a multi-pronged approach to stimulating change in partnership with the private sector, government and civil society organizations in the tourism and agriculture markets.

- Women's economic empowerment
- Fostering inclusive market systems
- Understand, adapt, innovate

Partnership Portfolio in Son La

- Agriculture: Medicinal plants (1), Tea (3), Vegetables (4), fruits (2), rice (1); bamboo shoots (1), Ramie (1)
- Tourism: community-based tourism (1), inclusive destination management (1)
- Cross-cutting: Innovation (2), access to Finance (1), business skills development (1), policy (1)

Son La Province Project Management Unit

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Annex 17: List of the stakeholders met and field visits during field mission (26 to 29 January 2021)

Date	Time	Activities
Tuesday 26/01	pm	Meeting with DARD Son La and other organizations (DAH, Extension Service Center, Department of Natural Resources and Environment, Department of Foreign Affairs, Department of Science and Technology) Meeting with Department of Statistic office Meeting with Department of Cooperative Alliance Meeting with Son La Agricultural Service Center Meeting with Tay Bac University – Head of Center for sustainable Agriculture
Wednes. 27/01	am	Meeting with Thuan Chau agricultural department and other organizations Meeting with Department of plan protection and cultivation of Son La Province Visit of Organic Pomelo Company Visit Dragon fruit cooperative Quỳnh Thuận (Mrs. Hoang Thi Thao, Chiềng Pha commune)
	pm	Visit Honey bee cooperative (Nguyen Van Thanh, Phong Lai commune) Visit of Tea company Thu Đan (Phạm Anh Danh, Chiềng Pha commune) Visit Farmers fields in Na Heo village, Chieng Pha commune (coffee, fruit, livestock)
Thursday 28/01	am	Meeting with Mai Son agricultural department and other organizations (unions, agricultural service center, statistics, invited projects-AFLI-II)
	pm	Visit Dat Thuy One Member Company Limited (Co Noi commune) - Fruit Visit Hung Cuong Livestock service cooperative (Co Noi commune) - Pig Visit Mé Lech Custard apple cooperative (Co Noi commune) Visit Strawberry cooperative (Co Noi commune) Visit farmers field AFLI II project (Co Noi commune) - Agroforestry Visit Cassava processing plant Visit DOVECO processing plant Meeting with head of organic fertilizer company
Friday 29/01	am	Meeting with Moc Chau agricultural department and other organizations (women union, agricultural service center, Agriculture service center, invited projects-GREAT) Visit Nafood company - Fruit (Moc Chau town) Visit Quyet Thanh cooperative (Moc Chau town) Visit An Tam vegetable cooperative (Muong Sang commune)
	pm	Visit biomass model in Moc Chau (dairy cow manure processing) Visit 19/5 cooperative (Moc Chau town) Visit Vegetable production Cooperative Loc Thanh (Muong Sang commune) Visit Fruit and integrated eco-tourism development (Muong Sang commune) Meeting Green Farm / GREAT project Visit farmers field – conservation practices for growing maize on sloping land Visit Ta Niet safe vegetable production cooperative in Moc Chau

Annex 18: Notes meeting with DARD Son La and other organizations

Interview by: Le Thi Thanh Huyen (NIAS), Dinh Khanh Thuy (NIAS), Trong Hieu Do (NOMAFSI), Le Khai Hoan (NOMAFSI), Pham Cong Nghiep (CASRAD), Pham Thi Hanh Tho (CASRAD), Hoang Minh Huy (IPSARD), Hoang Thanh Tung (VAAS), Nguyen Ngoc Mai (AGI), Pascal Lienhard (CIRAD), Mélanie Blanchard (CIRAD)

See the report “BC khuyến nông 2016-2019 (agricultural extension service report 2016-2019) and annex”

Large part of the Province with mountainous area. Agriculture focus on the production of fruit, coffee, rubber, annual crops with sugar cane, corn and Cassava.

The main challenges Infrastructure. Road infrastructure is poor and the province is far from sea ports. This leads to increased costs and a reduction in the competitiveness of Son La agriculture.

There is a difficulty in marketing agricultural products, with a beginning of product processing but still little investment towards modern technologies. To give examples of industrial plants: Rubber in Thuan Chau, fruit processing company with TH Milk in Van Ho, Doveco in Mai Son, Nafrood in Moc Chau, and various private coffee companies (Son La and Mai Son). On cassava there are two companies in Mai Son.

Transition from annual crops to fruit production

Before 2015, maize occupied the majority of the Province cultivated area, with 170,000 ha of maize. With a sharp reduction in economic benefits, strong competitiveness with imported maize, and degradation of slope land, and the need to use large quantities of chemical fertilizers; in 2015, a lot of slope land areas with inefficient production of maize and upland rice have been changed to grow fruit tree. Maize area has decreased sharply (70,000 ha today).

Mr. Minh vice director of cooperative alliance

There are many cooperatives in the Province and their development is good. The transition from maize to fruit is taking place under the decree of the People's Committee of the Province.

There are 682 cooperatives in the province, 589 of which are in agriculture and livestock (including forestry and fishery). 40 cooperative on livestock production, 288 on fruit production, 36 on vegetable production, 63 on aquaculture, 12 on herbs, 6 on tea, 8 on coffee, and 3 on beekeeping, and 126 on mixed sectors. There are 6 Alliances, in which 5 on agroforestry (several cooperatives come together to create an inter cooperative around the same value chain for a product).

Ms Thuan Tham / Extension center

They have 6 main tasks:

1. Organization of trainings for farmers, for DARD teams and for cooperatives and their members in the districts and communes.
2. Advocacy and information on government programs and program implementation by the Center agricultural service, information on markets, information on agricultural recommendations, information via newspapers and specialized television programs.
3. Design of technical models on production systems
4. International cooperation with different programs and projects: e.g.: AFLI 2 in Mai Son, CARE in Chieng Chung and Muong Chanh communes in Mai Son district; malnutrition program in Xuoi Nha commune, Van Ho district
5. Implementation of national projects: Viet Gap, certification, technical model design
6. Replication

Ms. Van / MONRE

DONRE only controls large scale production processes. Smaller production processes are controlled by the People Committee of the Province. There are 5 companies in Son La Province that are under DONRE control that process coffee and cassava.

The companies are required to follow the recommendations and report on their environmental impact and the measures and infrastructure in place to protect the environment. DONRE will issue a certificate after an environmental risk assessment and a visit once a year. The environmental issue is also at smallholder farms those are coffee producers, while the companies only purchase and process.

There is no provincial regulation, but an application of the national regulations: techniques to be applied, forest cover objectives etc.

Maps are produced by different departments of DONRE. It will be necessary to come and visit the department and express the request to have access to them.

The DARD manages protected areas. There are 640,000 ha of forest, which represents 45% of the surface area of the province, with more than 600,000 ha of protected forest and > 30,000 ha of planted forest. Natural areas need to be protected

Foreign Affairs Has in management the monitoring of investments, planning and investment attractiveness. For a new project, the DARD will submit the file of the new project to the Department of Foreign Affairs which will submit it to the People Committee.

- ⇒ Will provide data on foreign investments in the province that are related to the agricultural sector.

Mr. Dat / Center of Agricultural Service of Son La city

They provide consultation in all areas of agriculture, livestock, agroforestry, control of the adoption of sanitary measures, monitoring of plant diseases, etc..

They supervise the value chains on food products and control the quality safety in connection with the veterinary services. They are directly under the management of the People Committee of the Province and work with the veterinary department.

Statistical office Depending on the data we need, the service can provide us with the available data or carry out additional surveys (e.g. on the uses of pesticides for which data are not available).

The Department of Crop Protection, under the DARD is the department that formalizes recommendations for pesticide use from the list of pesticides authorized by the MARD. The supervisory services only transmit these recommendations to the farmers.

- ⇒ List of pesticides authorized by the MARD and recommendation of uses

Mr. Duc / Veterinarian

The livestock sector occupies 28% of the province value chains. There is a decrease in the buffalo herd, an increase in the beef cattle herd (2.6%) and dairy cow herd (18% in 1 year), and an decrease in the pig herd with big differences between the districts (see report, e.g. Moc Chau and Van Ho: growth of dairy farms).

Challenges: Diseases remain the main challenge for the livestock development (Foot and Mouth Disease and a new disease from China causing blisters on the skin). The second challenge is the climate and cold winters (higher mortality rate). Finally, the farms remain small, practising free grazing with complicated disease control.

The DARD gives advice on how to prevent diseases, how to protect animals from the cold etc. Some farms have adopted the biosecurity techniques introduced by the Center of Agricultural Service (pilot phase, with few farms yet). Industrial feeds are imported into the province (no industrial feed production). The grass forage production area has been growing for 10 years now.

They have a program on improved breed, with a production of 1,800 improved animals per year. But the artificial insemination service is still of poor quality, and only located along the road n°6 (difficult access from mountain areas). The decision to support householder is over (n° The decision 50 QD-TTg issued in 2014). They are waiting for another program to support householder now.

Development of fruits versus livestock: They do not encourage the livestock farmers to practice grazing. They prefer that the animals stay on the farms, with feeding based on cut and carry of forage produced and the use of locally produced concentrate (maize and cassava meal).

Strategy for livestock development in the province: increase in farm size (concentrated farm) with the use of new technologies and application of biosecurity. Increase in production based on local breeds and development of the production of the Province specialty products (OCOP type) applied to livestock (e.g. dry beef is a product that is now in the process of being awarded 3 stars (district-wide sales...)).

- Program 135, and District Program 38 to support farmers with improved breeds of animals, and credits for the purchase of feed.
- Resolution 128 to support the private sector and investments by companies in animal production (infrastructure, manure management, marketing, slaughterhouse). There is not yet a large-capacity slaughterhouse in the Province.

The export of pigs and cattle (from the dairy sector) is to the lowlands (around Hanoi) and the importation of pigs and poultry is done from the lowlands.

⇒ Data of the quantities imported and exported from the Province to be requested.

The development of forage production in the Province is under the responsibility of the agricultural supervision service.

⇒ Data of the area under forage production to be requested.

The management of the quality of animal products is under the responsibility of the DARD Quality Management Department.

Management of livestock manure, according to him, there is no serious problem in the Province.

Waste from coffee processing companies is a problem in the Province (management by DONRE).

Cooperative

⇒ Data on value chains and Viet Gap regarding livestock sector will be provided.

There is a cattle fattening company in Thuan Chau district with Viet Gap certificate.

Honey production and sturgeon production (Ca Tam) are two products that have potential for branding and marketing outside the province and associated ecotourism development.

Challenges

Breeding of high productive pig and poultry: The productivity is still very low.

Challenge in infrastructure: the veterinary station is belong to Centre of Agricultural Service, which is belong to the district where they are working with Vet department. Issue for the information flow, decision etc. eg. When they plan to organize a training. They have not enough staff to cover the Province.

Annex 19: Notes Meeting with Tay Bac University –Centre for sustainable Agriculture

Discussion with Dr Nguyen Van khoa, director Center for Sustainable Agriculture (CSA), vice dean Agriculture and Forestry faculty, Tay Bac University (TBU)

TBU is the only university in north west Vietnam

It regroups students from Son La, Hoa Binh, and Lai Chau provinces, as well as numerous students from Laos (total of 6,000 students including 1,000 students from Laos and 500 staffs).

Three different faculties: education, economics, agriculture and forestry

They propose curricula for technicians, Bsc, and Msc levels.

TBU is also providing consultancy services, notably in the field of ethnic groups minorities, culture and civilizations.

The Center for Sustainable Agriculture (CSA) employed 37 staffs and has an independent budget.

CSA activities focus on: capacity building, model design and assessment

CSA cooperates with local agencies (DARD and Dpt of science and technology) on: organic vegetable (Son La), value chains in agriproducts (Dien Bien)

Demonstration areas:

- on safe vegetables in Moc Chau and Mai Son (with NOMAFSI)
- on fruits/organic-oriented pomelo production system in Tuyen Chau and Mai Son
- on rice (organic/ VietGAP) in Dien Bien
- on cattle fattening using forage technology/silage in Tuyen Dau, Dien Bien (with NIAS)

CSA is also working on maize with Nomafsi, and on coffee with DARD (berry borer control) and through a PhD thesis (fungus on coffee).

Most promising value chains in the Province according to him? organic-oriented pomelo and vegetable.

Pest control management under OA? Different techniques exist: net house, plastic mulch, plastic tunnel...

Data about fertilizers/pesticide recommendations and use by farmers? Highly depending on product and production model (Vietgap, organic etc.); Dr Pham Van Hoi (VNUA) is the one that has been working the most on pesticide use

Any data about waste management? In each commune, specific place to collect agricultural waste (managed by plant protection department)

Annex 20: Notes Meeting with Thuan Chau agricultural department and other organizations

Local participants:

- Mr. Dien, Deputy Head of Agriculture and Rural Development Department of Thuan Chau district
- Mr. Doan: Deputy Director of Thuan Chau Agricultural Service Center
- Ms. Hoa: Vice President of Women's Union
- Ms. Ngoc: Farmer president
- Mr. Tuan: Thuan Chau District Statistical Office

Mr. Dien:

Provide document resolution of the district Party Executive Committee, have full data on economic, social, agricultural and rural development of Thuan Chau district from 2016 to 2020 and development orientation in the coming time.

Thuan Chau district ranks 2nd in the province in terms of total area. The total natural land area is 15,5002.3 ha. Population: 179810 people. The district has 28 communes and 1 town.

Ethnicity: Thuan Chau includes six ethnic groups living together, mainly Thai and some other ethnic groups.

Agricultural development is the key, accounting for (76%), mainly focusing on the development of crops and livestock. Specifically:

- Coffee: 5423ha, average yield 140kg / ha; have geographical indication dogs for safe and high quality coffee areas (eg in Chieng Pha); Coffee is mainly preliminarily processed and sold fresh.
- Tea: 1352 hectares with an output of 9,370 tonnes / year of tea buds. In the district, there are 3 tea processing factories of 2 enterprises and 1 cooperative (in Phung Lai commune, near Chieng Pha). Products include oolong tea, high quality tea planned for export to China, the Middle East; and products manufactured according to Vietgap standards. The district plans to have 4 production communes, including Chieng Pha, Phung Lai, and Muong E (see more in the document).
- Rubber trees: target 1658.7 ha, have 1 latex processing factory in Tong Lan commune. Currently, the district is planning 1279 hectares of rubber trees, with an output of 2208 tonnes of latex / year
- From 2015, to convert the acreage of other inefficient trees on sloping land (cassava, maize, upland rice) to fruit trees, reaching 4114 ha; Currently, 1600 ha have been harvested, the average yield of 8,000 tonnes / year. Specifically, the main types of fruit trees include:
 - o Mango: 1142.5 ha; There are regions that already have geographical indications, Viegap, which links chain-based businesses, in which seedling businesses provide guidance on care, harvest and product consumption; Contract term of 4 - 7 years
 - o Other fruit trees that are also basically under chain link contract include longan (796 ha); red flesh dragon fruit (46ha); passion fruit (244ha); avocado (290 ha); plum: 413 ha and other citrus, banana...
 - o Son Tra tree: more than 5700 ha, multi-purpose trees (forests, fruits, upland ecology) have no enterprise associated with the households.

Difficulty:

Mainly difficult in propaganda in the early stages; need the whole political system to take part. For example, price competition between an outside trader and an actor in the chain leads to a broken contract

Natural disasters are also a major difficulty for fruit tree production, for example, in 2019 there is a heavy frost, causing great damage to fruit trees. Recently, the rainfall in the area has decreased.

The people's cultivation techniques are not high

The training and training on care and harvest are inadequate and unprofessional, thus affecting productivity and production efficiency.

- Livestock:

- Mainly raising farm households, especially cattle raising such as buffaloes, cows, no farms or large farms (on average 1-2 heads / household, large households, 10-20 child). Trends in recent years for raising grass raising households in captivity. Since 2004, some households started growing grass for livestock. According to NQ 258, more households have grown because of support for grass varieties and technical guidance; In recent years, the households planted and planted grass on their own in any area of and near their home. The grassland area is about 100 ha
 - Other livestock includes poultry, pigs, and seafood
 - National agricultural extension program improves breeds of cows (zebu turns cows)
 - 1850 buffaloes, 4638 cows, and more than 47,000 pigs
 - 2 cooperatives for raising fish in cages and cages in Son La hydroelectricity with 782 fish cages; 3 cooperatives involved in farming, and 1 enterprise
 - In 2019, 2020, Thuan Chau is one of the first African swine fever epidemic districts in Son La province, occurring in Muong Nhe, Long Ha, and Muong Ban districts due to the border with Tuan Giao district, translated from Dien Bien Lan. and announced the end of the epidemic in 12/2020, mainly farm pigs infected with diseases. In the district, there is 1 cooperative pig raising in association with joint stock company (Hoa Dinh) to raise 100 sows and 600 pigs / litter according to the ATSH breeding model - the cooperative does not have pigs with ASF.
- The issue of using land for cultivation and animal husbandry: in the past, mainly grazing, shifting to semi-grazing, and now captive farming combined with growing grass and biomass maize, at the same time making use of banana trees (Planting only for stems and leaves for animal feed), cassava, chopped and incubated food for cattle. On average, each household can raise 3-4 cows. On the other hand, the land for grass is mainly used for making use of areas close to the house, so it does not affect the area of planting other crops.
- There are 5 OCOP products: including 2 4 star tea products (oolong tea and Binh Thuan black tea); 2 fish products (smoked carp and co-operative 3-star Da River fillet); 1 4-star ecotourism product; Some other products are subscribed to OCOP such as taro.

Annex 21: Notes Meeting with Extension Center of Son La Province

Respondent: Mrs. Tham

Tasks of the Provincial Agricultural Extension Center:

- Develop technical documentation
- Organize technical training classes
- Coordinate with domestic and foreign groups in building demonstration models

The agricultural extension model includes 2 types:

- Cultivation
- Breeding

Cultivation: Focusing on fruit trees (especially longan) according to the general orientation of the province, the model of mango, dragon fruit, organic vegetables ... the model of agricultural extension is working in Truong Pha commune (Thuan Chau).)

Breeding: artificial insemination for cows, crossbred cow sim, into beef cattle

- Swine, intensive farming model (formerly) : From 2021 towards organic direction
- High quality beekeeping model in collaboration with tropical bee center (Hanoi headquarters)
- Poultry and aquatic birds farming: breeding ducks, biosafety chickens (safe food, quarantined before being sold to the market)

How to replicate the **ntn**? model: From initially applied households, farmers can share varieties and production methods with relatives and villages.

- For example, in Chieng Pha, Thuan Chau district, there is a duck model (Truong Pha commune is Chieng Pha commune, prioritized by the province, assigned to the Agricultural Extension Center to be responsible for support) >> has potential for expansion, but not yet statistics.
 - o Some models in Chieng Pha
 - o The model of the provincial agriculture extension system in cooperation with the import-export commercial processing joint stock company: the shade of macca trees for coffee (year 1)
- The model of arabica coffee in Hung Nhan village (Chieng Pha) with nearly 20,000 ha / 5 districts is mainly arabica, no robusta
- Selling price: Coffee specialties of CARE project, coffee price of 100,000 VND / kg (dry bean); or 200 k depending on type, ground coffee ranges from 500-1 million / kg
- Having agroforestry model in Hat Lot commune,
- Co Noi has a model of Thanh Cuong Cooperative (ICRAF), they work on coffee with intercropped macca, agroforestry.
- In Hat Lot, there is a model of about 50 ha. In the 3rd year, the local people continue to expand more than 20 ha. The model includes ice grass, CAQ (plum, apricot, longan, mango), about 29 households participated

In Moc Chau: mainly coordinating with the Institute implementing the maize, vegetable project ...

- Moc Chau Farm, a model of growing thick corn for fodder; encourage replication of the model: but difficult (lack of capital), investment in cooperatives will be more effective
- Pig model: The province has a policy not to raise pigs in residential areas
- How to balance husbandry and cultivation due to the reduction of animal grazing area? Currently, the province has not had specific policies
- One of the solutions: growing biomass corn 74 tonnes / ha, on average 64 tonnes / ha (thick corn) - Center for Science, Technology and Agricultural Extension – VNUA

Annex 22: Notes Visit of Organic Pomelo Company

Interview of Mr Tien, director of “Safe Agricultural products Son La” (Cong ty co phan nong san sach Son La)

Mr. Tien has been working for more than 20 years in the construction sector (as engineer) before deciding to retire and turn to agriculture.

His company was established in 2018 with the idea to engage and promote organic agriculture. For him, too many agricultural surpluses, too much pesticide use leading to soil and water pollutions. He is engaged in the production of 9 different agricultural products: pomelo, taro, ginger, Son tra apple – ta meo-, special tea, medicinal plants, plums, sweet passion fruit, chayote; all organic-certified oriented.

He received the TQC (national organic) certification in 2020 for his pomelo production (picture). The TQC certificate has a 2-years validity. A test of samples (fruit, soil, and water) is needed to get the certification (test of Pb, cadmium and E. Coli content; picture).



The organic certification is on-going for taro and ginger (2021).

He tries to cooperate/ engage others farmers into organic production (for passion fruit, chayote, but also rice, pepper, and coffee production).

He receives financial support from private donors to promote organic agriculture in 3 other locations (10 households per location, 1 billion VND per farmers group).

Pest and fertility management?

Lots of problem with disease. He tries to favor biological control/ pest natural enemies (e.g. yellow ants, good fungus etc.). He uses different methods including traps for fruit flies.

He makes his own preparation mixing EM (efficient microorganisms), bio-product from fish, fermented maize and soybean with water to enhance plant health.

For him, plant health is highly related with soil health: the healthier the soil is, the healthiest the plant will be. He believes that pest problems are limited after 6-7 years of investment in healthy soils.

He intercrops many plants with his fruit trees: ginger, root vegetable, pumpkin, taro... and bring as much as possible fresh organic matter to cover the soil (maize straw, banana leaves, papaya and pineapple by-products, rice husk...).

He does not make any weeding; annual weeds dye naturally during winter.

He regularly (every 2 years) uses dolomites to increase soil pH.

He also manage soil fertility by limiting the fruit production (maximum of 50 pomelos/tree vs 100 and more in conventional systems). He dug a well (60-80m deep) to irrigate his plantation.



Marketing channel and strategy?

He targets organic markets with product certification as main strategy.

He received support from the government for the national TQC organic certification (he paid 20 millions VND out of the 130 M for 2 years).

He would be interested to export abroad (EU, USA, Japan organic markets) but the costs for international certification are high (200 to 300 M VND/1 year). He needs external support for that and/or to increase his production area. If the production area is above 5ha /7 HHs they can then establish as cooperative and get dedicated support from the government.

He has some connections with Japanese traders through friends in Hoa Binh Province (Pacific Cie). He plans to export 300-350 T of ginger to Japan in 2021.

For the moment, he sales his products to specialized groceries and supermarkets in Hanoi. He receives in average 100,000 VND/kg for his organic pomelo (up to 150,000 VND/kg for the special ones) as compared to 80,000 VND/kg under VietGAP or 20-30,000 VND/kg under conventional production system.

He engaged into QR code labels that are stuck on each pomelo and which provide information about his farm, the product and cultivation operations (product traceability).

Future? Dissemination mechanisms?

He is sure that the demand for organic products will increase.

Dissemination should bring together 4 different kind of stakeholders:

1. Government: state a budget for OA promotion; organize advocacy campaigns; improve certification/traceability systems, and provide technical support to farmers
2. Research institutions: engage more into research into practice; perform samples, share information, and find solutions to problems farmers are facing (notably pest management)
3. Private sector: find markets for organic products; connect the different stakeholders together
4. Farmers: better organize themselves; help each other regarding organic practices, issues and tips

Annex 23: Notes Visit Dragon fruit cooperative Quỳnh Thuận

Interviewee: Mrs. Hoàng Thị Thảo – Director

Telephone: 0373799605



1. General information about Coop

Quynh Thuan farmer group was established in 2016 with 7 members and then Quynh Thuan agriculture Coop was set up on July 2nd 2020 from Quynh Thuan farmer group and with 12 members, a production area 13ha in 2 villages: Quynh Thuan and Hoa Toat.

The Coop has 13.000 dragon fruit pillars in 13ha.



The charter capital is 1 bill. VND.

The Coop is also cooperating with other farmers in the locality in order to produce and buy agricultural products such as orange, pomelo, passion fruit, dragon fruit, etc.

2. Information about Coop's production

The Coop got VietGAP for dragon fruit. The willing of Coop will get Organic certificate in the near future.

The Coop bought dragon fruit seedlings from Ngoc Hoang Coop in Mai Son district. And the government supported 70% for seedling cost and 30% of farmers.

The government also supported 70% for pesticides and fertilizers cost in 2 first years.

The Coop is producing organic fertilizer by themselves from small fishes and soybeans. They bought small fishes and then mixed fishes with soybeans and probiotics to make organic fertilizer. After using this organic fertilizer, they see that the quality of fruits become very good, sweeter. They learnt this technic of making the organic fertilizer from TV and internet. They can master the technical process of dragon fruit.

3. Information about markets

For dragon fruit: 2/3 total production is sold to Ngoc Hoang Coop and then they export to oversea markets (???) and 1/3 remain is sold by producers in the domestic market. Ngoc Hoang coop only buy products with export standard and famers must sell the remain (low products).

The average price of dragon fruit is 16000 VND/kg and the output of each pillar is 25kg. So with 1000 pillars/ha the revenue of ha is about 400.000.000 VND/year.

For other products farmers can sell to customers or local collectors and traders.

Annex 24: Notes Visit Honey bee cooperative

COOPERATIVE “ONG PHÒNG LÁI”

Nguyen Van Thanh- director. Telephone: 0978112934

Address: Phung Lai commune, Thuan Chau district

Interviewer: Pham Thi Hanh Tho, Dinh Khanh Thuy

The cooperative was established on August 27, 2018, with 13 members, 12 beekeepers and 1 accountant. Established from the bee genus, operating from 1997-1998 with 20 members. However, during the operation, many members withdrew from the branch due to the ineffective operation of the branch, and so far there are only 13 members. As of September 29, 2019, the cooperative has 4 members following VietGAP standards. When participating in VietGAP, you must comply with the following regulations:

- No antibiotics
- Clean environment
- Avoid plant protection drugs

The 4 members have used the group brand of Son La honey for 11 years. The remaining households do not follow VietGAP because of many difficult problems. The most difficult thing is the epidemic, so we use antibiotics that we don't use

Membership

The cooperative does not yet have support for livestock members. In fact, members have to pay 10% of the total income to the cooperative, but the cooperative has not yet done so. Current charter capital is 650 million

The district also supports packaging, stamps, and labels the cooperative pays by himself. The province supports part of the cost of making VietGap standards.

Marketing

Products are not for export but for domestic consumption, customers are regular retail customers who do not sign contracts with companies with large enterprises. Up to now, the cooperative has not found partners because there is not enough output for the market. The cooperative has also connected with shops in Hanoi but the store has to order in advance because there is not enough volume to supply. The cooperative's total production of molasses is 33 tonnes / herd / year (1100 herd * 30 kg / herd). In which, 405 herds according to Vietgap standards in Thuan Chau and Song Ma districts (12 tonnes of Vietgap bile / year).

Products sold by cooperatives are not heterogeneous. Only Mr. Thanh's family sells about 150 kg / month. The other households on average sell 100 kg / month.

Honey price: 170000 VND / liter

Tree of honey source: honey of the river mum and molasses of saffron mixed with deciduous, but not exploited grass flower

Main issues

Yields did not increase because of more difficulty in choosing a bee breeding medium. VietGAP has only 2 areas of Thuan Chau and Song Ma. 4 households under VietGAP standard 1 year only 4 times of collecting honey (2 times of collecting honey, 2 times collecting honey) and mainly collecting in the spring, while other households go to many places to collect various types of honey.

Technical improvements:

In 2004, the cooperative was trained under the program of the Son La Ong Association

Understanding of breeding techniques: I do not want to follow vietGAP because the current profit is not equal to production according to vietGAP. Other households sell according to the market sometimes 200 thousand / liter. The price of VietGAP honey sold at home without packaging is 170 thousand / liter.

Quality management criteria of the cooperative: for cooperatives, the output is low but still ensures the quality

VietGAP Organic production direction:

The cooperative has been trained in organic production. The cooperative has not thought about organic production direction for honey products. Currently, they are still encouraging households to join vietGAP

VietGAP honey production decreased while the price has not changed, so the benefit is generally reduced.

There has been no improvement in product distribution, not towards export.

Desire to support:

If you want to have a water separator of 350 million VND, only 50% support from the state is needed to create trust and motivation for the remaining members of the cooperative

Annex 25: Notes Visit of Tea Company Thu Đan

Interviewee: Mr. Pham Van Doanh - Director of the Company

Phone: 0983537762

Address: Kien Xuong Village, Phoi Lai Commune, Thuan Chau District, Son La Province

Interviewer: Pham Thi Hanh Tho, Dinh Khanh Thuy

Interview date: January 27, 2021

Institution trajectory

- The company was established in 2012,
- Formation and development process Major evolution / changes since existing: A family living in this tea area owns an area of 20 hectares of tea. Through researching the safe tea market for export and meeting Taiwanese customers, the family decided to follow the direction of organizing production in association with households in tea growing areas according to export standards to Taiwan. This link has actually been formed since 2011 with the basis that 20 hectares of extended family by 100 in other households of 60 farming households. Currently, the company's total tea area is 350 hectares (20 hectares of family), the rest is the tea area of 400 households in the link in 3 communes Chieng Pha, Phung Lai, Muong é, Thuan Chau district, in which They are Phong Lai with 150 ha of 130 households / 700 ha, Chieng Pha 150/200 ha; Muong Nhe: 50/150 ha of tea in the communes. These households have different area sizes, at most 5 ha, at least 0.5 ha.
- Linkage characteristics: The linkage between the company and the households is established on the basis that the company directly links with each household with the participation of the village leader signing contracts with individuals and companies . the company supports 100% of leaves, pesticides, long-term technical guidance, farmers contribute land to grow tea, invest in care and collection. Many stages of care require techniques such as cutting tea, the company dispatches 4 technicians to work for farmers. The company purchases all tea materials that farmers produce at a price higher than the market price: For example, the usual price that the company buys is VND 10000 / kg while the market price is VND 6000 / kg because The factory does not have association with farmers but buys on the free market. 100% of products are exported to Taiwa

Business plan/ Development strategy

With the strategy of linking production towards export markets, the company has 4 workers to supervise techniques, trim, guide care, distribute medicine, spray to farmers, spray what and what time. Any point is regulated and monitored closely by the company. The company has fly cam to monitor the tea growing area.

Currently the company has 01 processing factory in the raw material area with about 10 regular employees: 2 processing technicians, 1 director, 1 accountant, 1 storekeeper, 2 machinery technicians, 1 marketing person. .

Annually, the average output of the company is 300 tonnes of dry tea (Factory capacity is 600 tonnes). To produce 300 tonnes of dry tea, 1500 tonnes of raw fresh tea will be required

Tea products include:

- Green, red, red tea, black tea, gaba, marinated house flowers, oriental beauty, most are oolong
- Oolong is mainly exported to Taiwan and 100% is directly exported
- Other teas are sold in Japan (50%) and Taiwan (with 5 Taiwanese customers)

The company has a clean production strategy: With 8 years of experience exporting tea, but the company's products have never been returned. Currently the company has followed the VletGAP Technical Process as newly certified for about 20%. The remaining area is still subject to the process but has not been allocated due to not registered (note: possibly according to the Provincial program). It costs more to do a clean production model. While the company buys the ingredients at VND 10,000 /kg, there are 2 normal local tea factories that can buy the ingredients for VND 4000/kg. The specific production process for tea is built by the company based on the specific requirements of the customer:

- Taiwanese customers require compliance with Vietnamese drugs allowed by Taiwan, allowed by Taiwan and allowed by Europe. Combining 3 requirements must find the right medicine for all 3 required countries
- Requirements for processing techniques, surrounding landscape, sterilization factory after each tea batch
- At the beginning, the company only switched to using plant protection drugs at the level of toxicity in yellow color (Actara), but from 2016 until now the company has changed to the lowest level of toxicity, the low level of the blue line according regulation (Abamectin).
- There is a transition in using Fertilizer: before using 100% synthetic chemical fertilizer but now using 70% organic and 30% synthetic fertilizer.

The company hires expert Taiwanese technical support.

Development strategy:

- Many farming households in the area want to join the company, but the company is not qualified to do so in the coming time there is no plan to expand the production area and increase the processing capacity.
- Focus on Quality Strategy: focus on quality improvement for green tea and black tea milk tea products. Green oolong tea still uses chemical fertilizers in the future, but in the future, it will replace soybeans and eggs for tea cultivation. With the above strategy, the company strives to bid for tea that can be exported at prices ranging from VND 250,000 to VND 300,000 / kg
- Still maintain the export strategy because in Lam Dong farmers destroyed a lot of tea area so many traders went to Thuan Chau Son la to ask and even new customers from Taiwan came to the company to buy products.
- Local planning has the potential to increase tea acreage by another 100 ha by 2025: an increase from 1200 to 1300 ha
- Since 2020: the company starts a strategy to change to use chemicals in the production of tea materials regulated by the European market,
- The Company has a strategy to export directly without intermediaries
- The company has piloted linkage with cooperatives but has not been successful due to the problem of benefits distributed to members and the leaders is not good.
- Linkage with the Producers' Collaboration could be easier to do

Difficulties: The road to the processing factory is difficult, the car is difficult to take place. There is no concentrated industrial park here, but the tea processing factory has to be built in the raw material area, so there is an obstacle that large vehicles cannot access.

Recommendation for support: need roads outside the factory fence. Other supports should be provided directly to farmers

Interest for AE and SFS

- Willing to participate in the project if implemented in the area, the project can support investment for farmers partly
- Currently the company is piloting the model of organic tea, but the buffer zone is not secure and difficult to do

Annex 26: Notes Visit Farmers fields in Na Heo village, Chieng Pha commune (coffee, fruit, livestock)



Date: 27 January 2021

In Chiềng Pha Commune, Thuận Châu District, Sơn La Province

Interview with M. Quang Van Nhat, M. Quang Van Sinh, M. Quang Van On

Interview by Mélanie Blanchard (Cirad), Pascal Lienhard (Cirad), Trong Hieu Do and Le Khai Hoan (NOMAFSI)

Farmer 1- Quang Van Nhat (1986)

7 cattle, 5 at home and 2 in the grazing area

He started to raise cattle a long time ago. He gets an income of 7 to 8 millions VND per cow. He sells the animals directly to collectors when they come, without any contract.

Feeding: During the rainy season, he uses forage (harvest from May to July). He produces silage also, but he prefers to use fresh grass. He started 5 years ago to produce grass (Co Voy, Elephant Grass) with the support of extension officer. He has 3000m². During the dry season, he also needs to feed his animals with rice staw, banana stem, maize and other powder to make feed.

The vet injects periodically medicine

In the past he used to grow maize and cassava, but his income was not good, so he decided to convert all his cultivated area to fruit production. He just maintain paddy rice production (2 season, 2000m²). He grows Arabica coffee since 5 years (7 000m²). The coffee is the main cash crop for his farm, and livestock production increases his income.

He thinks that 3000 m² of grass is more profitable than 7000m² of coffee: before he spent a lot of time to bring the animals to the grazing area. The cultivation of grass close to cowshed helps saving labor.

He cannot follow all the guidance for the coffee production (spraying, pruning etc.), because he has not enough labor.

Farmer 2- Quang Van Sinh (Khang ethnic group)

He has been producing coffee for more than 10 years. He sells the fresh beans (5-6000 VND/kg) to a collector without any contract. Before he used to grow maize and cassava but didn't get enough benefits. He was the first farmers to convert maize and cassava to coffee with a credit from a coffee company. His coffee suffers from "rime" (sort of cold mist that burns the leaves and can kill the plants)

Vietgap? He was trained last year but he didn't follow the guidance because it's too much investment for him (fertilizer). He just use organic manure from his farm and NPK fertilizer.

He has 2-3 cattle and 500m² of Elephant grass. His grass production is not enough for all the year. He use also banana stem and rice straw, and he cuts & carries natural grass from his own forest production area. His animals are not grazing (no more grazing area anymore). He just starts to keep cows for reproduction. Before he was only involve in cattle fattening (3 months).

Labor: One of his sons is a military, the other one has a shop. His wife has a shop in the village.

He needs to hire some labor for the field work (2 000 VND/kg to harvest the Coffee or 140 000VND/day for other works).

Main issue: variable and some years low cost of coffee and benefits, lack of labor, access to watering, and market

Farmer 3- Quang Van On (Khang ethnic group)

He got 15 millions VND from the government to raise beef cattle during 3 years. He paid back the cash advance already. He bought young reproductive cows and build a barn. Now, he has 1 calf and 2 full cows.

Before his main income sources were maize and cassava, then coffee. Last year, he transformed a part of the coffee cultivated area to fruits. He produce dragon fruits and banana (fruits but also to feed animals). He use the manure to fertilize the dragon fruits (4 times per year), the coffee (not specific treatment). With the weather issue (icy mist) and the price, the coffee was not profitable enough.

The cooperative Ngoc Hoang on dragon fruits give him seedlings and technical advice to grow dragon fruits. They monitor his practice (pesticide use is forbidden before harvest) and control the quality of fruits before buying the fruits (sugar content). For the first year he got 100 kg.

To sell the fruits, he has a contract with the company with a fixed price.

He plans to convert the remaining coffee area to dragon fruits if the price remains good. He just keeps a small area of cassava and maize to feed his animals (no need to buy).

The Dragon fruit production area is 27 ha in the commune. They export to Russia (before Covid).

His first income source is the livestock activities (15 millions, with 10 millions for pig each generation).



Annex 27: Notes Meeting with Mai Son agricultural department and other organizations

Ms. Cầm Thị Khay – Vice president of Mai Son people committee
And representatives from other units at district levels

- Ms. Khay's speech:
 - o Currently Mai Son is focusing on agriculture and rural development, especially for growing fruit trees, also increasing the development of livestock, and we have some models of raising cattle and pig.
 - o We now have 10.560 ha of fruit tree, mostly longan, passion fruit and some other citrus.
 - o Our strategy in terms of growing fruit trees in the coming years is limiting the expansion of the fruit tree areas and focusing on improve the quality. In the next 5 years, the areas for fruit trees still can be expanded but should be less than 1000 ha.
 - o We've been establishing many cooperatives and also businesses based on the results from the models of growing fruit trees and raising livestock.
 - o We currently have 127 cooperatives, 107 of which are agriculture cooperatives
 - o There are some projects which are currently deploying in the area funded by the government and by the international organizations.
- Mr. Pascal:
 - o Could you recommend some models which are considered as good and effective, particularly those ones related to agro-ecology, and meet the requirements of using safe pesticide & herbicide, hygiene food.
- Ms. Định from Mai Son DARD:
 - o We currently have 23 units (cooperatives, groups) that working in cultivating and producing organic agricultural products, and VietGap-oriented products in the area of 30 ha of sloping land consisting of mango, longan, dragon fruit, orange and pomelo.
 - The Agricultural service center is in charge of providing technical support for them.
 - In Chieng Sung: 5 ha mango, 5 ha of pomelo, 5 ha dragon
 - 23 cooperatives that producing VietGAP products are located in Co Noi, Hat Lot, and other communes.
- Mr. Cuong – The center of agricultural service
 - o The livestock production of Mai Son is considered as the largest amongst the province, with the total number of cattle is about 25.000 heads, number of buffalo is 19000 heads.
 - o There are 2 large-scale pig farms in Mai Son: Minh Thuong and Loc Phat companies, with a total of 25000 heads. Loc Phat company is keeping parent pigs imported from France. In the past, we had to import pigs from the lowland provinces, but now the district can produce enough for itself and also for selling to nearby areas.
 - o We have some cooperatives that growing livestock, but their development is poor, and the number is limited, the livestock production of the district is still mainly at small scale. There is a feed company Hoang Gia Viet in the district.
 - o For growing cattle: enclosed raising is the most used method, farmers use planted grass to feed their cattle, elephant grass is the most used variety. There are some communities still make use of forest area for grazing but this's not popular.
 - Currently there are no cooperative or household that follow VietGAP-oriented standards to grow their livestock, they mostly use the traditional methods.
 - o Is there any typical agroforestry model in the district?
 - In Chieng Mung commune (Mr. Duan)
 - 100 buffalos
 - Fruit trees consist of longan and mango

- Using manure from buffalos to apply for the fruit trees
 - Chieng Chung commune (Mr. Quy): 320 ha
 - Timber
 - Some fruit trees
- Any company that buys manure for producing organic fertilizers for rice, fruit trees...?
 - Seem to be no company doing this.
 - There are some households that raising pigs they make compos from manure to sell for other households. Minh Thuong and Loc Phat pig companies also make compost and sell to other households for cropping
 - They use EM to treat the manure then put it in the bags but there are no labels or brand name included.
 - Does increasing the number of pigs bring any issue on disease? If so, what do you do to manage this problem?
 - It does
 - We have some programs to support farmers to recover their number of pigs
 - But it's challenged since they are afraid of getting the disease again.
- The role of women union in the programs of supporting farmers that you are taking part in?
 - Ms. Luyen from Women Union of Mai Son (0982832782)
 - We involve in the programs that support farmers to develop their agricultural production through establishing the typical models
 - Nutrition for children programs
 - Gender equality
- The role of Farmer Union
 - Propagating members to follow the guidelines of using pesticide and herbicide properly, food safety and so on (i.e. 7 quarantine days before harvesting for using pesticide and herbicide on vegetable)
 - For the crop models, members are mostly conducting by themselves, the support from the union for this activity is very limited
 - Growing livestock: Encouraging farmers growing reproductive cows in enclosed facilities, planting grasses
 - 7-15 heads/household
 - The number of households that have 10 cows or more is quite high
 - Propagating households to treat manure before discharge to the environment.
 - Working in collaboration with other specialized agencies such as the center for agricultural service, Tay Bac university to support farmers.
 - What are the problems that you are facing in the development of fruit trees? Pests & Diseases?
 - We often encounter this problem, but it is well managed thanks to the effective collaboration between relevance agencies and units
 - Do you have a list of pesticides and herbicides to recommend for farmers?
 - Can be found at the department of plant protection in the center for agricultural service or at the agents that sell pesticides and herbicides
- ICRAF's representative: (Mr. Thach)
 - Since 2013 until now we've been conducting many models on sloping land, growing fruit trees, forestry, and rice.
 - In Hat Lot commune, we have about 50 ha that grow fruit trees and timber.
 - In that area, mung bean and peanut are used for intercropping
 - Guinea is used for creating contour lines
 - Designing model of growing contour lines of grasses on the fruit tree farm.

- In the first 3 years when the fruit trees haven't produced fruits, farmers earn money from intercropped crops, and harvest grasses from the contour lines for raising livestock
 - A cattle consumes about 30 kg of grasses/day, therefore 1 ha of planted grasses can produce enough feed for 2 cattle/year
- In the dry season, farmers can make use of sugar cane shoots to feed their cattle
- The model has been conducted for 6 years, and the fruit trees has been harvested for 3 years.
- In Co Noi we have 6 small models on agro-forestry, each model is about 4000 m² which consists of different modules such as nursery gardens for mango, logan, avocado. total area of all the models is about 10 ha, more than 10 ha of coffee
- In Hat Lot commune, we support seedling for farmers in the total area of 20 ha.
- What do the farmers prefer? Do they prefer agro-forestry model or the fruit tree one?
 - The farmers prefer the agro-forestry model, since it brings different sources of income
 - At the beginning when fruit trees haven't produced fruits, they have other sources of income (intercropped crops), and then use that income to reinvest for the fruit trees.
- Do you support farmers to establish nursery garden for grasses?
 - They harvest the grass seeds themselves and sell to other farmers.
 - In the years of 2016, 2017, 6-7 households in the model sold about 10 kg of grass seed to others.
- How many companies that produce seed and seedling in this area?
 - About 20 cooperatives
 - Seeding is bought from Fruit and Vegetable Research Institute, then farmers transplant and did marcotting themselves.
- In Co Noi, at the beginning, there are only 6 households, now there are 24 households that follow the model
 - Firstly we let them visit the model, then we help the farmers who want to apply the model to multiply varieties and also to design the model on their farms
 - We mostly support them on technical issue.
- Is there any other kind of grasses for feeding livestock except elephant grass and Guinea grass?
 - There are about 300 ha of elephant grass
 - 5000 ha sugarcane, their shoots can be used to feed the livestock
 - 200 ha of biomass maize >> (the variety is provided by Dong Giao company), these areas are mainly in Chieng Sung, and they're off-season planted
- Manure treatment:
- Is there any problem with cultivating maize on sloping land?
 - Since 2016, the district has converted about 10.000 ha of maize to fruit trees. Currently, most of the areas which cultivate maize are flat lands. Therefore, there are no problems in terms of soil erosion

Annex 28: Notes Visit Dat Thuy One Member Company Limited (Co Noi commune) - Fruit

Address: Co Noi commune, Mai Son district, Lang Son province.

Interviewees: Ms. Thuy - Facility Owner (0973583475)

Interviewers: Hoang Minh Huy, Melanie, Thuy, Hieu.

Company trajectory

Company Established in 2008. From 2018-2017, the company mainly trades in local corn and cassava products. The company buys maize and cassava from agents and sells to big animal feed factories such as CP, Green Feed, Stork in Hai Phong, Bac Giang ... Corn and cassava consumption a year about 15,000 - 20,000 tonnes.

From 2017, the Company started to participate in the processing of agricultural products because it realized the potential from local raw materials, while the output of local people was fragile, produced but could not be sold. .

The degree of using the company's drying system is almost continuous due to the seasonality of the agricultural products produced in Son La province (e.g. mango, dragon fruit, macadamia).

Currently the Company has 9 full-time workers. During the production season, the Company hires additional employees to work on a seasonal basis.

In 2020, the Company invests in a modern electric drying system worth 1.9 billion VND, in which the Company receives more than 200 million VND support from the Department of Industry and Trade of Son La province. The system will be completed in June 2020. The drying system allows for the drying of many locally available agricultural products. Currently, the Company has dried products such as: dried mango, longan, banana, dragon fruit, and crunchy persimmon. The company's drying system is modern, allowing active temperature control, so the quality of the product is higher than the traditional drying using coal.

The company has 2 electric drying systems. Total capacity of the drying system with the following products: Fruit longan: 7 tonnes / day; Mango 15 tonnes / day.

The company buys products directly from farmers and buys through cooperatives. Currently the company has association contracts with about 10 cooperatives scattered in several districts of Son La province (Song Ma, Co Noi, Thuan Chau). In Mai Son district, the company has links with about 3 cooperatives producing longan and mango products (Thong Nhat longan cooperative, Na Ban mango cooperative, Mac Ca cooperative in Hat Lot)

The purchase price of the Company's products is according to the market price. Most of the raw material areas of the Company, produced by cooperatives, are already VietGAP certified.

Cooperatives associated with the Company must ensure compliance with the technical process required by the Company. The Company sets the standards for pesticide residues for the products purchased by the Company. The cooperatives are responsible for monitoring and controlling the compliance with the production process and the requirements for pesticide use given by the Company. The Company conducts analysis of pesticide residue from sources that are doubtful and does not meet the Company's requirements. If the residue of plant protection drugs is high, then do not buy.

VietGAP-compliant agricultural products have not contributed much to the increase in the value of the Company's processed products. VietGAP standards only contribute to making the Company feel more secure with input materials used for processing.

Byproducts in processing (macadamia shell, longan shell, ...) The company allows the neighboring households and households in the cooperative to make organic fertilizer.

The company's products are mainly sold to customers in Hanoi, Bac Ninh, Hai Phong, The company sells products mainly in the form of raw materials to other companies for packaging and processing of finished products. . In 2020, longan products will be mainly exported to China through traders at border gates.

There are very few processed products with labels and trademarks of the Company going into supermarkets.

The Company's products have not been OCOP certified. It is expected that in 2020 the company's products will be certified OCOP.

For Maca products, currently in Mai Son, there are 100 ha of maca in Mai Son, which is not enough for the company, so they have to buy raw materials in other provinces such as Thanh Hoa, Tuyen Quang, Dien Bien, Moc Chau.

Development orientation of the Company:

The company prioritizes associating with cooperatives, consuming products of cooperatives. The Company has a policy to expand links with cooperatives if the Company's market expands. The company prioritizes cooperation with cooperatives.

Desiring to expand the market, especially the needy export market to China, ..., and export products to supermarket chains, agents in Hanoi and Dien Bien. In 2020, the company's longan products exported to China must still be through another company.

Difficulties of the Company:

The company has just entered into agricultural production and processing, so there are not many customers.

The process of processing and drying products is done by the Company by itself, but no unit has supported technology transfer to the Company.

Currently the company has difficulty in exporting due to Covid situation

Support need:

Supporting the company to market output products.

Support product processing technology transfer to the Company.

The company wishes to receive support to be able to directly export the product.

Annex 29: Notes Visit Hung Cuong Livestock service cooperative (Co Noi commune) - Pig

Interviewer: Tran Huu Binh. Telephone: 0972159136

Address: Sub-zone 3a, Co Noi commune, Mai Son district, Son La province

Interviewers: Minh Huy, Melanie, Dinh Khanh Thuy, Do Trong Hieu

The cooperative established 1/1/2017 with 26 pig raising households linked together to share experiences in breeding and unify to follow the group breeding process. However, linking activities just stop at sharing experiences. Associated groups do not have any market linkages, so many households have withdrawn from the group. Currently there are only 12 members.

Animal raising activities:

Currently the cooperative is pig raising and 3B cow breeding. From 2017-2019, the cooperative only raised pigs, but in the last 2 years, due to swine fever, the cooperative has gradually shifted to cow breeding. In 2019, 20% of the households in the cooperative have pigs die from swine cholera, occurring in households that do not regularly sanitize and disinfect.

The households followed the same breeding process, they only used industrial bran up to 50 kg, and then raised pigs with corn until they were discharged. For cow production they use corn stalks, grass crops and straw. Breeding knowledge is freely referenced from other husbandry models and disseminated to households in the cooperative. Pig wastes are treated through biogas systems and treated wastewater is used to water plants. Fertilizer is used for sale and cultivation by members of the cooperative.

At present, the cooperative provides 800-1000 pigs / year, mainly sold to local traders.

Technical improvements:

In the last 5 years, households in the cooperative have changed their methods of managing and caring for pigs such as: adequate vaccination, periodic mixing of antibiotics for pigs and good care of breeding sows.

Most households buying pigs come from Minh Thuy enterprise.

Having knowledge of biosafety farming by visiting biosafety farming models by themselves.

Cooperative members linkages

Links of members of the cooperative just stop at sharing breeding experiences, there are not many other joint activities.

There is no linkage activity on output, mainly households sell pigs by themselves. Pigs are mainly sold to traders in the province and district. In the locality, there are only small and no centralized slaughterhouses.

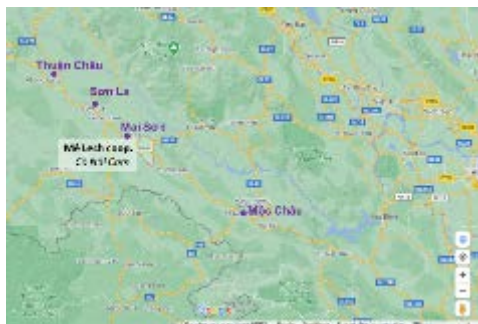
Difficulties: Co-operatives have difficulty in capital and epidemics. No output difficulties

Development plan:

Due to risky pig raising, the cooperative plans to switch to cow raising in the coming years. They get help with cow semen.

There are no plans to expand to add members. At present, members of the cooperative are not enough to link the chain, because there is not enough output to meet the market demand.

Annex 30: Notes Visit Mé Lech Custard apple cooperative (Co Noi commune)



Date: 28 January 2021

In Cò Nòi Commune, Mai Sơn District, Sơn La Province

Interview with Ms. Nguyen Huu Tu (0 378 989 998) in dans la parcelle de production de apple sous certificat organic

Interview by Mélanie Blanchard (Cirad), Hoang Minh Huy (IPSARD), Trong Hieu Do (NOMAFSI), Dinh Khanh Thuy (NIAS)

The cooperative Mé Lech gathers 20 Custard apple producers in Cò Nòi Commune. They crop 130 ha of which 120 ha are under Viet Gap certificate and 5 ha under organic agriculture.

What are the differences between conventional Viet Gap and organic agriculture?

Custard apples produced in organic farming are less attractive, the fruits don't look good. The yield is lower. The yield in conventional 13-14t/ha/year (not sure) while in organic agriculture it is only 7-8t/ha/year. Moreover it is difficult to find a market for organic products. The price obtained is often lower than the price obtained with the Viet Gap certification. They sell the products to resellers (in field). In 2020, the price of fruits was 45 000 VND/kg in the field. Another difference is that the soil under organic production contains more earthworms and seems to be healthier.

The investments for organic production are higher than for conventional production. The costs of fertilizers, labor, etc. are estimated at 100 million VND/ha for conventional agriculture, while they amount to 160 million VND/ha in organic agriculture.

Trees in organic agriculture are less tall and less vigorous. There is a clear difference with the neighbouring plot where the trees are under conventional agriculture (see photos below). Finally the trees under conventional agriculture should be able to be harvested for 25 years, but he thinks that this duration will be shorter in organic agriculture.

The cooperative started a long time ago now (2018). The members follow the Viet Gap recommendations. They use the recommended pesticides on the Viet Gap part and compost from Que Lam company ¹ (Vinh Phuc Province) and herbal oil sprays on the organic part. To limit insect attacks on the fruits they cover them. In spite of this, the organic part was attacked in the year 2020. The members of the cooperative apply the guidance and recommendations, the same harvest periods, the same times of spreading, tree pruning, fruit covering, etc. They apply 50% manure from the livestock farms and 50% of commercial organic fertilizer. Even if they had more manure they would need to apply organic fertilizers. 1 ha represents a need for 5 full-time female and male agricultural workers for 5 months (pollination, pruning, harvesting, and weeding). The plantations are irrigated with groundwater (drawn from the ground). Access to water will be a problem for production. They apply fertilization through the irrigation network (installed network).

In this context, why do you still produce organic custard apples?

Although productivity is low, soil health in organic farming is better

They follow the Province recommendations. They have received support in recent years:

+ 500 million VND over two years for the purchase of agricultural fertilizers.

+ 100 million for packaging, labelling

+ 130 million for organic certification

+ 50 million for product promotion

= 780 million VND in total support in 2 years.

And the support depends on owned production area

They started with information on the internet and training sessions organized by the Province with field visits. They have received support from Province and projects, including an improvement of the varieties produced (from FAVRI). 5 varieties are being used within the cooperative: one from Taiwan,

¹ <https://quelamorganic.com/>

one that tastes like durian, Traditional one called Na dai (90% of the area under production) and one Queen Called Na Hoàng Hậu, one from Thai land (called Na Thai).

In the coming year, they will change to plant Custard apple from Taiwan and Thailand

Their main challenges remain the lack of support to access markets.

They have developed a brand name and a QR code system to ensure production traceability. They have benefited from training provided by the company Que Lam, which supplies them with organic fertilizers, as well as by the NHONHO company (certification body). Their products are sold to traders in the Long Bien market in Hanoi and Hai Phuong city, but also a small share in supermarkets (ex. 2% in BigC). They connect with Hung Thing cooperative in Muong La district, Son La province to have access to supermarkets. They also connected with Greenpart company to advertise fruits in Du Bai

The price fluctuates, but the price of 80 000 VND / kg for fruit (for fruit with the best quality) of about 1 kg is the highest price they have.

The production and harvesting takes place from mid-June (lunar calendar) to January. But at the time of full season, traders want to reduce the price. For fear of not selling their products, they lower the price.

The cooperative's strategy is to increase the number of members and production area in the coming years and to promote the product to improve sales. There is no anticipation that prices are likely to fall when the production area is greatly expanded.

They intend to develop production for export and sales to supermarkets in the coming years

The cooperative charges on investments (1.5 billion VND/ha), and the members contribute monetarily to maintain the activities of the cooperative.

Transition and trends in the coming years

On the slope lands, there used to be production of maize, sugar cane and cassava. In the last 10 years, there has been a transition to fruit production, which is more economically efficient.

- Sugarcane 20 million VND/ha/year profit
- Custard apples 600 million VND/ha/year profit

The variety Taiwan allows to have a better price, the yield is better, and the taste is better.

Pollination must be done by hand, which in his point of view represents an ease of management.

The Queen variety is more expensive. The cost of a 5 year old plant is 1 trillion 100 to 1 trillion 200 VND. The The advantage of traditional one (Na dai) is to allow to keep the fruit more than 10 days on the trees once it is ripe before having to collect it, and to keep it 7 days after harvest.

Annex 31: Notes Visit Strawberry cooperative (Co Noi commune)

Interview of Mrs Nguyen Thi Lan, head of Xuan Que strawberry cooperative in Co noi commune, Mai Son district

She is from Hanoi. Her husband is from Son La.

She started produce tomato, cabbage and maize five years ago.

She started strawberry production in 2018, on 0,5 ha, bringing strawberry seedlings from Dalat (following the advice from a friend; she has no background in agriculture). She could get good benefit from selling strawberry directly to consumers in Hanoi and Hai Phong, then decided to invest in strawberry cultivation

Now she does not produce maize any longer. Strawberry, tomato, and cabbage are produced following 2 main rotational systems: strawberry/cabbage/fallow and tomato/cabbage.

Strawberry is the most profitable crop: she can make a net profit of 1 billion VND/ha/2 cycles of organic strawberry vs 200 millions VND/ha/2 cycles of tomato and cabbage.

Strawberry is harvested from December to March (4 months)

She has 3 ha of strawberry under Vietgap and 3 ha of organic strawberry. She employs 60-70 staffs permanently.



Marketing channel?

Two main channels: Big C supermarket in Hanoi to which she sells her production under VietGAP and high quality fruit store in Hanoi where she sells her organic production. Products are sent to Hanoi using refrigerated trucks.

No certification, no possibility to sell to these supermarket and retail stores, this is a reason why she established a cooperative with 10 others households.

For VietGAP: you can apply for a 3-year or a 1-year certificate (cost of 27 vs 15 M VND respectively).

She receives subsidies from the government the first year to support VietGAP certification.

To obtain the certification, she needs to make soil and water (she dug 5 wells to irrigate her vegetable production) quality tests every year (samples send to a laboratory in Haiphong).

She either sells strawberry baskets of 1,8 kg or plastic boxes of 0,5 kg.

Selling price is of 230-240,000 VND/kg for VietGAP. She can get 30% higher prices for organic but organic production is more complex and more costly (e.g. strawberry seedlings price is of 20,000 VND/plant under VietGAP vs 25,000 VND under organic). Strawberry production is also lower under organic (11 T/ha vs 15 T/ha under VietGAP). Organic production started in 2019.

Pest and disease management?

She experienced leaf sheath blight (kho vang) on Strawberry in 2018 and bacteria blight on tomato. They changed to resistant variety (grafted variety from FAVRI).

Plastic mulch is used to limit weed pressure. Two types: one she buys in Hanoi and that has to be replaced every year (collected and burned...); another one, imported (from?), that is biodegradable.

Fertility management?

The media used for plant growth (BVB) is imported.

They use organic fertilizers for organic production: fermented fish and soybean (EM?) also imported. Fertilizers are mixed with the water previous being spread through the irrigation system.



Cooperative?

The cooperative regroups 10 HHs. She is in charge of the marketing. Three other members are in charge of the input supply and quality monitoring.

If you want to become a member: you need to own your land, test your soil and water to see if they are suitable for strawberry cultivation and fill the application form. Application is then submitted to cooperative members for approval.

The cooperative is connected to five other cooperatives through the cooperative alliances at provincial and national levels. They have notably linkages with another cooperative in Hai Duong Province producing sweet potatoes for Japanese market.

Future plans?

She plans to increase her cultivated area up to 30 ha in 2022 (30% of which would be strawberry) and to export to Japan.

Annex 32: Notes Visit farmers field AFLI II project (Co Noi commune) - Agroforestry

ITW farmer and ICRAF staff AFLI II project Co noi commune, Mai Son district

AFLI project: Agroforestry for livelihoods of smallholder farmers in northwest Vietnam (Phase 1: 2011 to 2016). Funded by ACIAR and implemented by ICRAF (World Agroforestry)

AFLI project phase 2 (2017 – 2021): Developing and Promoting Market-based Agroforestry and Forest Rehabilitation Options for Northwest Vietnam.

Two main communes of intervention in Son La Province: Had lot (~50 ha, including 20 ha of spontaneous adoption by farmers) and Co noi (~10 ha).

Started with 29 HHs in Had lot; now 60 HHs; 6 HHs in Co noi, now 24 HHs. Dissemination process mainly supported by the project (tree seedlings provided for free to the farmers).

Visit in Co noi commune.

1. Macadamia –coffee- soybean system

Mr Lo Van Can (Farmer) and Thach (ICRAF staff)



Comparison Macadamia monocropping vs AF Macadamia intercropped with coffee and soybean

Macademia density in intercropping system: 9 x 7m (154 trees/ha)

Coffee density: 2x1,4m, 3 rows in between 2 rows of macadamia (about 2160 trees/ha)

Soybean was intercropped between coffee rows (about 30 kg/ha/season) the 3 first years.

Investment cost is of 55 M VND/ha (11 M VND for macadamia @70,000 VND/macadamia seedling; 43 M VND for coffee @20,000 VND/coffee seedling). *[investment cost do not include irrigation]*

Return on investment after 5 years (macadamia starts producing after 5 years).

In Dien Bien: a company support Macadamia seedlings to farmers; not in Son La.

Macademia farm gate price have been decreasing over last 3 years:

Year	Price VND/kg
2018	100 000
2019	75 000
2020	60 000

2. Forage grass strips in fruit tree plantation



Forage grass strips are planted every 10 meters in contour lines.

Two main forage species: elephant grass (*pennisetum purpureum*) and guinea grass (*panicum maximum*). This farm applied only guinea grass as its root is short, not competitive the nutrition with the fruit trees.

The main objective is to prevent soil erosion, fertilizers and nutrients losses related to water run-off and soil erosion (guinea grass being more efficient for soil erosion control)

Another benefit is the possibility to keep animals at home (cut and carry). In the area forage grass are complementary to sugar cane leaves as fodder.

Main constraints: farmers not interested when fruit trees plantation are far from living areas (labor for forage cut and carry).

Another limitation is farmer access to forage grass material (possible propagation by cuttings but limited seeds production).

3. Teak – plum – coffee – soybean – fodder grass system

Mon village, field of Mr Lo Van Thanh



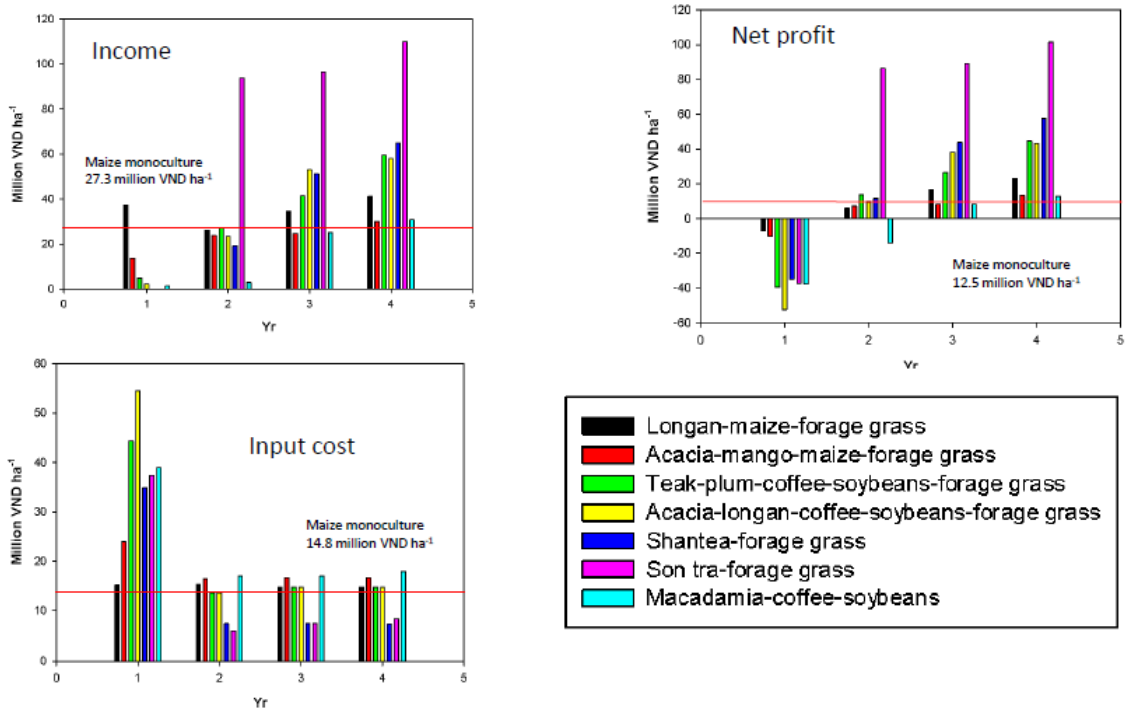
Limited farmers interest in this model.

Teak growth is too long (long return on investment in a context of limited land availability). Coffee is not suitable for the area (many coffee plants died).

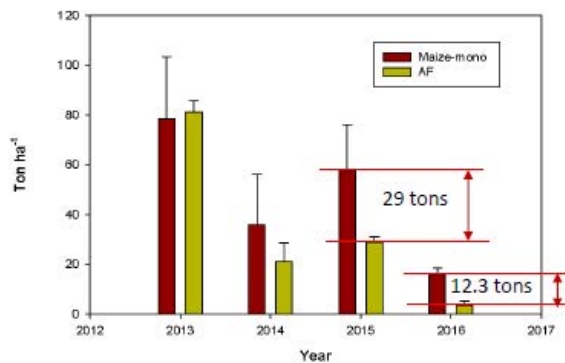
Farmers are more interested in fruits trees (plum/longan) plantation.

Additional data from Nguyen Quang Tan ppt presentation: Maize monoculture in North-west Vietnam: The role of agroforestry in sustainable maize production

Profitability analysis of agroforestry systems compared to maize monoculture



Soil erosion control



1 ton soil surface contain 1.1 kg N, 0.1 kg P, 0.15 kg K

Annex 33: Notes Visit Son La Tapioca Factory

Interviewed: Mr. Ngo Quang Tuan - deputy director (Phone: 0915409075)

Address: Muong Bon Commune, Mai Son District, Son La Province

Interviewer: Pham Thi Hanh Tho, Pham Cong Nghiep, Hoang Thanh Tung

Institution trajectory

The factory has 150 stable employees. Seasonal Labor: 100 people: part-time, seasonal. 80% of labors in Muong Bon commune are mainly untrained workers. Average income 5.5 -6 million / month

- 1998 Factory is built as a state-managed unit
- 2012: Due to ineffective operation due to inadequate human machines, the State allowed to equitize, Fococev Joint Stock Company acquired a majority of shares, restored raw material areas and concentrated wastewater treatment
- 2018: The factory has increased its capacity from 100 tonnes to 300 tonnes of finished products in 1 year by importing about 1200 tonnes of raw materials daily.
- Current yield: 15 tonnes / ha

Areas of raw materials that the factory purchases mainly cassava

- In the period 2012-2015: the main raw material areas are Thuan Chau, Bac Yen and Tuan Giao districts, Dien Bien and Mai Son
- In 2016: Due to Mai Son changing the plant structure, the cassava area for the factory is mainly Quynh Nhaim Thuan Chau, Yen, and Muong La.
- In 2017: The province built that BHL's new machine had a raw material competition, so the factory switched to buying mainly raw materials in Song Ma-Sop Cop Bac Yen. Song Ma, Bac Yen, Quynh Nhaim are the main areas where cassava is grown. Because of its soil suitability, it is not suitable for other crops because it is very drought, so it is considered a stable cassava area for the factory. At the beginning of the harvest, the factory can buy cassava from Lai Chau, Dien Bien: 10-15% by waterway.
- Song Ma raw material area has the earliest harvested cassava, almost 100% of households here - thousands of households grow cassava
- Thuan Chau district: only about 5-10% of households grow cassava
- Uncle Yen river: use a lot of cassava for animal husbandry: mixed with rice bran, corn, sliced to make dry cassava, curettage
- In the first 5 years to build a raw material area, the factory has propagated the instructions on planting, selecting varieties, and purchasing techniques to the people on the condition that cassava is not crushed and impurities, leaving both the root and in time. 48 hours after harvest will have to be processed immediately

Business plan/ Development strategy

The company focuses on building raw material areas using red cassava varieties with high starch content. In the first period of 2012-2013, the company combined with Thai Nguyen Fruit and Forestry Institute brought cassava varieties: SA 13, SA 1302, KM98, into production and started to invest in signing a contract for product consumption. However, this form of investment to create raw material areas is ineffective due to the fact that people often break consumption contracts.

In 2015-2016, the company did not implement the strategy of investment in creating raw material areas anymore but turned to the strategy of purchasing under the free market mechanism, only keeping about 5-6 ha of cassava planted by the company. manufacturing and purchasing products. In recent years, the factory has hardly invested anymore, but according to the market mechanism, the factory mainly provides technical seed consultation to farmers.

Cassava planting area will be increased in the main raw material areas of the factory (see above).

Lai Chau and Dien Bien may be the new material areas of the factory in the future

The factory has a strategy to stabilize raw materials, invest in deep processing into post-starch products such as paper making, monosodium glutamate.

Desire: stabilizing yield and quality, seed: replacing old varieties with local life, yield of flour content, soil protection

Give new varieties

The factory operates from October to March next year

There is a strategy to recommend farmers to plant in April-May and harvest after 1 year and a half in August the year after harvest.

Current interactions with other stakeholders

In recent years, farmers have started to invest more in cassava, the factory integrates with provincial projects and institutes such as NOMAFSI to guide farmers to comply with the process of ensuring productivity and quality

The factory combines departments to make cassava growing service / service model

Implementing the models in Sloping land: planting roads by intercropping legumes, combining with CIAT, intercropping cassava with grass, utilizing cassava as a runway to prevent erosion.

When the efficiency of planting cassava is improved and cassava becomes the main source of income, farmers will focus on investment. In the past 2-3 years, people have had more changes in the above direction.

The final product is from cassava flour, by-products of the factory's residue sold to CP Group in Hai Duong, Bac Ninh, Bac Giang, Vinh Phuc.

The factory humus shell by-products for people who do not take money for transportation only cost about VND 200,000 / vehicle. Around the factory area, there are households growing mango longan, pomelo farmers who buy by-products from the factory to compost manure to make fertilizer for fruit trees.

The current purchase price of cassava material is around VND 2600 / kg at the beginning of the crop, which can skyrocket from 16-17

The purchase price of raw materials is based on the powder content. For example, if using this content meter reaches 30, the price will be VND 2600 / kg. Every year, the factory sends samples to vinacontrol to send to its customers.

The market of the factory is mainly:

- China: 90%
- Korea, Southeast Asia
- Domestic: sold to factories processing MSG, paper

Difficulty

Processing capacity of the factory is not guaranteed: the main season has enough raw materials and lacks at the beginning and the end of the season. The factory only operates at full capacity from November to January, after Tet and the beginning of the season, there is not enough raw materials because in the planting season.

There is competition with factories from Hoa Binh, Nghe An Lao Cai. In recent 3-4 years, the quantity of fresh cassava has increased to other regions. Cassava is always processed no more than 48 hours after purchase because it will affect the quality because it is mainly exported, so it requires strict quality.

The time was not enough, the factory did not buy cassava from other provinces

Cassava harvested in November, February massively people spit

Interest for AE and SFS

Willing to participate in the project to promote investment in cassava towards sustainable quality by contributing comments on cassava varieties suitable for processing needs.

Annex 35: Notes Meeting with Son La Clean Energy Joint Stock Company

Interviewee: Mr. Nguyen Hoang Ha - Director of the company

Phone: 0399388868

Interviewers: Pham Thi Hanh Tho, Pham Industry, Hoang Thanh Tung,

Institution trajectory

Company Established in 2017 with the goal of implementing the project of agricultural waste treatment, biochar production, worm breeding, organic fertilizer production.

Strategy: After 3 years of operation, the company is adjusting to reduce biochar production and increase organic fertilizer production. New organic fertilizer from 2020.

Biochar factory project from waste: The province approves the project and receives tax incentives under the investment law, preferential for 9 years for industries receiving incentives in extremely difficult areas such as Land lease, pay once every 50 years, but in fact, there is no land rental for an area of 2 hectares. With this project, the company is applying to reduce activities to achieve the goal of increasing biochar production. Worm and organic fertilizer production due to market demand The company has 8,000 square meters of workshop and 1.2 hectares of experimental gardens, of which 5,000 square meters are planted with dragon fruit, organic grapefruit, and fruit trees are the models of using organic fertilizers to evaluate the effectiveness of using organic fertilizers

The company has a machine to compost and mill organic fertilizers into a common form, compost microbiological products from livestock wastes collected from livestock farms in Yen Chau Mai Son and Son La city. There are 3 collectors who supply raw materials to the company. The three main sources of raw materials are: concentrated livestock households, collectors (as in Yen Chau), and agricultural by-products are taken from coffee and sugar processing establishments. The company uses microbiological incubation technology of Viet Nhat company

The registered yield of the company is 10,000 tons / year, but currently it has just reached 3,600 tons of organic fertilizer / year. Annually, the company purchases 6000 tons of manure and crop residues, sugar cane

Fertilizer standards produced by the company are published in accordance with Decree 84, the company's basic standards issued according to basic standards 01 189. Regarding fertilizer quality: Standards are registered but lower the actual rates when registering to ensure that the fertilizer is always of the announced quality. Regarding pathogen control in fertilizers: According to the basic standard No. 01189, the company's products meet the prescribed factors such as the level of lead, mercury arsenic, salmonella, and incubation is 70oC. Before that the company has tested to see some mercury heavy metals... all passed

The company sells the organic fertilizer produced by the company and by others. Out of 3,600 tonnes of organic fertilizer sold, the company produces 70% of the organic fertilizer.

Selling price VND 4-5000 / kg organic fertilizer

Price of vermi-compost: VND 2000 / kg

Business plan/ Development strategy

Towards production of about 20 000 tonnes / year

Only focus on the market in Son La Province, Not planning to move to other regions because transportation costs account for of the product cost

Current interactions with other stakeholders

With farmers:

Currently, the practice of using organic fertilizers is not much, mainly taking advantage of by-products from other activities of the family for self-production, very few households buy organic fertilizers for use. Households using organic fertilizers are mainly in the support programs of the State.

The main organic fertilizer market is in the province: Son La area for vegetable producers in Moc Chau and Van Ho; Fruit trees in Thuan Chau, Yen Chau, Mai Son districts

Main customers:

Customers are users of organic fertilizers from: Cooperatives and Business Households with large stable output areas or from the State program, small producers who do not buy organic fertilizers. Households whose crops are harvested after 5 years or more can invest in organic fertilizers, except for some trees such as Thanh Long, the use of organic fertilizers may not depend on the area, but who have the arable land is flat because the productivity can be twice that of the sloping land, making the investment more efficient. Some households that invest in organic fertilizers are those that grow vegetables and strawberries are crops with faster income or dragon fruit, pomelo, and mango. The company has not been able to reach customers who grow oranges and guava. Maybe households who grow tea, coffee, and rice can be customers who will use the company's products in the future.

Difficulties

The main issue is people not having a source of income, and there must be many support programs because most of the support programs are available for farmers to fertilize.

About 1,000 households are using a total of 3,600 tonnes / year. 70% of the program is supported

- Recommended general use of organic and chemical fertilizers recommended routes
- The province invests a lot of initial costs but needs purchasing and processing impacts
- Good business price, reasonable price equivalent to how much
- Often cooperatives and households today use a combination of organic and inorganic fertilizers

Some suggestions for efficient conversion model

Model of off-season vegetables growing in cold regions of Van Ho, Thuan Chau (making potatoes)

Next products: mango tree, longan, dragon fruit, little hoarfrost: Thuan Chau, mai Son, Moc Chau.

Dragon fruit is harvested faster in time, the time is evenly harvested throughout the year, the price does not affect the investment evenly, the difficulty is a big initial investment. If Thanh Long, choose Thuan Chau and Mai Son

What to expect from the project if the project is implemented locally

Bringing their products to more producers, maybe the models you work in the project will be able to use the company's products as a reference so that customers can see more clearly the benefits of compost. muscle. It is possible to target corporate clients (see information above) to implement project models.

Annex 36: Notes Meeting with Moc Chau agricultural department and other organizations

List of interviewees: Mrs. Hường – DARD; Hòa – Agricultural service center; Mrs. Hường – Women Union and Hoàng – DARD

The district has:

- + Fruit area: 10.500ha
- + Tea area: 2.000 ha
- + Grass area: 1.000ha
- + Vegetable area: 1.000 ha
- + One crop rice area: 1.000 ha and two crop rice area: 500
- + Maize area: 10.000 ha, 3.000 ha for biomass maize
- + Casava area: 650ha
- + Oats area: 1.000 ha but is grown mainly in company.
- + Total cattle: 110.000 heads
- + Total poultry: 600.000 heads
- + Cattle and buffalo: 50.000 heads
- + Cow: 25.000 heads
- + Aquaculture area: 120 ha

The district has 80 Coops and farmer groups in cultivation.

Moc Chau orientates agricultural development in association with tourism development. There are many models of agriculture associated with tourism and fruit growing such as 19/5 Coop.

19/5 Coop has a good quality management system, has many kinds of products and homestay.

Tu Nhien safe vegetable Coop attained organic certificate.

In addition, Moc Chau also develops cow. The district has over 25.000 heads and 3 model cow farms. There is Moc Chau dairy cow company. They have many products such dairy, products from milk but they manage the technical process.

Nafod is investing in Moc Chau to build a processing factory for passion fruit.

The enterprises are cooperating with farmers to produce and buy products such as cow and tea.

Policies for livestock support: Decree No. 98 support Vaccine to raisers.

Policies for Coop support: Decree 128 support to develop agriculture.

Challenges: The fruit scattered harvest (*rãi vụn*) has not been done yet, so it has to be processed in a rapid-fire manner and sometimes there are no products to process to meet the market demand and tourists

Women union:

The Union mobilize its members to save money to lend to groups. The Union has 28 groups (25 members/group).

The Union trained about environment, safe use of pesticides, access facebook to sell products, and trained farmer households in the upstream of water to protect the environment.

The union is implementing 2 projects: No. 939 and No. 938 to support women.

Annex 37: Notes Visit Nafood company - Fruit (Moc Chau town)

1) Personnel: Nafoods Tay Bac has 6-7 regular technicians at Son La point to be in charge of providing technical assistance to the production area, especially households and cooperatives that buy passion fruit varieties. by Nafoods. Some of these officers also participate in assessing the quality of passion fruit produced in production households and cooperatives. Some of these officers are also involved in the purchasing activities of passion fruit products, which is an advantage for these staff because the technicians often know the production process of the buying households and regions. have the ability to purchase quality products.

2) Seed supply activities: The Company supplies seeds to three main groups, including households (10%), and state passion fruit development projects (40%); Cooperatives and purchasing agents (50%). However, this rate is not fixed, there are many changes over the years. Currently, the company has only 4 agents officially performing the role of supplying seed supplied from Nafoods. These are agents that have signed contracts on product consumption and are committed to supplying and consuming products with Nafoods. In addition, there are 10-12 other agents also involved in the supply of passion fruit varieties of Nafoods, but trading volume fluctuates.

3) Passion fruit purchasing activities:

- Northwest Nafoods is selected as the basis to develop the company's fresh fruit products. Nafoods Tay Bac also produces passion fruit to supply fluids to the factory in Nghe An. Passion fruit has the advantage of being able to consume different stages so the company can purchase a variety of passion fruit varieties of different quality levels, for example, some types of passion fruit cannot be exported. can be used to scoop fluids.

- Passion fruit purchased directly from households accounts for about 50%, the Company buys from dealers and especially buys from a factory in Mai Son. In addition, the company also buys passion fruit from a number of cooperatives on the table and has a contract to purchase products.

- For goods exported to Europe, passion fruit requires high quality, and the company needs to know the origin of using the input variety, the process of caring and harvesting the passion fruit. The Company has standards for each type of passion fruit purchased and with a corresponding price for each type of passion fruit. For this item, the company has links with reputable traders to ensure the supply of quality products and meet export standards.

- The company announces daily purchase prices for farmers, traders and cooperatives to purchase each type of passion fruit. On the basis of this price, the passion fruit suppliers can negotiate the price of the lemon, depending on the quality of the passion fruit at the time of the transaction.

4) Passion fruit scoop: Many types of passion fruit that do not meet export standards can be used for scooping (about 2.2-3kg of fresh passion fruit can be 1kg of passion fruit juice).

5) Consumption market: China is still the main consumer market, the export volume to Europe is only about 300 tonnes / year. The company also exports to some other markets such as Taiwan, Korea (mainly exports concentrate and Puree to these markets) In addition, fresh passion fruit is also transported to factories in Nghe An to for processing activities (accounting for about 30% of passion fruit consumed, transportation costs to Nghe An about 700-1000 VND / kg).

6) Customer database: The company now has customer database for product purchase and sale. However, it's new in the form of an excel file, not yet mapped to the company's customer network.

7). Linking strategy: The company continues to negotiate to expand close link partners in the supply, production and consumption of passion fruit products.

Annex 38: Notes Visit Quyet Thanh cooperative (Moc Chau town)

Interviewers: Huyen, Huy

Respondents: Mr. Quyet, director of the cooperative, CT of the Board of Directors

The cooperative was officially established in 2019. From the beginning of 2018, the family has 10 hectares of famous persimmon plant (*quả hồng*), reaching 120 tonnes / year, by 2019, they will start processing more plums and mangoes.

Sector: cultivation and processing: initially 28 members, up to now 32 members

The flagship product of 4-star OCOP persimmon (*quả hồng* in Vietnamese)

Produce and sell fresh: plum, peach, persimmon, avocado, oranges without seeds; total area of members is 60 ha

Manufacturing and processing (more than 20 products): dried (persimmon, plum, mango, apple) crispy (banana, jackfruit); in which the main processing products are plum, persimmon, banana, and mango

Mainly produced, sold fresh (60%); Remaining processing (40%)

Selected high quality goods to sell fresh, fresh output is about 200 tonnes

- Persimmon: 15ha, 6 tonnes / ha
- Plum: 25 ha; 8 - 25 tonnes / ha, depending on weather, climate and natural disasters
- Peach: 5 ha; 6 tonnes / ha

Drying capacity: 1000 persimmons / batch (8 fruits per kg; drying 6-8 quintals per day)

The cooperative buys from the members. Cooperatives pay relatively stable prices from the beginning of the season to the end of the season (due to the processing stage, they buy regularly)

Products are sold to the following channels: high quality wholesale traders go to the provinces to order in advance; Clean vegetable stores in Hanoi, Hai Phong (for high-end products, beautiful goods), supermarkets (mid-range)

4 Vietgap products: plum, avocado, persimmon, and pear (2019); is currently working on Vietgap for oranges and plum peaches.

Vietgap certification for gardens, 25ha in total, for 10 households; Some members have scattered planted land areas, difficult to control quality and process, so they do not register.

Monitoring from planting, tending, harvesting, surveying pesticide residues, managing which drugs are sprayed, and how long before harvest.

Fertilizer management co-operatives: buy fertilizers at a lower price than if they buy them individually, so the member households who buy fertilizers reduce 3 - 5%.

Dried products sold domestically: Da Lat, Hanoi, Hai Phong, Hai Duong, Dien Bien, Son La. In which the main market is Da Lat, the cooperative sells raw materials (the origin of raw materials), and the establishments in Dalat attach their brands. When the cooperative's products go to other provinces, it still carries its own brand name, Quyet Thanh. In Son La, products are mainly sold in Moc Chau to tourists.

Orientation: Cooperative is expanding, investing in scale, cooperating with Korean enterprises. The enterprise supports the drying machine and transfers the Korean gongs and cultivars. The goal is to increase the value and quality of the product. It is estimated that the profit will increase by 60-70%, especially in food safety, aimed at high-class customers. It is expected that Korean partners will buy 80% and the remaining 20% of products for domestic consumption.

For OCOP products, in 2019 the province supported 190 million in packaging and documents; in 2020, to support 100 million packages

Viet Gap, the province provided 30 million VND to file for 1 product, after the cooperative invested 2 plum and pear products.

Cooperatives want to build an organic garden system but do not have enough capital, qualifications, relationships, and support in this field in terms of capital and technology, while still having difficulty accessing information and resources. Currently, machinery and equipment in the country are not modern, the temperature is not uniform, affecting product quality.

Currently facing technical difficulties, not being professional, there is no laboratory or standard procedure. Want to link on technical and analysis, but the cost of consulting is very large. It is necessary to train members professionally, currently the members have not been trained professionally.

Annex 40: Notes Visit biomass model in Moc Chau (dairy cow manure processing)

Visit a dairy farm with production of organic fertilizer (Loi Tuoi farm)

The owner has little time for the interview, therefore, little information:

Origin is a state farm

1990: individual contractor, at that time 20 dairy cows

2016 participated in the project for a machine of manure pressure, built biogas works

Currently, the farm raises 200 HF dairy cows, sells fresh milk to Moc Chau dairy company, the company buys milk at the farm, the farm has a cooling tank, milk is purchased twice a day, the current milk price is VND 12,000. / liter; average yield of 25 l/cow/day, milking cycle of 300 days.

Organic fertilizer: sold to strawberry and passion fruit farms, priced at 1500 VND. However, because there is no product label, no business license, it is difficult to transport and sell manure.

Currently there are 5 fertilizer pressing machine invested by the low carbon project to Son La (700 million VND). The farm invested in biogas system and added a modern fertilizer pressing machine, more than 1 billion VND;

The farm consists of 10 hectares, growing elephant grass, biomass corn, and oats.

Currently, in the December-February season, oats are grown due to frost and weeds, while the humidity and temperature are more suitable for oats. Currently, 3 hectares of oats are grown as food for dairy cows in the winter crop, in addition, silage corn is also used

Annex 41: Notes Visit 19/5 cooperative (Moc Chau town)

Interviewee: Mr. Mai DucThinh, Director of the Cooperative

Phone: 0983869851

Interviewers: Pham Thi Hanh Tho, Pham Cong Nghiep, Hoang Minh Huy

Institution trajectory

- Cooperative Established in 2000 and restructured operations have been effective since 2004
 - Cooperatives clearly see the problem with agriculture of MC as a mountainous district, so we have to confirm the position from production to end-product consumption. The product must stick to the conditions of the region creating the specialty products of the region, so it must follow its own direction. In the area there are many kinds of crops and many ethnic groups, so they have to make use of their indigenous knowledge in production organization, for example, it is impossible to force the Mong to focus on growing vegetables because this is not their custom.
 - ASODIA has supported cooperatives since 2007, and has a strong mark of success in developing community tourism. In the period 2007-2012 ASODIA has built a community tourism program
 - First time There are models of effective farming transformation during the project participation phases of the cooperative, typically cutting branches and flowers to improve plum gardens. Plum pruning produces 14-15 pods / kg as a result of the ACIAR project. At first it was difficult to convince farmers to follow suit, but gradually they see a clear effect from the model that they should follow.
 - Members of the cooperative: there are 37 main members (paid work) and links with more than 200 local farmers.
 - Plum processed products: cheap price of 800-1000 tonnes of plum in the first year. Making wine cheaper today, dried fruit juice 400-500 tonnes of fruit / year. Selling fresh, under 100 tonnes: 20 ha vietGAP,
 - Produce Vegetables according to organic standards; 3 ha
 - Beekeeping for honey: for processing with plums and for sale to tourists
- Dried plum, dried apricots, dried mango: several tonnes of dried

Major Evolution/Business plan/ Development strategy

May 19 Cooperative had the right direction to be at the forefront of local production and business.

The strategy is that cooperatives have 5 main types of activities, which are:

- Organize the input stage well: transfer science and technology, instruct the use of fertilizers, consult on techniques to take care of felling and pruning so that plants can develop well with high productivity. However, high yield production suffers from the problem of poor season. In the first stage, the cooperative introduced new techniques to increase productivity, change the awareness and practices of farmers. Along with the development of the cooperative, a number of cooperatives have the ability to produce vegetable varieties, it is relatively difficult to relate to the season and agreement with the surrounding households because only one other breeder needs to be mixed with the variety.
- The next activity the cooperative focuses on processing: Starting from actual needs in 2004, the cooperative started to have processing activities: mainly processing wine from plums - according to French technology. 2006: Start standardization, develop processing system to improve product quality. Since 2007: Making dried fruits - dried plums. By 2020, there will be more products processed from plums than in the previous period, such as dried plums, honey, herbs, ginger, and plum jam. However, the output of processing is not much, only serving, mainly for tourists to buy. Can recently be sold to distribution agents in Hanoi on holidays.
- Organizing the production of potential products: growing ginger plant under the canopy of fruit trees (plum): after 2010. Ginger earns income in parallel with plum trees. Organization for farmer households to raise bees and to buy honey. Organizational planting: Herbal: growing fine-flavored dong quai is a catalyst for a healthy digestive system, extract marinated with plums to make herbal dried plum products. Combining production of short-term trees and perennial plants

- Reuse the byproducts from processing: plum residue, corn residue, ginger and manure compost water, then wine is composted for a while to fertilize trees, suddenly the wine is used to feed pigs and fish. In the past, the cooperative provided the farm with wine but now it no longer provides it, but to produce fertilizer or to feed fish.
- Community based tourism development: Community based tourism has been developed by cooperatives since 2014. Cooperatives are aware that they are the ones who bring products to consumers with products from agroforestry. Tourists can have experiential activities such as going to the garden to pick strawberries, taking vegetables, bringing them to the restaurant of the cooperative to organize their own cooking, ... about 2 ha for customers to collect and copy tea to flavor into bags. bring back as a gift. Guests can experience eating local dishes: when returning from the tour, they can buy ducks and chickens from the village and then return to the place of the processing cooperative using local spices. Guests can pick tea soaked in bath water then go to the orchards to visit and harvest (western wire). At night, guests can bake potatoes, the cooperative has a community hostel for 40-50 guests at a time. The cooperative has a restaurant There are farm stay menus. Seasonal breakfast menu, morning boiled sticky corn season, morning popcorn, sticky rice, sticky rice. There are Approximately more than 10 rooms for separate guests. 2019: The cooperative welcomes about 5,000-10,000 visitors, some groups sometimes have a few dozen guests. The average income of this CBT activity can reach 1 billion after deducting expenses. This is a new idea pioneered by the cooperative locally.

The cooperative strategy is: to continue developing the 5 types of production and business mentioned above in the direction of stabilizing and making a profit. Although Covid 19 had an impact, but only from a sales perspective, the cooperative still survived well, with no job reduction. Certainly in the coming time, investment must be made:

- Processing, investing in more good machinery and equipment to improve processing capacity
- Building better packaging
- Tourism is a direct service promotion point, so you will invest in images for the whole region, you can stay elsewhere, if you don't stay at the cooperative's sites, you can explore experiences elsewhere.
- Developing Vegetable Buffet dishes: seasonal food for customers to eat
- From production to dining table: quality control
- Farmers: are small satellites, kitchens, provide products like chickens: apply seasonal organic chains to sell and serve tourists, using products made in the production system. their traditions. Farmers can use rice water to irrigate vegetables, use composted manure to grow vegetables.
- Selling special souvenir products: Khèn of the mong people can sell for 2 million
- Should reorganize production activities of farmers and improve the quality of tourism services such as improving hygiene in living, eating, and rest so that guests can stay at home in people's homes. Butt. In the past, ASODIA supported to build a traditional house of the Hmong to welcome guests, but it was not as expected, so it was not like the real version of the Mong. There was an A Chu Housing program for tourists to visit, but it was not as successful as expected

Current interactions with other stakeholders

Cooperative actively participates in local activities such as OCOP program of Son La province Products Apricot wine, plum, maize - 3 stars; 3 dried plum products: achieving 4 stars OCOP in 2019

The cooperative still works closely with farmers to organize community tours

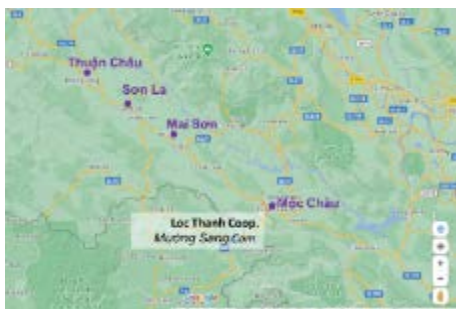
Combine with only 1 travel agency out of many companies to organize tours. Do not combine with large companies but only combine with small companies because they find it more appropriate, many large companies often use a method of advertising that is a bit too much, but many times their services do not meet the expectations of customers.

Being affiliated with a greenut-dried plum distribution exclusive company ??? This company specializes in selling organic soy products in chain stores.

Opportunity of Collaboration

Participation in this project: maybe involved in the project but not sure because of many things

Annex 42: Notes Visit Vegetable production Cooperative Loc Thanh (Muong Sang commune)



Date: 28 January 2021

In Mường Sang Commune, Mộc Châu District, Sơn La Province

Interview with Ms. Nguyen Van Quan (0 904 559 290)

Interview by Mélanie Blanchard (Cirad), Pascal Lienhard (Cirad), Hoang Thanh Tung (VAAS), Dinh Khanh Thuy (NIAS)

In Mường Sang Commune, Agriculture represents 90% of local people income. The commune agricultural development

plan focuses on fruits and vegetable production: 1 050 ha of fruits and 40 ha of vegetables (leaves vegetables, peanut, tomato etc).

4 cooperatives working in the agricultural sector: 2 specialised on vegetable, 1 on fruits and one is selling land (focused on orange production before, and now start to produce pomelo).

The vegetable cooperative is supported by projects (first pilot phase with ACIAR and now with GREAT) and has just started engaging into safe vegetable production. They will continue to focus on vegetable (safety, benefits and yield with 2 crops cycle a year).

200 ha of plum and apricot (that still dominates local fruit production). Viet Gap is not yet used for fruit production in the commune. It required to produce on geographically delimited area to be certified (not currently the case for fruit production with a diversity of production in the same area). The maize production has a low economic efficiency. They start transitioning to fruit production. Maize is still cultivated the first year of fruit plantation establishment. They have 180 ha of irrigated rice.

Livestock production: they reduce pig production following African Swan Fever (AFS) pandemic. They currently have 900 heads of pigs. The farmers who had sick animals get a compensation fee (30 000 VND/kg) for having their animals killed and burnt. In total the commune received 1,4 billion of VND of subsidies as compensation fee (+/- 400 – 600 animals killed). The animals are kept closed to the houses. There is no more animal roaming in the hills dueto fruit production. The herd of buffalo and cattle also decreased with the development of motorisation (< 400 heads of buffalo in the commune now).

Vegetable: the main production period is from April to October. During the off-season (November to March) the price is higher, because the production of vegetable in lowland areas is low. They sell the vegetable to a collector.

They started with a group of farmers in 2015 with 6-7 members, then in 2019 they started the coop with 20 members. The members get benefits of technical advice and knowledge on vegetable production. The coop cannot buy all the production of the members. They try to follow the Viet Gap guidance, but without any certification yet. It take time to change the practices to switch to safe vegetable.

The certification is costly, and they have a lack of money for the needed investment to follow Viet Gap (net house, irrigation system etc.).

DARD, Agricultural extension center and farmer union share the information and organise training for the members of the coop.

Market issue:

Important price fluctuation for the vegetable. Even with a contract, the price can fluctuate e.g. Last year they had a contract with a price of 6 000 VND/kg but only received 2 000 VND/kg.



Same problem of price fluctuation with fruit production e.g. plum: the price can reach up to 150,000 VND/kg at the beginning of the season down to 10,000 VND/kg during the full harvest season. Limited mix of fruit tree species? Mixing species is more secure (reduce the risk of crop failure) but is more constraining for pesticide spraying; in addition, it is not possible (more complicated?) to get certified (1 area = 1 product).

Some mulching but limited intercropping/ agroforestry systems? Some farmers are implementing fruit + pineapple systems but mostly monocropping systems (with sometimes bee hives under fruit trees for honey production)

Special pruning techniques for fruit trees: farmers are cutting the end of the branch before flowering to decrease the number of flowers/fruits and increase fruit size (plums).

Containers for empty pesticide bottles disposal have been set-up by the department of plant protection. Bottles are collected every 3-6 months (then? Some apparent burning in an open trash container)

Annex 45: Notes Visit farmers field – conservation practices for growing maize on sloping land

Responder: Mr Vi Van Tien – an adopter of the CSA on sloping land

Address: Long Han village, Chieng Hac commune, Van Ho district

Ethnic group: Sing Mun

Labor: 2 main labors

- The total applied area: 5 ha, in which 1 ha was changed to plant mango last year with support rootstock plants from local government. I would like to try with new crops. With mango I hope support from organizations on management techniques.
- For maize cultivation practice on sloping land: Maintaining the mulch, intercrop rice bean, moth bean with maize, planting contour grass lines
 - + The demand of the market for rice bean is high
 - + Their biomass is good, thus, they can provide a good mulching layer
 - + In June, when the tassel is visible, we plant rice bean. Rice bean keeps growing after harvesting maize. In the following season, we just need to break down the corn plants then apply some herbicide, and that would be enough to start planting.
 - + There is no problem as there was still a layer of mulch which was maintained from the previous season.
 - + We keep our buffalo in a barn near the field, so that is not a problem
 - + I have 5 buffaloes, the grass hedgerows provide enough feed for them for about 10 days/month
 - + We mostly sell it, I just keep a small part to grow chickens and ducks
 - + With 5000 vnd/kg
 - + It's about 6-7 tones/ha
 - o At the beginning, there were 6 at the beginning, after that only one household was supported by the project
 - o Now, 50% of household in my village, they do, fully or partly, some of them just apply the practice of intercropping. And most of the households who have farm surrounding our farm stopped burning since we applied the practice. Other households, they could not apply because the fields are too steep and some others, they changed to fruit trees
- Some challenges:
 - o At the beginning it was hard to follow as planting with a thick layer of mulch is very inconvenient, and we also worried about the damages from rats
 - o The difficulties of planting on a thick layer will slow down the process and also increase the labor, that's the problem
- The problem with pests and diseases:
 - o There were no problems, actually, in the 2 recent years, there were a problem with Spodoptera Frugiperda, but it can be controlled by applying pesticide.
 - o There were also damages from rats but not so much.

Annex 46: Notes Visit Ta Niet safe vegetable production cooperative in Moc Chau

Interviewee: Nguyen Van Duyen – Chairman of the cooperative

Conductor: Hoan & Hieu

- The cooperative was established in 2016
- Currently we have 12 members, before the establishment of the cooperative, we worked as a production group with 14 members, after that there were some members cannot follow the procedure and they left the group.
- But there were also some new members joined the cooperatives after that.
- The total production area that follows VietGAP standards is about 3.5 ha
- Do you have contracts with your consumers?
 - o We did, in the past we even had production plans with supermarkets in Hanoi. But now they've stopped buying with specific amount of vegetables for each order. Fortunately, we've got some experience, and we're no longer depend on supermarkets to sell our products, we are selling our vegetables in the markets in Mai Son also.
 - o There are 3 persons in the management board including Mr. Duyen and 2 others
 - o Mr. Duyen is in charge of finding market
 - o Big C and Lotte are the major customers of the cooperative
- The major species: Cabbage, tomato, H'Mong greens (Mustard greens), but currently the demands on these kinds of vegetables are low, while their harvesting time only last of 7 days
 - o For tomato, we're planting the big-size varieties, in the coming time we intend to shift to growing cherry tomato as we see the potentials from the markets.
 - Seeds are mainly from Ha Tay province, for example 5-good variety
- Do you grow seedlings yourselves?
 - o Yes, we buy seeds from Ha Tay, Hung Yen to grow seedlings in our net house.
 - The net house is 2000 m² (for building the net house, the safe vegetable project supported 80% fund and we contributed 20%)
- Is the net house enough for the cooperative to produce seedlings?
 - o The seedlings can be produced inside or outside of the net house as it's easy to grow, in case seedlings are not enough we can manage to buy from Green Farm or other agents
 - o For other agricultural materials we buy from the agents in the district
- How about the byproducts? How do you treat them?
 - o There are some farmers they collect all of those byproducts, for the remaining things we just collect and then burn them.
- Do you have collaboration with other cooperatives (Ms. Tam, Ms. Luyen for example)
 - o Yes, we do, we also collaborate with cooperatives in Van Ho district
- How about the irrigation techniques that you are using?
 - o We have sprinkler system
 - o And also drip irrigation system, but we have encountered a problem with this system since the water source contains limestone, it got stuck in the needles, so we intend to change to using small pipes instead of needles.
 - o However according to the analysis result, the water source still meets the VietGAP standard in terms of quality
 - o Some areas of our cooperative are not equipped the above irrigation systems and we need to water those areas manually.
- What are your plans in the forthcoming time?

- We want to expand the production area of the cooperative, but some members are waiting to compare the effectiveness between longan and vegetable before decide to expand or not.
- Besides, in terms of increase the number of members of the cooperative: if people/household who want to join the cooperative and they can manage to follow our regulations as well as requirements we will accept them to join.
- Apart from the market in Hanoi, do you intend to find other markets for your products?
 - There are some customers from Nghe An, Bac Ninh, Dien Bien, Hai Phong... they've contacted me to ask if we can supply vegetables for them. However, since the amounts that they requested were small and therefore the profit would be low so we cannot supply for them.
- How about organic vegetables?
 - The project has supported me to attend some training course on VietGAP and also organic vegetable production.
 - I've visited some areas producing organic vegetables, they need to follow some strict regulations such as: not using any chemical form of fertilizers, pesticides, herbicides; the planting area need to be surrounded by elephant grass...
 - I think we need to follow the trends of market.
- Have your products ever been returned because of not passing the quality tests?
 - No, they haven't, since we regularly do quality check that's why some members cannot follow the requirements and left the cooperative.
- What happens if a member violates the regulations?
 - They would be suspended from selling their products through the cooperative for 6 months.
- What is your strategy to cope with the situation of high competitiveness among the cooperatives and groups nowadays?
 - If we cannot sell our products to Hanoi's market, we will sell our products around here, and we will focus on producing off-season vegetables to make use of the advantages of the cultivation conditions in Moc Chau. The demand for off-season vegetables is very high, we normally cannot supply enough for the market.
- What are the difficulties that you are facing with?
 - Tax
 - Label
 - Fee for hiring accountant.
 - Before, when we were working as a production group, there were no requirements in terms of papers, invoices and so on...
- How do you compete with other production groups?
 - Focus on increase the quality, the appearance, and decrease the price (we compromise to reduce the profit)

Additional info:

- In the past, supermarkets like FIVImart, AEON didn't require packaging, invoice... they signed 6-month or even 1-year contracts with cooperatives in Moc Chau to supply them vegetables. However, since the beginning of 2020 they stop doing that, probably because there are so many production groups, cooperatives, and this gives them more options in finding suppliers.

Annex 47: Meeting with Son La Department of Crop Production and Plant Protection

Interviewees:

Ms. Lan - Deputy Director of Branch (0913048209)

Ms. Lien - Expert (0974394266)

Interviewers: Lê Thị Thanh Huyền, Hoàng Minh Huy

Situation of agriculture in Son La province

Agriculture in Son province has been stable since 2016 until now, there have been strong changes in crop structure. There is a big shift from land for cultivated crops with low economic efficiency (maize, cassava, ...) to planting fruit trees.

Specific data on the current status of fruit tree development and planting will be sent later and the year 2020 report will be sent.

The province issues Decision 910 regulating the key products of the province. The list of agricultural products is divided into 3 groups: Cultivation, husbandry, and fisheries. Details are given in Decision 910.

Currently, the province has granted 181 planting area codes for the province's crop products.

In the period 2015 - 2020, to solve the problem of exporting agricultural products, the province assigns a unit to act as a focal point to support the linkage between cooperatives, households and enterprises. From 2020, when the capacity of cooperatives has been improved and businesses have cooperative relationships with cooperatives, businesses and cooperatives actively exchange and cooperate with each other.

The province's agricultural products aim to apply safe quality standards such as VietGAP, organic, UTZ, fairtrade, ...

The province's vegetable products are mainly supplied to Hanoi market. The main consumption channel is the wholesale markets in Hanoi. The output of vegetables going into supermarkets and safe vegetable stores is still small, accounting for about 2%. Vegetable products are mainly consumed by traders. Currently, the province has 196 chains of safe and linked consumption of agricultural products.

The fruit tree has been exported to China. Specific data will be sent in the following report.

The main product development areas of the province are mainly located in Mai Son and Moc Chau districts. Most of the province's pilot models are located in Mai Son district.

Currently, the province has 4 facilities, large agricultural processing factories, such as TH Group's processing factory, Deveco factory, ...

High technologies applied in agriculture are mainly net houses, greenhouses, membrane houses, and drip irrigation. The application of Drones in pesticide spraying was tested in Son La province.

According to the assessment, the application of Drones has not brought about high efficiency.

Use of pesticides in cultivation.

The province does not issue the list of pesticides permitted for use in Son La province, but uses the list of pesticides issued by the Ministry of Agriculture and Rural Development.

There are an estimated 400 stores selling pesticides in the province.

Every year, the Department of Crop Production and Plant Protection, Agricultural Extension organizes many training courses for farmers on the use of pesticides. In the training sessions, it was recommended to use pesticides for plants to treat diseases.

The Sub-Department of Plant Protection organizes training courses for farmers on state regulations on the use of pesticides, and updates information on the list of prohibited active ingredients.

From 2018 to 2020, the province has implemented the project of packaging pesticides. According to the evaluation, the project implementation is very good. Details will send the evaluation report to the mission.

There is no pesticide production facility in the province. Pesticides are imported by agents from manufacturers from provinces such as Hanoi, Bac Ninh,

Instruct farmers on how to look up and use pesticides under the app "Pesticides", developed by the Department of Crop Production and Plant Protection, to search for suitable pesticides when plants are sick or pests.

Orientation for agricultural development in Son La province:

In the 2016-2020 period, the head province supported the shift from maize and cassava to the development of fruit trees. In the coming period, the province will promote the development of processing, post-harvest technology and processing. The fruit-growing area will not expand much, up to an additional 1,000 hectares.

In the next period, focus on developing safe and sustainable products. Development of VietGAP, organic, VietGAP certified products, ...

Agricultural production towards the application of high technology, green, sustainable and safe production.

Currently, the Department of Agriculture is submitting to the Provincial People's Committee a project to develop cultivation associated with high technology, a project for developing coffee. It is expected that the second quarter of 2021 will be approved.

At present, the Department of Agriculture and Rural Development is also submitting to the Provincial People's Committee 2 projects: i) Agricultural production development project; ii) Agro-forestry product processing scheme.

Policy supporting agricultural development:

Resolution 128 of the Provincial People's Council on encouraging investment in agriculture contributes significantly to the agricultural development of the province. In the resolution, there are provisions on supporting investment in agriculture, supporting the development of cooperatives, and supporting the development of agricultural product chains.

Annex 48: Meeting with Son La Cooperative Alliance

Name of the interviewee: Mr. Nguyen Van Minh - Vice Chairman

Interview date: January 26, 2021

Interviewer: Pham Thi Hanh Tho, Hoang Thanh Tung

General information

Cooperatives are a type of production and business with legal status to perform transaction contracts with other actors in the value chain, so it is a form of interest to develop. Although Vietnam's cooperative model is a new one like those of Japan, Australia, and Canada, in general, our cooperative model is still ineffective, many cooperatives are in a weak state.

Difficulties, obstacles

In Son La, the growth rate of the cooperative is considered to be at the top of the country.

Production characteristics in Son La may be strong in agriculture and forestry with an area of about 80,000 hectares, ranking second in the country in terms of area, but the cooperative in Son La generally has many weaknesses:

- Management capacity
- Executive management skills
- Financial management
- The Board of Directors is mainly farmers with limited qualifications.

Therefore, it is very necessary to have policies and plans to foster human resources for cooperatives but this issue is not easy to deploy. Every year, the Cooperative Union has to implement the task of training for cooperatives assigned by the Provincial People's Committee. Specifically, the Union must organize 15-16 classes annually to foster human resources, study 2 theoretical days; 5 days of field trip in the provinces (taught by lecturers from the school of management staff), learning experience in the organizational structure model, techniques applied in production, cooperation exchange and product consumption With cooperators.

However, in general, the capacity building of the majority of cooperatives is still on the basis of support programs. Son La province is a province, without this support (travel, meals, hotels ...) the cooperative staff will not attend. The usual one-day allowance for cooperative staff to be trained is VND 75,000 / day for meals. The province all has short training programs, with long-term professional training courses, cannot support the provincial budget, the cooperative staff are not willing to pay to improve their qualifications.

Cooperative Union mainly performs the task of training professional skills, improving qualifications, fostering managerial human resources for cooperatives such as improving management capacity, accounting profession.

Strengths, achievements

In general, about 30% of Son La cooperatives operate very effectively, such as:

- Cooperatives in the Agriculture Restructuring Program
- In communes that register for the implementation of the criteria of the new Rural National Target Program, the condition is that coop within the commune must operate effectively.
- Some cooperatives that operate well are cooperatives that have input link from the plant protection breeding stage to implement GlobalGAP, VietGAP, Organic
- Son La already have cooperatives with products supplied to Big C, Lotte in Hanoi, domestic, central, Hai Phong and for the fastidious European markets.

Currently, to export Son La province's products, there must be the participation of many provincial agencies such as the Government, the Department of Intellectual Property, the ministries at the central level - The Export Processing Department, Ministry of Agriculture Rural Development, Department of Economic Cooperation, Ministry of Agriculture, Ministry of Industry and Trade ... Up to now, Son La province has had 196 value chains with products exported to foreign markets, of which Vegetables - 127 chains, fruits - 123 chains, coffee - 1 chain. The proportion of members whose products can meet export requirements is not large, only about 30% of households can export.

Exported mango has invested in bags of mango beetles, the company must apply immediately after production.

The vast majority of cooperatives operate in the field of crop production, with about 40 livestock cooperatives operating

Investment and cooperation opportunities

Opportunities to associate with large companies:

Companies, corporations and businesses rarely invest in agriculture, these companies only account for about 1% because of the high risks. Some big companies have invested in Son La but the raw materials are not enough, such as TH true milk factory, fruit juice processing - Dovecom is investing in pineapple varieties in Sop Cop district. - 70 ha - The company buys all the output for households who follow their own procedures.

Local awareness to support the transition:

In terms of perceptions of local agencies and leaders, for example, I myself have a clear awareness of the transition towards safety, but not everyone is aware of, or is not clear, good awareness. on this issue. Over the past 3 years, the leaders and agencies of Son La province have been quite drastic in agricultural development to implement the policy of converting the area of crops with low economic efficiency, unsustainable such as maize and cassava to efficient crops. higher: fruit trees. However, some farmers are well aware of the motivations for cooperatives and safe production.

Market innovation:

In Son La, the most obvious improvement in market is that the development of export-oriented production and high-end markets in big cities has been implemented. Many supermarkets have connected with cooperatives to sell agricultural products

Opinions about Districts in scoping study:

Mai Son, Moc Chau and Thuan Chau are all easy-to-access districts, a developed district of the province along National Highway 6.

In Son La there are 3 different climatic sub-regions. The selected places may be representative. For example, in the list of value chains in an integrated development program, there are 27 safe vegetable chains and Moc Chau is mainly with VietGAP standards.

Typical models

In Moc Chau: Vegetables from Luyen's Safe Vegetable Cooperative in Dong Sang, Vegetable from An Tam Cooperative; Vegetable Cooperative in Ta Niet

About Fruit, Mai Son has custard apple (na), Mai Son grapefruit, Ngoc Lan Cooperative, Ngoc Hoang Cooperative

Mai Son Livestock Cooperative: Pork Safe Cooperative

Minh Thuy private enterprise in Co Noi - whose pig product is consumed in Son La, Dien Bien, China

In Thuan Chau: Can visit Ong Phoi Lai Cooperative, Binh Thuan Tea Cooperative: Ms. Binh deputy director

Every year, the cooperatives are classified by types of cooperatives according to fields and products

Some important documents:

Resolution No. 57 88, 76, 77, 28

Resolution No. 128 on development policy to encourage investment and development of agriculture and forestry