Phou San Wild Tea

Xieng Khouang Province
LAO PDR

From Early Days
to
Current Production and Market Development
Agro-biodiversity Project, September 2016
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by
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Executive Summary

The Phou San wild tea is named after the Phou San Mountain (2,218 m.a.s.l.), located in the Northern part of Xieng Khouang Province. The wild tea is a unique part of the biodiversity in the upland areas and is famously mentioned in legends of the ancient Imperial Household of China of being a tea with excellent flavour and taste. In Laos, wild tea trading dates back to the Lan Xang Kingdom whereas the first known attempt of commercial tea production in Xieng Khouang Province started during the Indochina period by M. du Pasquier, a French horticulturist, who during 1928-31 collected samples and planted wild tea at a research station probably located at Phou San Noi forest, close to the Ngot Phieng Village in Paek District. His studies confirmed that the Phou San Tea was the very same variety as the legendary Shan Tea from Northern Myanmar.

A survey by Chinese tea taxonomists, as part of this study, identified the wild tea variety in Xieng Khouang as *Camellia sinensis* var. *assamica*, also known as the Assam Tea or the Shan Tea. The survey also identified a new tea species for the area and probably for Laos, the *Camellia kissoi var. confusa* from which kissoi tea oil can be made.

The provincial stakeholders are well aware of value of the unique and ancient wild tea and currently the authorities are labeling more than 1,600 individual tea trees in the Phou San Area.

The cultivation area of Phou San Tea in Xieng Khouang Province is estimated by the study to approximately 300 hectares, equal to 7% of the total area of Lao PDR of 4,160 hectares (2015).

The typical wild tea growing areas are within the conservation and community forests as well as in upland fields among trees and crops and in monoculture in tea gardens. Previously, seedlings from natural growth were transplanted, but for transplanting in larger numbers seeds are collected from the forest and seedlings raised in nurseries.

Phou San Wild Tea cultivation stated some 10 years ago Ngot Phieng and Oh Anh villages, where all households are engaged in tea cultivation. In the province, an increasing numbers have taken up wild tea cultivation and today has reached a total of 12 villages. All, except two villages (one each in Khoun and Kham districts) are located around the Phou San Mountain, i.e. eight villages in Paek District, one village in Kham District and one village in Phoukout District.

A large part of the wild tea is sold as fresh tea or semi-dried tea to mainly Chinese traders and only Ngot Phieng and Oh Anh villages have started to process their own tea.

More than half (175 hectares) of the Phou San Wild Tea is cultivated inside the forests of various densities and particular by Oh Anh, Suan, Ta and Nguang Thong villages. The combined area of
tea gardens amounts to 128 hectares and with Ngot Phien, Ngodphae, Phone and Perp villages taking the biggest share.

Assisted by the Agro-biodiversity Project, the Ngodphae village in Phoukout District has increased their cultivation area from three hectares in 2014 to 88 hectares in 2016 of which 53 hectares are planted in tea gardens.

Steadily, and particularly during the past decade, the natural characteristics of Phou San Wild teas have become highly valued by the tea markets especially in China, but also in Laos and overseas. The official tea production of Xieng Khouang Province is 245 tons, equal to 4% of total production in Lao PDR of which 80% - 90% is believed to be purchased by Chinese traders for the Chinese market, demanding various types of specialized tea.

In 2015, the Phou San Wild Tea obtained a farm gate at a price of 8,000 - 50,000 kip (USD 1.0-5.5) per kg fresh and 75,000-230,000 kip (USD 9-28) per kg processed. These prices are double of other teas from Laos and 10 - 20 times higher than low-end imported teas.

This study also paid special attention to the three villages i.e. the Ngot Phien, Oh Anh and the Ngodphae villages. Together with most other villages in the province, the Ngodphae village in Phoukout District is a new growing area where 63 families in 2015/16 transplanted 93,000 Phou San wild Tea seedlings in 6.5 hectares upland fields and with expected harvest in 2018. From the existing 3.5 hectares tea gardens, planted in 2008, the 2015 income of two families amounted to 73 million kip equal to USD 9,100. In Ngot Phien village, all farmers (20) cultivate tea in gardens and in 2015 earned a total income of 450 million kip (USD 55,000), whereas the 73 families in Oh Anh village roughly received 1 billion kip equal to USD 125,000, from wild tea mainly cultivated tea inside the Phou San Forest.

The key to continued success in tea production is improved cultivation practices and better processing and storage of fresh and processed teas. Certification of teas as “organic Phou San wild tea and pursuing Geographic Indications and other trademarks would contribute to better quality and sales. A strong provincial body to better coordinate and advise stakeholders in promoting Phou San Tea wild tea would also benefit the sector.

The private sector has an important role in advising on improvements in tea cultivation and processing, and not least in branding, advertising and product labeling and possibly in connection with the Plain of Jars ancient cultures.
Tourists often express interest in the Phou San tea, but since there are no well-known sale points or “market channels” sales are sporadic and supplies are often limited. Few growers e.g. in the Ngot Phieng village are experimenting various processing techniques, although the detailed knowledge of making green, oolong, black, etc. teas is very scarce.

This study also offers a range of detailed recommendations for expanding and improving tea production in Xieng Khouang Province, of which most are applicable to other tea cultivation areas in Laos. The recommendations include steps for protection of wild tea stands, seed collections, cultivation, harvesting, processing, storage, packaging, logos, marketing, and coordinated local support. Improved quality by more careful post-harvest handling of the various types of tea is particularly emphasized to create timely benefits for farmers and add value to their wild tea products.

Although the domestic and non-Chinese market is still small, there seems to be a potential for coordinated efforts for value addition through quality improvements and better marketing of chemical free and organic teas. Geographical Indication certification of Phou San Tea would add value, for which the “market” will pay “premiums”.

Above all, the villagers’ affinity and love for the natural forests and their conservation and pride in “Phou San tea” are positive factors for both protection and expansion in Xieng Khouang Province.
1 Background

1.1 Definition of tea

Tea is the most consumed aromatic beverage in the world and is prepared by pouring hot or boiling water over cured leaves of the *Camellia sinensis*\(^1\) plants whereas herbal tea\(^2\) usually refers to brews of fruit or herbs made without the *Camellia* tea plant. Scented tea is *Camellia* tea that is flavoured by adding flowers and leaves such as jasmine and chrysanthemum.

Wild tea, in this report, is described as tea grown from seeds from wild tea either within the natural forests or cultivated in upland fields mixed with other crops or transplanted to tea gardens. Ancient tea is tea trees of an age of more than 100 years.

1.2 History of tea

The *Camellia* tea plant is regarded to originate from a larger area covering North-eastern India, Northern Myanmar, Tibet, and Southwestern China. Others narrow the birthplace of tea to Fengqing County of Yunnan Province in south-western China, where also the world’s oldest tea tree is said to grow at an age of some 3,200 years (Heiss and Heiss, 2007), and now a tourist attraction.

Tea drinking dates back to the Chinese Shang Dynasty (1556-1046 BC), mainly consumed as a medicinal drink and gradually spread to other Asian countries, the Middle East and Europe. During the 16\(^{th}\) century Portuguese priests and merchants introduced teas to the West and from the 17\(^{th}\) century, tea drinking became especially fashionable among the British who then started large-scale tea plantations in India to bypass the Chinese monopoly.

Today, tea drinking is still linked to maintaining good health including its perceived role of preventing cancer, reducing cholesterol, lowering blood pressure, giving weight loss, etc. of which some have been medically proven and some not. Tea contains caffeine in an amount of 25-50% of the content in coffee.

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\(^1\) In this context *C. sinensis* covers other and less known camellia (tea) species

\(^2\) Extracts from mulberry leaves is consumed by many Lao people and Asian visitors to Laos and probably the most featured Lao herbal tea in restaurants and hotels in Laos. However, as a retail product, mulberry tea is not widely known outside Laos, except in Thailand and Vietnam, which produce mulberry tea in connection with silk production.
1.3 Growth requirements and yield

The wild tea is evergreen forest tree growing in semi-shaded areas and reaches a height of 15 - 20 meters. It normally takes more than 10 years to bear its characteristic brown fruits. The tea plant pollinates easily with other species and varieties to form hybrids. The agro-climatic conditions influence the yield and quality of the tea and it typically requires moist conditions from minimum 1,250 mm yearly rainfall and temperatures between 10° C and 30° C. Tea prefers acid soils (pH 4.5-5) and responses well to 5 - 10 degrees slopes and well drained soils (FAO, 2015). Tea yield in tea gardens also depends on variety, plant density, regular applications of manure and/or chemical fertilizers and rainfall/irrigation. Average yield in China is approximately one ton per hectare, in Sri Lanka about 1.5 tons per hectare, and in Kenya about two tons per hectare, see Annex 1.

1.4 Tea species and varieties

The main variety in East Asia is *Camellia sinensis* var. *sinensis* (the sinensis variety) whereas the *Camellia sinensis* var. *assamica* (the Assam variety) is probably the most common tea variety in Laos. The Assam variety has longer buds and leaves and also cultivated in Northern India for producing Darjeeling black tea and in China where it is mainly used for Pu'erh tea. The Cambodian variety has the medium sized leaves and taxonomically referred to as *Camellia sinensis* var. *laciocalyx* (Mondal et al. 2003).

In larger tea producing countries many clones are cultivated in tea gardens with numerous local and commercial names (in China more than 1,000 see also Rate.Tea.Com), where elite single tea plants are carefully selected for their growth performance and unique taste and subsequently propagated by cutting off small branches. Some plants in tea gardens are up to 100 years old, but normally replaced after 10-20 years, depending on variety, location and cultivation method. Additional wild tea species and members of Camellia, section Thea include *Camellia taliensis*, a rare but valuable tea species for making Pu'erh tea. It grows in Southern Yunnan, Northern

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3 The forest tea report (NAFRI 2011) mentions *Camellia sealyama*, identified in Laos 1999, but this tea species is not widely referred to and does not appear in the updated Lao Flora of 2009.
Myanmar and Thailand and perhaps in Northern Laos (Liu et al. 2012; Zhao et al. 2014). Other wild species and varieties growing in Southern China include *C. kwangsiensis*, *C. gymnogyna*, *C. crassicoluma*, *C. tachangensis*, *C. kwangnanica*, *C. ptilophylla*, *C. costata*, *C. fangchengensis*, *C. sinensis* var. *pubilimba*, *C. sinensis* var. *dehungensis*, etc (Chang 1998; Ming et Bartholomew 2007). Only few of these are used in tea production. In Phou San area, another *Camellia* species, *Camellia kissi* var. *confusa*, was identified during the survey (Annex 4) from which kissi tea oil is produced in China and used in the cosmetic and health industry.

Compared to the commonly cultivated tea (*Camellia sinensis* var. *sinensis*), the wild tea is more erect and has larger leaves, see Annex 5.

### 1.5 Cultivation

The transplanting of seedlings in tea gardens normally aims for 50 cm between plants and 150 cm between rows reaching a plant density at least 10,000 per hectare, without making the plucking too difficult. Harvest normally takes place when the tea plant has reached a height of 0.5 - 0.7 m and should be done during early mornings or under cloudy conditions. Only the top (2.5 - 5 cm) of new shoots containing two leaves and a bud is plucked and new young leaves and buds normally emerge within 15 days. It is important that the newly harvested leaves are kept in shaded places. Pruning is an important operation to stimulate new and fresh foliage and should be done every 5 years (Kumar et al. 2015).

Pests are not regarded as a serious problem, though temporary attacks of leafhoppers, plant bugs, mites, aphids, trips, and leaf-folding and leaf-rolling caterpillars do happen. Various diseases caused by fungi may occur such as leaf blight, grey blight and brown blight, brown round spot, and green leaf spot, but normally easily controlled by regular harvesting (IPGRI 1997; Zee et al 2003). The tea bushes will also become more resistant to pests and diseases if they are well fertilized with e.g. organic fertilizers, which should be applied several times during the growing season.

In some countries, tea growers irrigate and thereby extend the harvesting season and yield. However, slowly developed tea leaves e.g. during the dry season normally produce more flavoured tea and fetch higher prices.

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4 *C. gymnogyna* and *C. crassicolluma* are regarded as the most primitive species
Natural growth and cultivation of wild tea in the forests occur where space and soil conditions permit. Naturally germinated tea seedlings are either nursed at original spots or moved to other shaded or semi-shaded areas within the forest including fields of the rotational shifting cultivation system. Nowadays, it is more common that seeds from wild tea stands are raised in nurseries and then transplanted in the forests or new tea gardens. Due to the larger spacing between tea plants in the forest, they are raised to bigger size than the tea grown in rows in tea gardens.

1.6 Tea categories and processing

Apart from tea plants of good quality, the key to success is to controlling the drying process from harvest to the final product including to what extent the fresh leaves are exposed to air (oxidation⁵). The harvested tea is processed in various tea categories (types), i.e. black⁶, white, oolong, green, yellow, and Pu’erh, which often require different tea varieties and processing techniques. After harvesting, the fresh leaves quickly start an oxidation process, facilitated by enzymes in the leaves. When making green tea the oxidation process is swiftly stopped by destroying the enzymes by heating (panning). In black tea the oxidation is allowed with controlled (low temperature and exchange of air) and leaves become dark. In oolong tea the oxidation process is stopped half way by higher temperatures. The Pu’erh⁷ tea is a specialized rolled tea of large tea leaves pressed in large blocks of different forms and typically wrapped in paper and stored up to 10 years (Pu’erh Mao cha). Storage time may be shortened by several years by accelerating the fermentation process (Pu’erh Mao shoo). Various pressed products similar to Pu’erh teas are popular in the Chinese market and can also be found at the San Jiang Market in Vientiane. The real Pu’erh tea is GI registered in China, indigenous to Yunnan. The key processing steps for most common tea types are provided in Annex 6 and 7.

1.7 World tea production and trade

During the last decade, world production of tea has annually increased by 4.2% and in 2012 reached 5.1 million tons from an area of 3.5 million hectares, see Annex 1. By far, the world’s biggest producer is China (38%) followed by India (24%), Sri Lanka (9%) and Kenya (7%). In 2014, the annual world trade was 1.7 million tons with an average yearly increase of 3.4% during the last decade. Green tea contributed to the greatest growth in trade with an average increase of 6.4%, compared to black tea with an average increase of 1.2%. India, China, Sri Lanka and Vietnam are

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⁵ Oxidation often mistakenly called fermentation
⁶ In China black tea is called red tea due to its often red coloured brew
⁷ Pu’erh is a name of a town in Yunnan province from which the cultivation originates
the largest exporters, see Annex 1. The next 10-year projection of yearly export increase of all tea is set to 3.7% and the green tea is forecast to increase with 8.9%. (FAO 2016c).

Green tea is mainly produced in China and in Japan, where nearly everybody drinks green tea. Organic tea has recently seen significant production increases with India and Sri Lanka being the world’s largest producers of certified organic tea. In Sri Lanka organic tea is estimated to reach 10,000 hectares and fetches 2-3 fold premium prices at the international market (FAO, 2016a).

During the last decade China has shown the largest increase in tea consumption at an average of 11% per year whereas the tea consumption in Europe has declined during the last decade, although the consumption in UK and Germany has increased, see Annex 1.

Vietnamese tea has been expanding since the 1930’s and particularly grown in Northern provinces and central highlands (Pong et al. 200x). In 2012, the cultivated area of tea reached 117,000 hectares (see Annex 1) of which a significant amount is processed as green tea.

2 Development of the tea sector in Lao PDR

2.1 Lao tea history

Tea production and trading in Laos has a legendary history dated back to the Lan Xang Kingdom (1353 - 1707) where tea together with other non-timber forest products were traded among feudal states in mainland Southeast Asia.

The tea cultivation in Laos began during the French colonial period (1893 - 1953), where in 1920 tea was brought from Central Vietnam to the fertile volcanic soils of the Bolavens Plateau in Champasak Province of Southern Laos.

In the northern Laos, the French administration in Hanoi recognized the unique wild8 forest teas in Xieng Khouang Province and in 1928 commissioned a study to M. du Pasquier, an agronomist and tea expert, to identify and assess the wild tea in Xieng Khouang Province for its economic value and particularly to find tea plants alike the famous Shan tea from the Northern part of Myanmar (A. J. E Marseille, 1990). The study confirmed the great potential of Xieng Khouang tea grown in the higher altitudes in the Phou San area, from which indeed the tea was identical with the “Shan variety with the remarkable aroma” and resulted in the establishment of a French

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8 In this report the Wild Tea is defined as non-vegetative propagated tea, collected from the forest floor either in form of seeds or seedlings and transplanted inside the forest or in the current or previous slash and burn fields.
tea research station in Xieng Khouang Province\(^9\) with tea plots and experimental processing of high quality green and black teas. The existence of the research station is still a legend in Xieng Khouang Province.

However, as a result of the prolonged dispute and agreement between the British and French colonial powers, the French tea cultivation in southern Laos as well as the tea cultivation experiments in Xieng Khouang Province suddenly stopped in 1932. In order to reduce competition in world market and to protect British tea plantations in Assam in India, the British demanded the French to cease tea cultivation in Laos in exchange for a ten-year preferential reduced tariff agreement for oil supplies to France. On short-term the agreement had limited domestic impact as the Lao people did not drink much tea and the ethnic Chinese and Vietnamese favoured tea from China or Vietnam.

Some harvesting of wild tea in the Northern Laos, however, continued as the drinking of tea and/or eating as a vegetable had a long tradition among the many upland ethnic groups such as the Tai Dam, Yao or Mien, Khmu, Akha, and Hau (Yunnan Han Chinese). Wild tea is also used at offerings to ancestral spirits or in other faith based ceremonies.

The expansion of tea cultivation was facilitated by the adoption of the “New Economic Mechanism” in 1985 and private companies including Ai Savanh, Lao Coffee, Dao Huang and Lao Mountain Coffee companies gradually got involved in tea processing and trading as well as some commercial tea production. However, the real push started during the beginning of this century with the increasing Chinese demands for Lao tea resulting in a ten-fold expansion of the tea cultivation area, i.e. from 545 hectares in 2006 to 4,140 hectares in 2015. The total production in 2015 was nearly 6,300 tons with an average yield of 1.5 tons per hectare. Today, the Phongsaly Province has a significant tea cultivation area of 2,800 ha, representing 63% of the total planted tea area of Laos, followed by Luang Prabang (15%), Champasack (9%), Oudomxay (9%), Xieng Khouang (3%) and Huaphan (2%), see Annex 2. A number of other provinces such as Luang Namtha, Salavan, Bokeo and Sayabouly provinces are known to cultivate tea, but these provinces are still to appear in the national statistics.

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\(^9\) Exact location has been difficult to trace, but it believed by local people to be in the area between Phou San and Phou San Noi in Paek District.
2.2 Market development

The Chinese tea companies, which entered the Lao tea sector in 2005 provided mainly cloned tea seedlings from the adjacent Yunnan Province to Lao farmers in Phongsaly and perhaps Luang Namtha provinces. Most of these companies were also involved in the rubber, vegetables and banana subsectors and soon realized that tea form wild tea stands in the Northern provinces were very valuable and favoured in the Chinese market for their reputation as organic, chemical free, natural and good tasting tea”. In other words, the Chinese consumers were willing to pay a premium for Lao organic and natural tea while advertising the “good health” attributes. The increasing demand of Lao tea from China was confirmed in a recent assessment of the Yunnan market for Lao wild tea (Smith, 2009), that stressed that Lao wild teas were priced at medium level with a potential for even higher prices, particularly for tea processed as Pu’erh tea.

Also, around 2005, the Lao Farmer Products company got involved in the organic tea sector by working directly with organic tea growers in Champasak and Salavan provinces by providing tea cultivation and processing services, often in close collaboration with provincial and district agriculture and forestry offices. The sales showed a promising market of Lao “organic” or “natural” teas, confirming to world trends of tea marketed as “health beverages” and not just a substitute for coffee.

The most widely consumed lower end lower priced tea in Laos is probably not Lao tea, but a cheap tea produced in Vietnam and sold at 1-2,000 kip for a 100 gram pack.

A small percentage of the domestic market, tea of moderate prices and mainly consumed by Chinese, Japanese, Vietnamese and Korean residents or workers. Further, the national and international tourists tend to buy medium-high quality teas.

2.3 Lao tea export

Official data on tea export is difficult to obtain. Provided that 80% - 90% of a total harvest of 6,300 tons (MAF, 2016) is dried with factor 5 and exported, the yearly export could be in the neighbourhood of 1,200 tons, representing an export value of USD 6-10 million (USD 6-
10/kg) of which nearly all are heading in bulk to China, where there is a growing demand for organic and wild tea (pers. comm. with traders). Little is known about the end use, but a significant part of the tea is probably used as or mixed with other Chinese teas. In one reported case, however, Lao branded “Ancient Tea” are marketed in a variety of attractive packages with Lao land marks such as the That Luang Stupa in shops in Nanning, Guangxi Province at prices at premium prices from 10 to 1,000 USD per kg. The tea types include the Pu’eh tea. The Lao Farmers Product company is selling Lao branded teas in Belgium and France where the products are well received, and possibly amounts to several tons per year. Additional small quantities are also sold in Germany, Russia and USA and nearby countries (Earth Systems, 2016).

2.4 Tea import

The exact yearly import of tea is unknown but foreign tea such as Lipton (British), Twining’s (British), Ranong (Thai) and Dilmah (Malaysia) teas are the most widely featured teas in larger Lao hotels, restaurants, shops and guest houses.

2.5 Knowledge of and training in tea cultivation and processing

Teaching and carrying out research in tea cultivation and processing are very limited to non-existent in Laos and as a result very few technicians and farmers have systematically been trained or have solid experience in commercial tea cultivation and processing. Tea subjects are not taught at technical colleges including the Northern Agricultural and Forestry Collage in Luang Prabang and at the Faculty of Agriculture of the National University of Laos. Further, systematic tea cultivation research has yet to take place at the National Agriculture and Forestry Research Institute and official cultivation and processing guidelines are waiting to be developed.

A Lao Tea Alliance was established some years ago with representatives from donors, non-profit organizations, government, and farmers, but this body has been inactive since 2014, and suggestions have been made to establish a “Tea Dialogue Platform” (Earth Systems, 2016).

Currently, there is no question that the private sector and tea farmers have the best knowledge about tea cultivation and processing, not the government officers. Nevertheless, the local
government offices in the provinces and districts are showing increasing interest in tea production and market development.

2.6 Policy support to the tea sector

At national level, various plans, strategies and laws support the development of the tea sector such as 8th Socio-Economic Development Plan and the new “Agricultural and Development Strategy” emphasizing on both quantitative and qualitative improvement of tea products geared towards both the domestic and international markets.

At local level, the Phongsaly Province is in the process of drafting a Tea Development Strategy addressing cultivation, processing and market issues as well as institutional capacity development. The strategy is an important step towards a possible national tea strategy.

2.7 Tea processors

There are approximately 20 Lao and foreign owned commercial tea processors in Laos\textsuperscript{10} which produce partly or fully processed tea and nearly all for the export market. Among the larger tea processors are the Suyen Company and the Green Tea Company in Phongsaly Province and the San Jiang (Golden Champa) Company which operates tea processing facilities both in Sayabury and Xieng Khouang provinces.

Generally, the Lao processors are making lower quality teas and selling at low prices to Lao consumers who are price sensitive and not much taste sensitive, as other consumer groups.

3 Wild tea in Xieng Khouang Province

3.1 Wild tea stands

The Xieng Khouang wild tea, the “Phou San Tea” is linked to various legends told among the Tai Phuan people during generations. One key legend tells that the tea reached the Emperor of China 200 years ago who so much liked the tea, that he requested regular shipments of the Phou San Tea to Beijing. A second legend says that, many years ago, the Emperor of China sent the original tea seeds to Xieng Khouang as a gift for planting and cultivation. A third and a more recent legend states that a French tea trader sent a sample of the tea to the Dowager Empress of China in the

\textsuperscript{10} Estimate based on informal information
early twentieth century as a gift and that she afterwards requested regular supplies of Phou San Tea Wild Tea.

The wild tea is growing in the forest area (217,000 hectares) of San Mountain (Phou), having its highest peak of 2,218 m, located in northern part of Paek District. However, at the hills on the western side of the peak, a number of wild tea stands are also growing in Phoukout District at Ngodphae village where farmers for generations have been eating fresh wild tea leaves with their traditional food. Further, there are wild tea stands at Ngaan/Phouhai Mieng Provincial Protection Forest in Khoun District and probably some also in Kham District as well as other remote areas.

Since 2015, the TABI project has assisted local authorities in marking some 1,600 wild tea trees in Phou San Conservation Forest. Likewise, the Agro-biodiversity project is supporting the Phoukout District in mapping and marking the wild tea at Ngodphae village and thereby supporting the attempt of protecting the wild stands.

The earlier mentioned tea experiments of M. du Pasquier in the early 1930’ties are not visible, but presumably he only experimented on wild tea at the (Phou) San Noi Mountain, close to Ngot Phieng village.

### 3.2 Wild tea cultivation and processing

The survey confirmed that the wild tea in Xieng Khouang Province belongs to variety *Camellia sinensis* var. *assamica* (see, Annex 4), though the survey team of two Chinese taxonomists did not visit all known wild tea growing areas, including those in Ngot Phieng village.

The commercial wild tea cultivation in the province is only some 10 years old and now according to MAF statistical yearbook of 2016 covering an area of only 135 hectares (Annex 2), equal to nearly 3% percent of the total cultivated tea in Lao PDR. However, informal information from villages indicates that the planted area including the tea planted and harvested in the forests is significant larger and amounts to some 300 hectares, of which less than half is planted in tea gardens, see table 2. Often the wild tea is thinly planted or naturally growing in rotational
shifting cultivation system, thus difficult to estimate the exact cultivation area. Bigger tea plants (if slashed) can re-grow, but seedlings are normally transplanted and intercropped at a density 50-600 plants per hectare, whereas the tea-gardens have a much higher plant density of 5-10,000 plants per hectare (Phouyavong et al., 2011).

The survey revealed that currently there are at least 12 wild tea growing villages, eight villages in Paek District, two villages in Khoun District and one village each in Phoukout and Kham districts with a total of 225 growers, see table 2 and below map.

In Paek District, the Ngot Phieang and Oh Anh villages are well-known for their Phou San Wild Tea cultivation of 45 and 104 hectares, respectively, but also the Ta, Phone and Suan villages cultivate wild tea at a significant area of some 20 hectares, each, whereas Phosi, Nguan Thong and Perp only grows four, two and one hectares, respectively.
In Phoukout District, the Ngodphae village has recently started tea production in a rather significant scale of 88 hectares by 63 families. In the last few years, also a few farmers in Om village in Khoun District and Lao and Song villages in Kham District have started up tea cultivation, see table 1.

Ngot Phieng and Phone villages have prioritized tea planting in rows in tea gardens whereas Oh Anh, Ta, Phone, Suan, and Nguan Thong villages, currently, only cultivate tea inside the forest. In Ngodphae village both systems are applied. In average, the villages roughly cultivate an area between 1 and 2 hectares per family and in the oldest tea growing villages (Oh Anh and Ngot Phieng) all households are engaged in tea cultivation.

Table 1: Wild Tea area and growers, Xieng Khouang Province, 2016, by village

<table>
<thead>
<tr>
<th>District Village/hamlet</th>
<th>Household Total</th>
<th>Tea grower</th>
<th>Cultivated area (ha)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phoukout</strong> Ngodphae</td>
<td>176</td>
<td>63</td>
<td>53.0</td>
<td>88.0</td>
</tr>
<tr>
<td><strong>Khoun</strong> Om</td>
<td>97</td>
<td>3</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Kham</strong> Lao</td>
<td>204</td>
<td>2</td>
<td>-</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>6</td>
<td>1.0</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>865</td>
<td>225</td>
<td>128.0</td>
<td>175.0</td>
</tr>
</tbody>
</table>

*: Informal data from villages and DAFOs **: Not planted in rows. ***: Includes minor plots densely planted inside forest

Additional villages are probably in the process of starting-up cultivation of wild tea and numerous villagers are harvesting small amounts of wild tea for own consumption.

This study pays special attention to three villages, i.e. Ngot Phieng and Oh Anh in Pek District and Ngodphae in Xieng Khouang District.

3.2.1 Ngot Phieng Village

The Ngot Phieng village of Paek District resettled in 1975 and has a total of some 21 households of the Phuan Tai ethnic group of which all households are engaged in tea cultivation. The village sits in a valley at the base of Phou San Noi Mountain at an altitude of 1,200 m, some 40 km
northwest of road No. 7. The village area is probably where M. du Pasquier carried out the tea research in the early 1930ies, but unfortunately with the sudden halt and destruction in 1931/32, by order from the French Administration.

Supported by Oxfarm, large scale wild tea cultivation is said to have started in 2007/08 by transplanting naturally occurring wild tea plants. At the same time, wild tea seeds were collected, a nursery was established and 40,000 seedlings were transplanted in various densities (from tea garden to thinly intercropped in upland fields including fruit trees) by 21 families (Phouyavong et all, 2011).

**Table 2:** Farm gate price for dry and wet season, by village, 2015

<table>
<thead>
<tr>
<th>Village</th>
<th>Fresh Tea(^1) (kip/kg)</th>
<th>Processed Tea(^1) (kip/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry season(^2)</td>
<td>Wet season(^3)</td>
</tr>
<tr>
<td>Ngot Phieog</td>
<td>18 - 22,000</td>
<td>8 - 10,000</td>
</tr>
<tr>
<td>Oh Anh</td>
<td>30 - 50,000</td>
<td>20 - 30,000</td>
</tr>
<tr>
<td>Ngodphae</td>
<td>18 - 22,000</td>
<td>8 - 10,000</td>
</tr>
</tbody>
</table>

\(^1\) Interviews with grower representatives, \(^2\) Feb-May, \(^3\) June - October

In 2008, the Lao Farmers Product (LFP) company facilitated a 10 days training for four farmers in Champasak Province and the group also provided processing equipment including frying pans and a roller. The wild tea is mainly harvested from tea gardens (42 hectares) and some three hectares inside the forests.

The majority of the tea is sold as fresh tea, though a square shaped roasters provided by LFP in 2009 is increasingly used and several of the growers are now experimenting in making black and oolong teas. One grower in the village is buying fresh tea from other villagers and after processing he uses a simple tea packing machine, where processed wild tea is packed in 500 gram sealed plastic bags with a “Phou San” logo and the name of the processor (Mr. Khamphan) and his telephone number. The packing machine enables direct sales and increased profit.

**Table 3:** Income intervals and total income of three villages in Xieng Khouang Province, 2015

<table>
<thead>
<tr>
<th>Village</th>
<th>Income grouping of growers (million kip)</th>
<th>Estimated village income (million kip)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-3</td>
<td>4-5</td>
</tr>
<tr>
<td>Ngot Phieog</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Oh Anh</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>Ngodphae</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>22</td>
</tr>
</tbody>
</table>
In wet season of 2015, the fresh tea price ranged from 8,000 to 10,000 kip (USD 1.0 - 1.2 per kg) fetching double of this price during the dry season, see table 2. The yearly income for the growers ranged from 5-6 million kip (USD 625-750) to 40-50 million kip (USD 5,000-6,250) for the smallest income group (7 families) and the biggest income group (6 families), respectively. The total annual income for the 19 sampled growers in Ngot Phieng is estimated to 450 million kip (USD 55,000), see Table 3.

3.2.2 Oh Anh Village

The Oh Anh Village is a Hmong ethnic group village, resettled in 1974, located about eight km northwest of Road No 7 and enjoying easy access of traders. Since 2009, 46 families have been cultivating wild tea, planted in various small plots and between forest trees within the Phou San National Protection Forest some up to five km further up from the village. The exact area of planted wild tea in the forest is unknown but probably in the neighbourhood of 100 hectares. Another nine hectares of wild tea are cultivated in tea gardens.

Nearly all wild tea in Oh Anh village is sold as fresh tea at a price of 20,000 - 50,000 kip with the remaining processed at a price 80,000 - 230,000 kip. This price is usually much higher than the processed tea in Ngot Phieng and Oh Anh villages, mainly due to the fact that better-off and the more experienced growers are continuously improving the processing technique.

The majority of the growers (26 families) earns an yearly income of 20 - 30 million kip (USD 2,500 - 3,150) and the total annual income for the 46 growers is estimated to be more than 1,000 million kip (USD 110,000) giving an average annual income of 23 million kip (USD 3,000) per farm family, see Table 3.

3.2.3 Ngodphae village

The Ngodphae village\textsuperscript{11} is located at an altitude of 1,200 m in the north-eastern part of Phoukout District, some 35 km from the Phonsavanh. In 2016, on initiative of the former District Governor, two families started to cultivate a few hundred wild tea plants, but their attempt failed, as they soon thereafter moved to Vientiane.

\textsuperscript{11} Ngodphae Village has eight hamlets of which 70\% of households are belonging to Phuan ethnic group
In 2008, partly stimulated by relatives in Ngot Phieng village, a 3-hour walk over a mountain range known as Phou San Noi, Mr. Phasi, collected wild tea seeds from Phou San Mountain and started to prepare 800 seedlings in 2008 and have gradually increased the area to three hectares, covering some 10,000 tea bushes by end of 2015. He started to harvest wild tea from 2010.

At the village, there are community forests of 35 hectares containing wild tea plants and since 2014 the forests have been protected as Village Conservation Forests to protect the wild tea and to collect seeds.

Mr. Phasi has gained his knowledge and skills mainly from his relatives and traders. In 2010, he purchased a wok.

From 2014, the GEF/UNDP/FAO supported Agrobiodiversity (ABP) Project has assisted the existing and potential new wild tea growers in the village by organizing farmer to farmer visits to Phongsaly Province, carrying out forest surveys, funded nurseries for expanding growing areas, etc. As a result, during 2014-2015, a total of 96,000 wild tea seedlings have been produced from seeds from Phou San Area by 63 families from the six hamlets12 and at the beginning of the 2016 rainy season the seedlings have been transplanted to some 88 hectares upland fields, of which some have been planted in young forests between trees in their slash and burn farming systems and others in rows as tea gardens. In 2017-18, the Ngodphae village is expected to produce some 10 tons of tea.

12 Pommeuang, Khangthong, Nabuak, Nangnang, Dongmaen, and Pang.
In 2015, the leading tea family sold 666 kg of fresh tea and 654 kg of processed tea earning them a total income of approximately 70 million Kip (USD 9,000). Compared to Ngot Phieng Village, the 2015 price for fresh tea is at same level i.e. the processed fetched prices of 8,000 - 22,000 kip (USD 1 - 2.7) per kg whereas the processed tea only fetched 75,000 - 100,000 kip (USD 9.4 - 12.5) per kg, some 20,000 kip (USD 2.5) less per kg than in Ngot Phieng, see table 3.

Currently, the Ngodphae village tea growers are gaining valuable experience and are ambitiously and enthusiastically expanding the tea production. Mr. Phasi’s family is the leading tea farm family and his wife and adult children assist in the tea cultivation near their village (see Box 1).

3.3 Current trade of Phou San Tea

With the arrival of the Chinese merchants to Xiang Khouang in 2005, the trading of whole trees as well as wild tea leaves started and the brand name “Phou San Tea” became popular among local people, in Laos, in the region, and especially in China. Hence, today, the market values “Phou San Tea” and pays a premium for the legend, taste, and geographic location at prices that more than double the price of any other teas in Laos including those in Phongsaly Province.

The total trade of Phou San Tea is estimated to be 50 -100 tons. Currently, the largest buyer and processor is the San Jiang Company, (see Annex 8) which purchases and processes “Lao ancient teas” from Xieng Khouang and Sayaboury provinces. In 2015, the company produced 15.3 tons of processed teas in more than 20 products including green, black as loose teas or in tea bags as well as pressed tea blocks similar to “Pu’erh tea”.

The Saengsavang family in Phonsavanh is yearly buying about 2 tons of Phou San Tea from Ngot Phieng and Ban Ta villages and packaging in 500 g plastic bags. The Saengsavang Company (see Annex 8) is a significant local tea trader selling to tourists at the guesthouse and at the main market and also retails some tea for markets in Nongkhai, Thailand.

During 2011-12, Lao Farmers Products (LFP) exported Phou San tea to France and Belgium, but stopped due to the higher prices offered by the Chinese buyers. LFP was only able to offer 60,000
kip for processed teas whereas in 2012, the prices offered by Chinese companies were often more than 100,000 kip. Today, using old stocks, the LFP has continued domestic sales of Phou San Tea as their best seller at the LFP retail shop in Vientiane.

Further, there has been some “test marketing” of the various products of Phou San tea in the United States and in China by several companies, but no new buyers are known to have entered the market at this time. However, minor Chinese and Vietnamese buyers seem to regularly entering and exiting the Phou San Tea market.

### 3.4 Market opportunities for Phou San Tea

As mentioned earlier, the highest market demand and highest tea prices are for quality fresh or semi-processed tea leaves from Phou San Forest, processed by mainly Chinese tea companies such as the San Jiang Company or on a smaller scale by Saengphet Company, both located in Phonsavanh.

Increased sales of higher quality tea would be an option, but so far, a grading system has not yet been put in place to encouraging growers to provide higher quality tea free of twigs and non-tea material. Sales would also be expedited if the villagers are having bank accounts with e-banking opportunities, taking telephone orders and sending tea by bus or truck to the regular tea buyers. Waiting for tea traders to take a long drive up a difficult mountain road is not a good model.

Better organization of tea growers will also improve the bargaining power as well as helping small scale growers. Currently, the growers from Ngot Phieng and Oh Anh villages enjoy better reputation of processed tea among buyers than the tea from Ngodphae village, but with time, this can and will probably change with more focus on quality.

A general added value potentially lies with the Geographical Indication certification\(^\text{13}\), which has successfully been done by the Pu’erh Tea in Yunnan Province (Smith, 2009). Another option is to seek a trade mark certification.

The market segments of the Phou San teas can be divided into a) the general domestic market, b) the general tourist market, c) the tourist market in Xieng Khouang, d) the Chinese market, and e) the overseas market.

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\(^{13}\) Ministry of Science and Technology (MoST) and MAF are responsible for Geographic Indications (GI) including detailed regulations for certification.
a) Domestic Market
The key domestic consumer tea market is in Vientiane and very crowded and competitive, based mainly on price. The market of Phou San tea is small, but generally selling at higher prices than tea from southern Laos and other northern provinces. Hence, currently the domestic market for Phou San teas is limited. Further, the packaging by most traders and processors tends to be unattractive and poorly marked with LFP having the most attractive packaging with the Plain of Jars logo. San Jiang Tea Company also provides very attractive packaging for their some 20 tea products, but intended for the Chinese market. Their translated labels and the narrative into Lao and English is generally confusing, whereas the Chinese text is much more detailed and precise.

b) General Tourist Market
Foreign visitors to Laos are less price sensitive than Lao consumers and respond well to reasonable prices and attractive and durable packaging for possible gifts of familiar tea such as oolong, black and green tea. They are more demanding to taste and quality and positively react to “organic” or “natural” and an eye-catching story. This market segment is a noticeable one for the Phou San Wild Tea as no other Lao teas have the same compelling legends related to the imperial household of China.

c) Tourist Market in Xieng Khouang
Tourists visiting Xieng Khouang Province are currently the most attractive market segment for Phou San tea. In connection with visiting the Plain of Jars (soon to be a designated UNESCO World Heritage Site) both foreign and domestic tourists will be happy to purchase Phou San Tea, provided it is much better packed, beautifully labeled as natural or organic tea and possibly certified with the Geographic Indications mark. Thus, there is a growing and promising market of high priced Phou San Tea in Phonsavanh e.g. at central markets, Plain of Jars visitor center, at tea tasting events, and sales e.g. in connection with tea garden visits showing well managed tea gardens and processing techniques. Like in China “tea tourism” has a great potential for Xieng Khouang Province, both for oversees and Chinese tourists provided that good quality products can be offered. “Tourist packages” would gain value in visits to tea growers and wild teas in forests.
d) Chinese Market

The Chinese market for more expensive specialized organic wild tea from Laos is growing and consequently a number of Chinese companies such as the Chinese San Jiang Tea Company is increasingly purchasing fresh or semi-processed Phou San Tea both from the forest and the cultivated tea using seeds from wild tea trees. Lao wild tea is now well known in China as “organic” and “natural”, coming from Northern mountainous forest areas and offered in attractive gift packs. In China the Phou San tea is also known as the “pure water” coming from high hills (pers. comm.).

e) Overseas Markets

Beyond China, there has been a record of good but small scale sales of Phou San and other Lao teas by Lao Farmers Products in Europe, including Belgium and France. Some market testing has been done in the United States mainly among Lao immigrant communities. In 2016, there have been at least two orders of small quantities of processed black teas from Ngot Phieng village, a five kg order from a German buyer and a three kg order from an American buyer. With local government and market support, foreign markets could further expand.

3.5 Self-financing and access to credit

It is not clear, to what extent growers are self-financing or are receiving informal credit (e.g. from relatives and advances from buyers) or receiving formal credit from banks. Currently, in Phou San area, growers are typically using family labour for clearing land, nursery, planting, pruning, weeding, harvesting, etc. and it is the impression that they easily finance minor equipment such as pruners/scissors, simple processing equipment (roasters pans and stoves) and simple packaging materials (air tight plastic bags, storage baskets, etc.).

In the future, however, formal credit may be needed depending on size of fields and if there is a need for extra labour during peak times and when there is a need for more advanced processing equipment. The Anoby Bank and the Agriculture Development Bank are keen to make low interest loans to tea farmers. Both banks prefer group loans with Anoby Bank providing the best services and lowest interest rates, but only to the poor districts including Khoun, Kham and Phoukout districts, see Annex 7.

Further, there is anecdotal evidence that some companies provide “production credit” i.e. advance payment in exchange for an exclusive right to purchase the harvest at a specified price, although this practice has not been reported during the field study.
3.6 Expansion and improvement of Phou San Wild Tea

The upland areas of Xieng Khouang Province favors tea cultivation provided it is grown on good and non-alkaline soils with sufficient rainfall/soil moisture. Hence, there seems to be a good potential for expanding the cultivation areas as an integral part of the current upland cropping systems and an excellent way to reduce slash and burn practices. Dedication for and interest in tea production as well as availability of labour for weeding, plucking and processing are equally important issues to be taken into consideration before starting-up. If organic production is preferred, manure should be easily available to maintain soil fertility. Prior “Farmer to farmer” visits to successful villages would also help potential tea growers to make the right decisions.

Regarding the many new tea growers in Ngodphae village, it is important they prepare well for the 2018 season, when the first plucking of more than 90,000 tea bushes is expected to take place. A dual strategy of selling fresh and partly to fully processed tea (e.g. green, oolong, and black) would make them more competitive. In the short run, simple-low-cost technologies currently being used by the Mr. Phasi are appropriate. Continued exchange of experiences with Ngot Phien would help to improving cultivation, harvesting, processing, and storage. This includes improved post-harvest technologies and packaging of the processed tea. For example, the tea at Ngot Phien is stored in air tight plastic bags or double bags to maintain quality and new logo’s, packaging plans are introduced.

For the non-Chinese market, it is important to understand what appeals to consumers and assistance from professionals on how to improve quality, advertising, price fluctuations, and market mechanisms should be considered.

Further, buyers are attracted to reliable sellers, with sufficient volume to justify transportation costs and quality.

With respect to climate change including prolonged drought and unpredictable rain the tea gardens seem to be more resilient than other crops as they can withstand higher degree of weather fluctuations.

3.7 Local institutional support for wild tea

In Xieng Khouang Province, there is widespread acknowledgement of the importance of wild tea cultivation in the upland areas as well as limited planting of wild tea cultivation inside the protection forests. The provincial agencies generally regard the planting of tea in the conservation forests as a way of protecting the forests and accept that villagers receive economic benefits from the limited and controlled plots, provided that no logging takes place.
The Xieng Khouang Social and Economic Development Plan (2010-20) promotes cultivation and processing of “wild teas” by small farm holders and assigns the Provincial Office of Agriculture and Forestry (PAFO)\textsuperscript{14} and the Department of Natural Resources and Environment (PoNRE) and their district offices to support wild tea production both inside and outside the Protection and Conservation forests, covering total area of 25,000 hectares.

The PAFO’s Development Plan for 2010-30 notes that tea is an important product of the province and describes Paek District as the key cultivating area. Phoukout District is not mentioned, as the plan may have been written before the tea cultivation at Ngodphae village started in 2008.

The Provincial Biodiversity Strategy and Action Plan (PBSAP), 2012-20 also highlights tea production by promoting expansion of wild tea in Paek and Khoun districts (Action plan 1.3.2.1(k)).

The DAFO in Phoukout District now considers the tea cultivation to be a priority for diversification of the agriculture and noted that the previous extraction of wild tea trees by Chinese companies was unfortunate and has stopped.

Continued technical support from Local Government agencies will ensure that new tea farmers are using the improved methods and lessons learned from other places. Coordinated efforts of multiple agencies in obtaining Geographical Indication (GI) certification of the Phou San tea is one of several tasks ahead. The Ministry of Science and Technology, Department of Intellectual Property, Trademark and Geographical Indication Division is mandated to assist with the GI and a trademark registration for Phou San Wild Tea.

“A rising sea will lift all ships” and the certifications for all wild tea producing areas of Xieng Khouang Province will be an important step to attract more buyers and promote the “Phou San Wild Tea” brand.

Collaboration among local stakeholders in marketing of Phou San Wild Tea will benefit all including the tourist sector with sales at tourist and market venues. A well-produced booklet of the French tea study of 1931 could also be part of the marketing mix together with Plain of Jars.

\textsuperscript{14} From 2016 PAFO is (again) responsible for all forest categories
4 Recommendations

Based on discussions with a number of stakeholders in Xieng Khouang Province and in Vientiane, the following detailed recommendations are provided for Phou Wild San Tea sector.

1. Protection of wild tea
   - Wild tea plants in the forest (“the ancient trees”) should effectively be protected from being felled and harvested
   - Forest areas containing wild tea should be designated as conservation areas and have regulations and signboards, agreed by village and district authorities
   - Official protection labels should be put on valuable wild tea stands for protection and seed collection, only.

2. Time of collection of seeds
   - Collection of seeds from the forests should be done in October when trees provides most seeds and not in August, as done in the past.

3. Selection of tea plants
   - Specific origin of tea seeds/seedlings of cultivated tea should be recorded
   - Growth performance notes (e.g. response to stress and disease resistance) of individual/group of plants should be made for later selection of new plants either from seeds from wild plants or cutting from branches
   - Selection good tea plants should also be based on cup tea quality (aroma and taste) by submitting tea samples to blind tasting events.

4. Tea cultivation
   a) Collection of seeds and care in nursery
      - Shortly after seed collection, the seeds should be placed in water for 24 hours and sinkers should be separated from floaters
      - Planting plastic bags should be 10 cm in diameter, which are larger than normally used
      - After 1-2 months under shade germination starts and thereafter shading should gradually be adjusted to transplanting place
      - Transplanting should take place, when seedlings are about 30 cm high.
b) **Shading in tea gardens**
- Bigger trees should be left to protect young tea seedlings from the sun and to increase tea quality - aiming at 30-50% shading
- Suitable fruit-trees and leguminous trees should also be planted.

c) **Fertilization and mulching**
- Soil analysis (P, K & pH) should be carried out to assess if the soils are in need of plant nutrients
- Depending on production type and preferred number of harvests organic fertilizers should be applied several times
- Grass and weed mulch should be applied at the base of the tea bushes
- Simple fertilizer and mulching demonstrations should be carried out by the growers to study results and make decisions on larger area.

d) **Transplanting to tea gardens**
- The spacing of tea plants in the tea garden should aiming at 150 cm between rows and 50 cm between plants, which will optimize plant coverage and yield and reduce weed
- Prior to transplanting furrows should be made following the contours.

e) **Pruning**
- Tea plants should be pruned allowing a yearly growth of 15-20 cm ending with a height of 1.0 - 1.2 m
- Thinly planted tea plants should also be pruned, though they should be allowed to become higher.

**Harvesting of fresh leaves**
- The fresh tea leaves should be plucked in cloudy weather or during early mornings before the sun becomes too strong
- 2-3 young leaves and the bud (2-3+bud) should be plucked from each shooting branch
- Fresh plucked tea leaves should be transported in local bamboo or rattan baskets to ensure air to freely go through and kept in shady area to avoid direct sun, otherwise leaves and stem may turn red and tea may become bitter.
5. **Processing – fixation, drying and grading**
   - After plucking, leaves should be processed to preferred tea type (green, black, etc.) and preference of buyers
   - Careful planning of pan and/or sun drying and/or frying and/or rolling should be considered for required tea type and taste
   - During hot fixation, tea leaves may be “massaged” by hand with a tri-angled wooden instrument
   - Before final drying the tea leaves should ideally be rolled by hand or using a roller machine with a barrel diameter of barrel of 25 to 35 cm, which will improve appearance and quality
   - Depending on market/buyer preference, the tea leaves should be carefully cleaned from any dirt, twigs etc. Later, as tea production improves, tea can be graded for value addition for buyers requiring better quality products.

6. **Storage**
   - To maintain good tea quality the final dried tea to less than 6% water content and must be stored in air tight plastic bags with tight seal or double bagging.

7. **Organization, sales and marketing**
   - Growers should formally organize themselves with bylaws, etc. and on longer term make a Phou San Wild Tea Growers Association
   - Growers should learn how to access price of local as well as specialized tea, either through media/internet or by making use of trusted persons
   - Growers should consider marketing their own products with high quality labeling and information on their area
   - Growers should collaborate with tourist companies to promote their villages with unique tea and sell tea at the village in attractive bags with standard weights and consistent quality.

8. **Record keeping**
   - Growers should be trained in detailed but simple record keeping including origin of tea seeds/plants, resistance to stress and deceases, yields, sales/prices and names of buyers.
9. **Manual in Lao and English**
   - Growing, post-harvest and market information materials should be developed for extension workers and growers including plenty of easy to understand illustrations and photos.

10. **Expanding tea area**
    - Provincial authorities should carry out a study for possible expansion of wild tea production, including areas in Kham District, matching with improved quality products and market demands
    - Villages with suitable agro-ecology should be encouraged to consider wild tea production, facilitated by farmer visits to experienced growers.

11. **Lao Tea Strategy**
    - A Lao Tea Strategy should be prepared to guide the Government in further developing the tea sector in Lao PDR.

12. **Coordinated local support**
    - Local Government should take the lead in establishing a permanent forum with the aim of bringing together all stakeholders including grower representatives, with the view of improving cultivation, quality and market
    - Government should consider promotional events and pursue Phou San Wild Tea with GI, organic, and other certifications.
5 Conclusion

Wild Tea production in Xieng Khouang Province is a viable economic crop for small holder farmers and a potential major income earner for the Province with the advantages of protecting the natural resources and the rich biodiversity.

This study confirmed that the wild Phou San Tea belongs to the famous *Camellia sinensis var. assamica*, the variety that most likely is referred to in century old Chinese legends, characterized by a unique flavour and taste.

In terms of “volumes”, the wild tea from Xieng Khouang Provinces is only 245 tons equal to 4% of total Production in Lao PDR. A total of 12 villages have been identified to cultivate wild tea and except for two villages, close to (Phou) San Mountain. The consumer markets in Laos and especially in China values Phou San Wild Tea and more than 90% is purchased by Chinese tea traders preferring to buy fresh tea, exported in bulk to China. In 2015, the Phou San tea obtained a farm gate at a price up to 8,000 - 50,000 kip (USD 1.0-5.5) per kg fresh and 75,000-230,000 kip (USD 9-28) per kg processed. These prices are double the value of other natural or cultivated teas in Laos and 10 - 20 times higher than low end imported teas.

Together with several other villages in the province, the Ngodphae village in Phoukout District is a new growing area where 63 families (Village total: 173 families) in 2015/16 transplanted 93,000 Phou San wild tea seedlings in 6.5 hectares upland fields with expected harvest in 2018. From the existing 3.5 hectares tea gardens planted in 2008, the 2015 income of two families amounted to 73 million kip equal to USD 9,100. In two other surveyed villages all households were engaged in tea cultivation. In Ngot Phieng village, all families (21) have tea in gardens and in 2015 earned a total income of 450 million kip (USD 55,000), whereas the 73 families in Oh Anh Village roughly received 1 billion kip equal to USD 125,000, from wild tea mainly cultivated tea inside the Phou San Forest.

The key to continued success in tea production is improved tea cultivation practices, better processing and storage of fresh and processed teas. Certification of teas as “organic Phou San wild tea and pursuing Geographic Indications and other trademarks would contribute to better quality and sales. A strong provincial body to better coordinate and advise stakeholders in promoting Phou San Tea wild tea would benefit the sector.

Tourists often express interest in the Phou San teas but since there are no well-known sale points or “market channels” for these teas, sales are sporadic and supplies often limited.

The private sector has an important role in advising on improvements in tea cultivation and processing and not least in branding, advertising and product labeling, including an association with Xieng Khouang and the symbolism of the Plain of Jars ancient cultures.

<table>
<thead>
<tr>
<th>Region/country</th>
<th>Cultivation ('000 ha)</th>
<th>Harvested ('000 tons)</th>
<th>Yield (tons/ha)</th>
<th>Export ('000 tons)</th>
<th>Consumption ('000 tons)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>2,368</td>
<td>2,686</td>
<td>3,150</td>
<td>3,517</td>
<td>2,980</td>
</tr>
<tr>
<td>Far East</td>
<td>2,155</td>
<td>2,573</td>
<td>3,280</td>
<td>3,966</td>
<td>1,036</td>
</tr>
<tr>
<td>China</td>
<td>998</td>
<td>1,059</td>
<td>1,420</td>
<td>1,513</td>
<td>704</td>
</tr>
<tr>
<td>India</td>
<td>490</td>
<td>521</td>
<td>579</td>
<td>605</td>
<td>826</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>189</td>
<td>213</td>
<td>222</td>
<td>222</td>
<td>306</td>
</tr>
<tr>
<td>Indonesia</td>
<td>121</td>
<td>143</td>
<td>125</td>
<td>123</td>
<td>163</td>
</tr>
<tr>
<td>Vietnam</td>
<td>70</td>
<td>98</td>
<td>113</td>
<td>116</td>
<td>70</td>
</tr>
<tr>
<td>Others</td>
<td>143</td>
<td>110</td>
<td>155</td>
<td>160</td>
<td>31</td>
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<tr>
<td>Africa</td>
<td>412</td>
<td>506</td>
<td>616</td>
<td>650</td>
<td>448</td>
</tr>
<tr>
<td>Kenya</td>
<td>120</td>
<td>141</td>
<td>172</td>
<td>191</td>
<td>236</td>
</tr>
<tr>
<td>Uganda</td>
<td>16</td>
<td>20</td>
<td>27</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Malawi</td>
<td>18</td>
<td>18</td>
<td>23</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>Tanzania</td>
<td>19</td>
<td>21</td>
<td>11</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Latin Amm &amp; Carr.</td>
<td>67</td>
<td>89</td>
<td>107</td>
<td>95</td>
<td>71.2</td>
</tr>
<tr>
<td>Argentina</td>
<td>39</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>54</td>
</tr>
<tr>
<td>East</td>
<td>233</td>
<td>262</td>
<td>254</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>77</td>
<td>77</td>
<td>76</td>
<td>76</td>
<td>139</td>
</tr>
<tr>
<td>Egypt</td>
<td>69</td>
<td>99</td>
<td></td>
<td></td>
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<tr>
<td>Pakistan</td>
<td>134</td>
<td>120</td>
<td>127</td>
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<tr>
<td>Iran</td>
<td>32</td>
<td>34</td>
<td>19</td>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>Morocco</td>
<td>54</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>50</td>
<td>49</td>
<td>47</td>
<td>46</td>
<td>85</td>
</tr>
<tr>
<td>EU</td>
<td>230</td>
<td>242</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>128</td>
<td>120</td>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>25</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>86</td>
<td>97</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>180</td>
<td>178</td>
<td>159</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>100</td>
<td>124</td>
<td>127</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: FAOSTAT. *: FAO, 2015a
**Annex 2.** Tea cultivation in Lao PDR, 2006 - 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Planted Area (ha)</th>
<th>Harvested area (ha)</th>
<th>Production (ton)</th>
<th>Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>545</td>
<td>490</td>
<td>610</td>
<td>1.24</td>
</tr>
<tr>
<td>2007</td>
<td>740</td>
<td>740</td>
<td>1,040</td>
<td>1.41</td>
</tr>
<tr>
<td>2008</td>
<td>1,270</td>
<td>1,250</td>
<td>1,395</td>
<td>1.12</td>
</tr>
<tr>
<td>2009</td>
<td>2,155</td>
<td>2,145</td>
<td>2,165</td>
<td>1.01</td>
</tr>
<tr>
<td>2010</td>
<td>3,795</td>
<td>2,415</td>
<td>2,600</td>
<td>1.08</td>
</tr>
<tr>
<td>2011</td>
<td>3,660</td>
<td>2,665</td>
<td>3,410</td>
<td>1.28</td>
</tr>
<tr>
<td>2012</td>
<td>3,395</td>
<td>2,705</td>
<td>3,975</td>
<td>1.47</td>
</tr>
<tr>
<td>2013</td>
<td>3,895</td>
<td>3,440</td>
<td>6,105</td>
<td>1.77</td>
</tr>
<tr>
<td>2014</td>
<td>4,970</td>
<td>3,990</td>
<td>7,935</td>
<td>1.99</td>
</tr>
<tr>
<td>2015</td>
<td>5,140</td>
<td>4,180</td>
<td>6,295*</td>
<td>1.51</td>
</tr>
</tbody>
</table>

Source: Statistical Center, MAF 2016  
*) Production in Luang Prabang corrected from 3,610 t in 2014 (yield 5.0 t/ha) to 1,180 t in 2015 (1.5 t/ha)

**Annex 3.** Tea production in Lao PDR, by province, 2015

<table>
<thead>
<tr>
<th>Province</th>
<th>Planted Area (ha)</th>
<th>Harvested area (ha)</th>
<th>Production (ton)</th>
<th>Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phongsaly</td>
<td>3,235</td>
<td>2,275</td>
<td>4,100</td>
<td>1.80</td>
</tr>
<tr>
<td>Oudomsay</td>
<td>445</td>
<td>445</td>
<td>480</td>
<td>2.00</td>
</tr>
<tr>
<td>Luang Prabang</td>
<td>785</td>
<td>785</td>
<td>1,180</td>
<td>1.50</td>
</tr>
<tr>
<td>Huaphan</td>
<td>80</td>
<td>80</td>
<td>100</td>
<td>1.25</td>
</tr>
<tr>
<td>Xieng Khouang</td>
<td>135</td>
<td>135</td>
<td>245</td>
<td>1.81</td>
</tr>
<tr>
<td>Champasack</td>
<td>460</td>
<td>460</td>
<td>190</td>
<td>0.41</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5,140</strong></td>
<td><strong>4,180</strong></td>
<td><strong>6,295</strong></td>
<td><strong>1.51</strong></td>
</tr>
</tbody>
</table>

Source: Statistical Center, MAF 2016
**Annex 4. Tea species and their location in three areas of Xieng Khouang Province, December 2015**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Locality</th>
<th>Altitude (m.a.s.l.)</th>
<th>GPS</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,545</td>
<td>19°8′22.3″N 103°40′35.3″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,530</td>
<td>19°8′23.6″N 103°40′36.0″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,570</td>
<td>19°8′23.8″N 103°40′36.3″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,530</td>
<td>19°8′23.7″N 103°40′35.7″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,580</td>
<td>19°8′23.5″N 103°40′36.0″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Khoun District, Nalan village Phouhai Mieng area</td>
<td>1,580</td>
<td>19°8′23.5″N 103°40′36.0″E</td>
<td>Secondary forest</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,151</td>
<td>19°44′10.7″N 103°14′32.8″E</td>
<td>Introduced</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,151</td>
<td>19°44′6.0″N 103°14′50.2″E</td>
<td>Introduced</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,150</td>
<td>19°44′19.6″N 103°15′3.0″E</td>
<td>Remnant forest near village</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,150</td>
<td>19°44′19.8″N 103°15′1.2″E</td>
<td>Remnant forest near village</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,150</td>
<td>19°44′20.3″N 103°15′1.7″E</td>
<td>Remnant forest near village</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,155</td>
<td>19°44′22.0″N 103°15′4.1″E</td>
<td>Remnant Community Forest near village</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Phoukout District Gnodphae village</td>
<td>1,155</td>
<td>19°44′22.0″N 103°15′4.1″E</td>
<td>Remnant Community Forest near village</td>
</tr>
<tr>
<td><em>Camellia sinensis</em> var. assamica</td>
<td>Paek District Phou San</td>
<td>1,843</td>
<td>19°39′0.1″N 103°23′10.5″E</td>
<td>Natural forest</td>
</tr>
<tr>
<td><em>Camellia kissi var. confusa</em></td>
<td>Paek District Phou San</td>
<td>1,868</td>
<td>19°38′41.75″N 103°23′25.40″E</td>
<td>Shrubs in natural forest</td>
</tr>
</tbody>
</table>

Survey collectors: Shi Xiong Yang, Dong Wei Zhao, and Ole S. Pedersen
Annex 5. Key morphological differences between wild tea and modern Chinese clones

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Wild Tea (mainly C. sinensis var. asamica)</th>
<th>“Modern” Chinese clones (mainly C. sinensis var. sinensis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree shape</td>
<td>Arbor and semi-arbor, mostly erect</td>
<td>Arbor and semi-arbor, mostly erect Semi-arbor and shrub, mostly semi-spreading and spreading</td>
</tr>
<tr>
<td>Leaf</td>
<td>Middle or large, 10-25 cm in size; surface cuticle thicker, crisp; vein unclear; surface smooth or slightly elevated; sparse and obtuse serrulate margin</td>
<td>Middle or small, 6-15 cm in size; soft and thick texture; vein clear; surface smooth or slightly elevated; acute serrulate margin</td>
</tr>
<tr>
<td>Shoot</td>
<td>3-5 scales on overwintering bud; green or yellow green, without or with slight pubescence</td>
<td>2-3 scales on overwintering bud; yellow green or greenish, with or slight pubescence</td>
</tr>
<tr>
<td>Corolla</td>
<td>4-8 cm in diameter, 8-15 petals, white and thick Mostly &gt;/0.7</td>
<td>2-4 cm in diameter, 5-8 petals, white, greenish or reddish</td>
</tr>
<tr>
<td>Male part</td>
<td>70-250 filaments, thick and long; large anther with Odors</td>
<td>110-300 filaments, thin and long; small anther with fragrance</td>
</tr>
<tr>
<td>Female part</td>
<td>Ovary with or without pubescence, (3) 4-5-splitting Style</td>
<td>Ovary with or without pubescence, 2-5, mostly 3-splitting style</td>
</tr>
<tr>
<td>Capsules</td>
<td>Diameter 3-5 cm, 0.2-1.2 cm hard pericarp, thick and long central axis</td>
<td>Diameter 2-4 cm, 0.1-0.2 cm soft pericarp, short and thin central axis</td>
</tr>
<tr>
<td>Seeds</td>
<td>2 cm in diameter, scabrous, brown or deep brown, globose, reniform or sub-globose, seed ridge angular</td>
<td>1-2 cm in diameter, smooth, brown or deep brown, mostly globose, seed ridge unclear</td>
</tr>
<tr>
<td>Leaf structure</td>
<td>Thick cuticle, upper surface cell larger, palisade tissue 1 layer, stomata density lower, sclereide big with starry branches</td>
<td>Thin cuticle, upper surface cell small and closely arranged, palisade tissue 2-3 layers, stomata small, sclereide rare and small usually reniform</td>
</tr>
</tbody>
</table>

Source: Extracts from Yu F. and Chen L.: Indigenous Wild Tea Camellias in China, Tea Research Institute, CAAS, China

Annex 6. Key tea processing steps of main tea types

<table>
<thead>
<tr>
<th>Process/Type</th>
<th>Pu-erh</th>
<th>White</th>
<th>Oolong</th>
<th>Black</th>
<th>Green</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withering</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>(x)</td>
<td></td>
</tr>
<tr>
<td>Heating to stop oxidation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolling</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Oxidation</td>
<td>(x)</td>
<td>(8 - 15%)</td>
<td>(18% - 80%)</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fermentation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grading</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Re-dried</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aged</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Withering: Initial drying of bruised or torn leaves to evaporate that makes the leaf soft
Fixation: Stop oxidation by heating
Rolling: Forming leaves in desired shape. Sometimes called squeezing.
Oxidation: The most crucial step. Leaf enzymes control the process that can be accelerated by rolling, cutting or cruising
Drying: Sun, pan/wog, baked, air dried
Fermentation: Microbiological process taking place in Pu’erh tea, but with low water content.

rh
Annex 7. Tea types

**Green tea** may be uniformly sundried (withered) for few hours or indoor with good air circulation. The green tea lacks the oxidation processes, which is immediately stopped (fixation) to avoid enzymes breaking down the polyphenols in the tea leaves e.g. by using pans or hot air. After this process, the leaves are still green (dull) and slightly sticky and fragrant with some 60% water content. Rolling will help the tea to improve appearance, still having a fragrant smell. The drying down to some 6% should be done in several stages (e.g. with a horizontal drier with forced air), without the tea gets too sticky, ending up with drying on a pan.

**Oolong tea** is a traditional semi-fermented aromatic tea, originating from eastern part of China (Fujian) and Taiwan. It undergoes unique process of withering under sun and/or shadow (evaporation), shaking (promote damage of leaf margins) to promote oxidation before panning at high temperature (to stop enzymatic oxidation process) curling/twisting (equal bruising) and final drying to less than 4%. Particular tea varieties are grown with specific flavors. High quality oolong can be steeped several times from the same leaves and, unlike other teas, it improves with re-brewing up to five times.

**Black tea** is allowed to oxidize before final drying. After withering, the continued oxidation process allows enzymatic changes in leaves with the result that the final brew becomes reddish or brownish. The orthodox processed black tea leaves are heavily rolled either by hand or mechanically on a cylindrical rolling table or a rotovane. The rolling table consists of a ridged table-top moving in an eccentric manner to a large hopper of tea leaves.

**White tea** has been slightly oxidized e.g. by short withering before halting the oxidative processes in a pan. In China white tea is fully oxidized by letting the tea naturally dry out in sunlight without rolling or curling, as done in black tea.

**Yellow tea** processed in a similar manner to green tea, but instead of immediate drying after fixation, it is stacked, covered, and gently heated in a humid environment which gives the yellowish or greenish-yellow colour.

**Pu’erh tea** comprises two kinds; an ancient traditional method i.e. the Pu’erh Sheng or Mao Cha and a quick aging ripe Pu’erh version, the **Pu’erh Shou**.

a) **Mao Cha**, also called (light green) rough tea (Pu’erh Sheng) requires large tea leaves (such as the one from Lao wild tea). The big dark green colored leaves are briefly sundried, before oxidation process is nearly stopped by heating on pans or large wok, packed in traditional round cakes or other forms and stored in well air circulated rooms with less than 80% humidity up to 10 years. The compressing slows down the microbiological fermentation process. This tea, normally has a very mild flavor and reddish-brown. Alternatively, the tea can be left uncompressed and maturing process (fermentation) will be significantly shortened.

b) **Pu’erh Shou** is also called raw or ripe Pu’erh and treated much like composting with regular piling, wetting and mixing. The process is difficult and needs much attention. The process is normally completed within 45 days.

Source: wikipedia
Annex 8. Buying and processing Companies of Phou San Tea

1. San Jiang or Golden Champa Tea Company, Vientiane
Manager: Mr. Zhou, San Jiang Market and Grand Hotel, Ban Dong Pa Sack, Vientiane.
This Chinese owned and Lao registered company is the largest single buyer and processor of teas from Xieng Khouang. Their labels are also in English and traded under three different names including “Yunnan Tea Company”. Often inconsistency in labeling to English and Lao.

2. Champa Kham Tea Xieng Khouang Lao Co. Ltd.
Owner: Mr. Ting Kuajang (Chinese), Ban Thongmixay, Pek District

3. Xannou Natural Tea Xieng Khouang Lao Co. Ltd.
Owner: Mr. Han Sion (Chinese), Ban Phonsavanhxay, Paek District

4. Keo Paththana Chaleune Co. Ltd.
Owner: Mr. Keo Tasamak (Lao), Address: Ban Nakon, Mok District

5. Hatthakham Pounteng Kheangdeum Co. Ltd.
Owner: Mr. Sengphet Phoutthavanh, (Lao), Ban Ngeoy, Paek District

Manager: CEO, Dr. Sisaliao Svengsuksa, Address: 158 Mittaphab Lao Thai Road, Vientiane
Lao Farmers Products (LFP) is a registered cooperative that started the commercial tea production of the Phou San teas in Xieng Khouang and during 2010-2012 LFP purchased about 3 tons of Phou San teas annually mainly wild tea from two larger tea producer group areas covering and Oh Anh and Ngot Phieng villages and some tea from Ngodphae Village in 2012. However, since 2012, LFP has not purchased processed tea from these villages as prices have exceeded Kip 60,000/kg. However, LFP continues to sell “Phou San Tea” at its sales office and at markets in Vientiane from the tea stock purchased several years ago.

6. Intermittent or occasional buyers
Chinese companies from Luang Namtha occasionally buy processed tea in addition to some buyers from Vietnam. Some of the Chinese Companies provided tea roasters and other drying facilities to the Villages in or near Ngot Nam Ngum, either as a gift or purchased by the villagers. However, this information is sketchy and farmers are not so keen to discuss it.

7. Lao retailer
Owner: Ms. Bouvan Saengsavang (Lao), Saengthavang Guest House, Phonesavanh town, Paek District
Multi-product food processor and handicraft company repacking Phou San Tea in 500 g packs. Currently, the company buys about 2 tons per year of processed tea from the larger tea farmers and better tea processors such as Mr. Tong Zer Moua at Oh Anh Village and Mr. Khampanh at Ngot Phieng Village. The “Saengthavang Company” is not registered with DoIC official as a tea trader. Nevertheless, the Saengthavang is a significant local tea trader selling to local tourists in the main market near the bus station, at their guest house and even exporting to markets in Nongkhai, Thailand.

8. Smaller Chinese Companies
Since 2012 – 15, some smaller Chinese companies and the larger San Jiang Company have provided some technical assistance and/or donated fryers and roasting buildings and equipment to some villagers or villages. This information has been difficult to document as it seemed to be more of a gift in exchange for the good will of the villagers with the companies and to instill customer loyalty.
Annex 9. Main Formal Credit Institutions

a) Anoby Bank
The Anoby Bank is a “poverty alleviation” rural development and agriculture focused bank, financed directly the Bank of Lao PDR and has no capital of its own and confined to work in the 46 poorest districts in the country. In Xieng Khouang Province the poor districts are Phoukout, Kham and Khoun. Kham and Khoun districts have already branches and a branch in Phoukout is scheduled to open in 2017. Preferences are given to groups of 5-50 mill kip per family and not exceeding 200 million per group. Interest rate 5% p.a. but less with 2-5 years loans and no collaterals are needed. The strong point of the bank is “joint solidarity groups” whereby each member of the group guarantees the loan repayments of each member of the group. The bank also has a training component. So far, no loans have been taken out in Xieng Khouang, but the Anoby bank seems very interested in the tea sector and Phoukout District in particular.

b) Agriculture Promotion Bank
The Agriculture Promotion Bank (APB) is providing loans to agricultural production, small business and related sectors. In Xieng Khouang the APB’s mainly supports maize, livestock and fish production activities. Loans may be given to individuals or to groups of 5-6 households of a period of 1-5 years with a ceiling of 10-50 million.

If income from the loan activities do not accrue until several years, as might be the case in tea growing, the borrowers can just repay the loan interests and not the principle until production revenues begin. Compound interest rates are set at 12-15% per year. As regards required documentation for loan applications, the borrowers should have a standard set of Lao ID cards, family books, land use titles or property which can serve as loan collateral. The APB Credit Department is interested in the tea sector for Xieng Khouang, but so far the Bank has not made any loans in this sector. The APB has branch offices in all districts of the province and welcomes viable agriculture proposals.
**Annex 10. List of references**


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