

# Doi Chaang: Balance Between Coffee, Forest, and Community\*

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## Abstract

Doi Chang Village is in Wawee, Chiang Rai Province, on the mountain peak, near the source of a river and the home of Thai hilltribe ethnic groups; Akkha, Lisu. In the past, swidden agriculture was practiced, resulting in forest clearance and natural resource depletion. In 1969, His Majesty the King Rama IX initiated a project for local communities to decrease opium production and swidden cultivation. With various projects, the hill tribe farmers have been encouraged to grow cash crops with perennials; they began to grow Arabica coffee. Until now, the area devoted to Arabica coffee cultivation was 30,000 Rai, including the forest that had become fertile again. In 1990, a company was established under the name “Doi Chaang Coffee Original Company Limited”. Later, it developed into a world class coffee brand. The company developers have been accepted in the business and local communities, due to changes in cultivation habits and in forestation.

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Sukkamon Thepin was a typical Doi Chaang Akha teenager and worked in his family organic coffee farm. He was fond of farming activities; however, he saw an opportunity for tourism business in his community. Doi Chaang Academy would be an attraction, including beautiful nature, coffee farm and friendly community. Sukkamon needed to scrutinize the social-economic and environmental impact, and community acceptance. Since Sukkamon's family was a member of the company, on 30 June 2020, he would need to present his idea to the company board and some community members to get funds for developing tourism in Doi Chaang.

**Keywords:** Agritourism, Community Based Tourism, Coffee Tourism, Organic Farming, Doi Chaang Coffee

## ดอยช้าง : ความสมดุลของกาแฟ ป่า และชุมชน\*

ฉวีภา คันทธา\*\*

รับวันที่ 13 เมษายน 2563 ส่งแก้ไขวันที่ 31 มกราคม 2565 ตอปรับตีพิมพ์วันที่ 22 กุมภาพันธ์ 2565

### บทคัดย่อ

ดอยช้างตั้งอยู่ในอำเภอดอยหล่อ จังหวัดเชียงใหม่ เป็นต้นน้ำ เป็นบ้านของชาวเขาเผ่าอาข่าและลีซอ ในอดีตมีการทำไร่เลื่อนลอยจึงทำให้เกิดการตัดไม้ทำลายป่าและทรัพยากรธรรมชาติเสื่อมโทรม ใน พ.ศ. 2512 ในรัชกาลที่ 9 ทรงริเริ่มโครงการพัฒนาชุมชน เพื่อลดการผลิตฝิ่นและลดการทำไร่เลื่อนลอย ส่งเสริมให้ชาวเขาปลูกพืชเศรษฐกิจร่วมกับไม้ยืนต้น ชาวเขาเริ่มปลูกกาแฟอาราบิกาจนถึงขณะนี้กลายเป็นพืชส่วนใหญ่บนดอยช้างครอบคลุมพื้นที่ 30,000 ไร่ รวมถึงป่าที่กลับมาอุดมสมบูรณ์อีกครั้ง ในปี พ.ศ. 2533 “บริษัท กาแฟดอยช้างออริจินัล จำกัด” ถูกก่อตั้งขึ้นต่อมาพัฒนาเป็นแบรนด์กาแฟระดับโลก ผู้บริหารของบริษัทได้รับการยอมรับทั้งจากภาครัฐกิจและชุมชน เนื่องจากการเปลี่ยนรูปแบบเกษตรกรรมและการปลูกป่า

สุขกมล เทพอิน คนรุ่นใหม่ในดอยช้างอาข่าและทำงานในไร่กาแฟอินทรีย์ของครอบครัวที่เขารัก อยากรู้ว่าทำไม เขาเห็นโอกาสทางธุรกิจสำหรับการท่องเที่ยวในพื้นที่ชุมชนชาวเขาบนดอยช้างทั้งดอยช้างอาคาเดมี่ ทั้งธรรมชาติที่สวยงาม ฟาร์มกาแฟ และชุมชนที่เป็นมิตรต่างเป็นที่สนใจของนักท่องเที่ยว โดยสุขกมลต้องพิจารณาผลกระทบทางสังคม สิ่งแวดล้อมและการยอมรับจากชุมชนให้ถี่ถ้วน เนื่องจากครอบครัวของสุขกมลเป็นสมาชิกของบริษัท ดังนั้น ในวันที่ 30 มิถุนายน 2563 เขาจึงต้องนำเสนอแนวคิดดังกล่าวต่อคณะกรรมการบริษัท และสมาชิกชุมชน เพื่อหาทุนสำหรับการพัฒนาการท่องเที่ยวบนดอยช้าง

**คำสำคัญ :** การท่องเที่ยวเชิงเกษตร การท่องเที่ยวชุมชน การท่องเที่ยวกาแฟ เกษตรอินทรีย์  
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\* กรณีศึกษานี้เขียนโดย ผศ.ดร. ฉวีภา คันทธา อาจารย์ประจำคณะบริหารการพัฒนาสิ่งแวดล้อม สถาบันบัณฑิตพัฒนบริหารศาสตร์ (นิด้า) ซึ่งได้เรียบเรียงขึ้นมาจากข้อมูลทุติยภูมิ โดยมีจุดประสงค์หลักเพื่อใช้สำหรับการเรียนการสอนและการอภิปรายในชั้นเรียนเท่านั้น ไม่ได้มีจุดประสงค์เพื่อใช้เป็นแหล่งข้อมูลสำหรับการอ้างอิง หรือนำไปใช้รับรองประสิทธิภาพการบริหารจัดการใด ๆ

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## Doi Chang, Opium and Coffee

Doi Chang Village in Wawi Sub-district, Mae Suai District, Chiang Rai Province, is located at an altitude of between 1,000-1,700 meters above mean sea level (MSL); it is in an upstream area and acts as a habitat for several hill tribes including the Akha. The weather is cool all year round and the land is rich in resources which are suitable for growing Arabica coffee. The population in the area at present consists of ethnic Akha, Lisu and Chinese with more than 1,000 households, most engaged in coffee-based agriculture. 40 years ago, Doi Chang was a place of shifting agriculture practiced by different hill tribes such as the Akha, Lisu, Hmong. The shifting cultivation can cause soil degradation and deforestation when it has been done intensively because there was not enough time for soil regeneration. Moreover, at that time, the hill tribe people were running out of land as more of them immigrated and the population grew. Therefore, opium became a cash crop, which solved all their problems e.g. limited land, and provided a year-round income. However, it was not an easy time for living as hill tribe people needed to dissimulate their opium cultivation and to confront opium addiction in their communities. Thai government had tried to help hill tribe to change their cultivation pattern for better and more sustainable in economic, environmental, and social aspects.

Finally, however, in the mid-1980s, the Thai military, under pressure from the U.S, destroyed the poppy crop and terrorized the hill tribes. To diversify, different cash crops were introduced to the Akha, but none were very successful, and some were even disastrous, leading to further deforestation, the use of more pesticide and a crushing debt burden. (Perdergrast, 2015)

In 1983, Thai-German Highland Development Program personnel arrived in Doi Chang to help the Akka and Lisu change from illegal opium production to other sustainable cash crops. This was one of several such efforts in Thailand to wean the hill tribes off opium cultivation. A year later in 1984, the Lisu and Akha received 9,000 coffee seeds from His Majesty the King Maha Bhumibol Adulyadej in cooperation with the Thai-German project; however, these Arabica species were prone to coffee leaf rust. Therefore, the Catimor variety of Arabica, which was more resistant to the leaf rust, was given to the hill tribe farmers. This time, more

coffee plants survived, offering greater hope for the success of coffee as a crop in the village. Day by day, coffee seedlings were distributed in the village, even though the farmers were not particularly interested in this crop at the time. After four years, the coffee plants bore fruit, but the price of coffee had decreased from \$1.15 to \$0.65 a pound, due to world market forces. This led to the establishment of a cooperative to stabilize the price of coffee produced in the village which later it became to be famous “Doi Chaang” coffee brand. With the cooperative, coffee farmers trust and extend coffee cultivation together with other perennial trees.

Farmers in the Doi Chang area switched to growing Arabica coffee from 1983. More than 2 million trees were planted; this activity consisted of coffee planting and forest creation. It was known by foreigners as the “Doi Chang Model”: reforesting the mountain with 2 million trees on an area of 30,000 rai over a period of 15 years (Ritpreecha, 2011). The Doi Chang project was therefore a way to generate income and to preserve natural resources and the environment at the same time.

According to people in the Doi Chang area, people in the community realized that the area of shifting cultivations decreased, surrounding environments has been in better situation and the community was livelier than before, as shown below.

“The younger generation Akha are aware that taking care of the environment doesn’t mean just planting trees---- and it is not because they want to be fashionable or trendy. They have a genuine awareness of the environment.” (Ritpreecha, 2011)

The villagers had also started to make compost on Doi Chang. The farmers there showed great interest in plant detritus, including tree branches, the leaves of which could be fermented and used as an organic fertilizer for trees. The other residue such as coffee husks etc. could be fermented into compost as well. The trees became visibly stronger. A leader of the Doi Chang community (Mr. Phahachai Phisailert or Adel) made the following comment:

“You can look around here (in the area around the project in Doi Chang). Before, there were no trees. Now each tree has grown here. Everything has changed a lot: not only the natural environment, but the social environment has also changed. In the past, people here never had a cell phone or a television. Now every home has

a UBC dish. All kids left the village but now they have come back and prefer to do business in the village.” (Ritpreecha, 2011)

After Doi Chang coffee cultivation got going, the farmers came to realize that coffee trees planted in the shade of perennial trees, so called shade grown coffee, gave better quality coffee beans. To earn a year-round income, other related organizations in collaboration with the farmers discovered a market demand for different perennials, for instance macadamia, plum, and avocado; these were introduced and have continued to be grown. Growing coffee under the forest increased and enhanced the flavor of the coffee due to the beans slowly becoming mature with less sun light. The trees not only protect the coffee from direct sun, but also, they cover the soil with their fallen leaves which helps hold soil moisture. Therefore, the soil becomes healthier and provides good conditions for forest growing and biodiversity. As seen in Costa Rica and Indonesia, the bee species diversity and numbers increased (Klein et al., 2003a; Klein et al., 2003b). Under the forest, many weeds can be eliminated in plantations with at least 40 percent canopy cover, lowering the need for harmful herbicides (Jha et al., 2011). Finally, there are more variety of wild animals and trees in this environment. So Doi Chang area has become forest again, as it was before. Currently, the formerly bare mountain landscape is covered with coffee bushes and large perennial trees which is totally different from the situation 40 years ago. Moreover, diversification by using coffee by-products is feasible. This will not only prevent ecological damage by using other leftover by-products but will also improve the economic sustainability of coffee production. Farmers produced organic fertilizer from the coffee ground, husk, leaves, stems and twigs. (Daengtuy et al., 2017)

The situation happened along 40 years in Doi Chaang was a good model not only coffee farm and brand, but also the community and surrounding environments, as cited previously. Doi Chaang success is shown by the improvements made at origin-the health and wellbeing of farmers and people living in the community, the better farm practices, etc. The co-op of Doi Chaang coffee became fully self-sufficient while using best farming and business practices as possible, which is not easy to complete in other places.



**Figure 1:** Forest and Coffee Beans in the Forest Shade, Doi Chang

## Development of Doi Chaang Coffee

His Majesty King Bhumibol Adulyadej Maha Bhumibol Adulyadej initiated a project to improve the quality of life of hill tribe people. His Majesty King Rama IX bestowed a plant species that he thought would be an economically viable crop to replace and reduce opium cultivation, along with reducing deforestation. In 2001, Adel, who was the village head at that time, and Mr. Wicha Phromyong, a Thai friend of Adel's father, brought Doi Chang coffee with the intention of making it well-known in a wider market. Mr. Wicha had made a thorough study of the coffee manufacturing process from cultivation to production. Compared with the good coffee sources elsewhere in the world, the Doi Chang area is very suitable for growing Arabica coffee on an area of up to 20,000 Rai (Ritpreecha, 2011). In 2003, after Mr. Wicha had improved the local coffee production and had learned to make coffee, he was able to present Doi Chang coffee to expert tasters, who accepted it.

Therefore, later in the same year, Doi Chaang Fresh Roasted Coffee Company Limited was registered under the Doi Chaang brand. The company was set up to belong to all Doi Chang coffee growers: company benefits were granted to all the hill tribe farmers. From then on, Doi Chang grew steadily, both in terms of the cultivated areas, from 500-600 Rai to thousands of Rai, and in terms of the number of farmers. Soon

afterwards, Doi Chaang Coffee started looking for partners to export their coffee. Doi Chaang Coffee found a business partner from Canada which could act as a marketing channel. In addition to maintaining stable business growth, Doi Chaang Coffee founded the “Doi Chaang Academy of Coffee” in Doi Chang to enhance the ability of farmers both inside and outside the Doi Chang area as growers and producers of Arabica coffee for export around the world.

After the sudden death of Mr. Wicha in 2014, Mr. Phisanuchai Kaewphichai took over the position of company president, as he had always been closely involved in Doi Chaang Coffee. Therefore, it was the change of Doi Chaang Coffee in the era of Mr. Phisanuchai which was somewhat different from before.

## High Demand for Doi Chaang Coffee

The current coffee market was constantly growing, both domestically and globally. In 2016, the market value was approximately 15,000 million baht. It was expected that in 2017 it would grow by 15-20 percent. It was estimated that the demand for Doi Chang coffee would reach 20,000 tons, assuming that the market was still buoyant. Chiang Rai province, which has continuously promoted coffee, has approximately 38,000 rai of Arabica coffee growing area and 33,000 rai gave total coffee beans of 4,355 tons. This yield generated an annual income of around 2,000 million baht, while the Arabica coffee production nationwide was approximately 9,000 tons per year (Prachachat Business, 2017). These together accounted for nearly 50 percent of national production, due to the location of Doi Chang and other places in Chiang Rai which are suitable for Arabica coffee due to the following geographical features: higher than 1,000 m. above Mean Sea Level (MSL), 1500-2000 mm. of annual rainfall, and temperatures ranging from 16-22 degrees Celsius (Suwanwisolkrit, 2008).

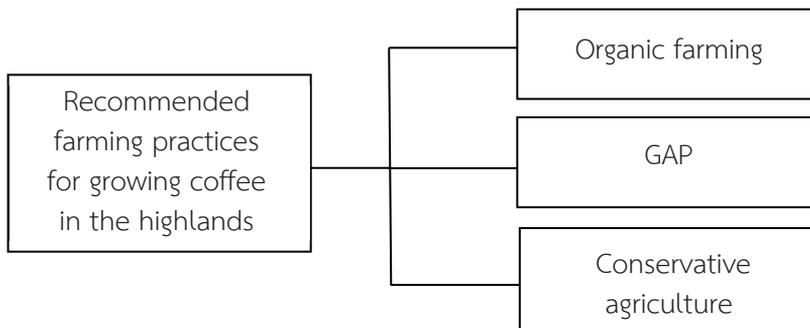
Mr. Panachai Phisailert, Managing Director of Doi Chaang Coffee Original Company Limited, stated that at present, the company had a network of coffee growers on Doi Chang of approximately 1,200 households, with an area of around 30,000 rai, approximately 2,000 tons total yield, and an average selling price of 1,080-20,000 baht/kg (Prachachat Business, 2017).

In July 2006, due to being an Arabica coffee grown on Doi Chang area of altitude area 1000-1,700 meters above MSL and both soil and water fertility, fresh fruit harvesting, carefully seed processing in every step: drying, sorting, and coloring, roasting-baking until receiving good quality coffee. Coffee fragrance in Doi Chaang with a mild flavor resembling white wine is considered unique. Doi Chaang Coffee was registered as a Geographical Index (GI) product by the Department of Intellectual Property and a Geographical Indication in the European Union (GI EU) in July 2015 (Department of Intellectual Property, 2014). Due to the unique natures of its, Doi Chaang has been demanded in the market domestically and internationally.

## **Promoting the Cultivation of Arabica Coffee in the Highlands**

In Thailand, hill tribe farmers were encouraged to grow coffee to replace opium cultivation and shifting cultivation. By developing various varieties in northern Thailand through the Royal Project and the Royal Agricultural Research Center, Chiang Mai, coffee varieties from foreign countries have been introduced: C. Arabica var. Typica, Bourbon, Blue Mountain, Caturra, Kent and Catimor (Suwanwisolkrit, 2008). Varieties that are suitable for north of Thailand are Caturra and hybrid Timor varieties, which have high yield and are resistant to rust and drought. Hill tribe coffee growers in northern Thailand were therefore encouraged to grow these selected coffee varieties.

Coffee in Chiang Rai has been promoted in different ways, including variety development, community partnerships and networking, environment-friendly and organic cultivation, and marketing carried out through various organizations. These promotions have made Arabica coffee meet the buyers' requirements. Arabica coffee production world-wide has shown a trend to be more systematic and environment-friendly with production certification such as organic farming guarantees, Fair Trade Rainforest and UTZ. In Thailand, not many coffee farms have reached these standards. However, there are different recommended farming practices for farmers. Pinthukas & Angkasith (2017) recommended three types of coffee growing systems that should be used: organic farming, Good Agricultural Practice (GAP) and conservative agriculture (Figure 2).



**Figure 2:** Recommended Farming Practices for Growing Coffee in the Highlands

Source: Pinthukas, N. & Angkasith, P., 2017

### Good Agricultural Practice (GAP) for Arabica Coffee

Good agricultural practices or so-called GAP for Arabica coffee is for farmers who would be certified the Arabica coffee GAP of Ministry of Agriculture and Cooperative (MoAC). Every step of the production process, from planting to post-harvest, was guaranteed to be safe and environmentally friendly. GAP for Arabica coffee was used in conjunction with TAS 5701 Agricultural Standards for Arabica coffee beans.

GAP for Arabica coffee can be summarized as follows.

1. The planting area must not contain harmful substances or substances which leave residues or cause contamination during the coffee production process. If there is any risk, soil and area quality analysis must be carried out and documented to ensure land use rights.
2. Farmers who use hazardous agricultural substances must have basic knowledge of such substances e.g. pesticides. If necessary, farmers should follow the recommendations of the Department of Agriculture, MAOC.
3. To ensure quality during the cultivation process, coffee varieties should come from reliable sources and should be checked. If diseased plants are found, they should be removed.

4. Harvesting and post-harvest practices must be rigorously controlled. Coffee fruit should be harvested when it is fully ripe, judging from the fruit color. After harvesting, plots can be managed by eliminating ripe coffee or dried fruit remaining on branches. If not sold in the form of fresh coffee, the harvested fruit must enter the production process within 24 hours of harvesting. As for wet coffee, the separation process must be controlled: the drying area should be exposed to sufficient sunlight, and there should be good ventilation, free of contamination. Coffee mills must be maintained in risk-free condition.

5. Storage and transportation: coffee and shell storage facilities must be hygienic, dry, well-ventilated, protected from external humidity and contamination, and separated from animals. In addition, the coffee bean transportation vehicles must be clean and protected from humidity.

6. Workers should have knowledge of appropriate hygiene practices or have undergone appropriate training in hygiene.

7. To check and monitor the production process, data such as product origin, the use of harmful agricultural substances, pesticides and other pest control practices, as well as details of sellers and buyers, must be meticulously recorded.

## **Organic Farming**

Organic farming is a form of agriculture based on natural principles carried out in an area free from pesticide residue and contamination of soil, water, and air. Organic farming promotes soil fertility, ecological biodiversity, and natural balance without using chemicals or GMO products. Through systematic management and planned production following organic standards, it aims to achieve high productivity, rich and non-toxic food values at low production costs for a better quality of life. The cultivation of organic coffee, therefore, concerns soil resources, water resources and the use of chemicals during the coffee growing period. In Doi Chang, coffee farming can be transformed into an organic agricultural practice more easily than in downstream areas, since the upstream areas have not accumulated contamination, as in the case of the downstream areas.

Organic farming can provide direct positive effects on those who consume coffee that is completely non-toxic and has no adverse effects on consumers' health. Besides, organic agriculture also encourages farmers to grow coffee free from chemical fertilizers and pesticides to ensure a better quality of life for themselves as well as a higher income from the fair-trade system.

The standards of organic farming in Thailand are generally as follows:

1. Coffee farms dose not locate in a location that is lower than the MoAC set standard.
2. Farming areas must not have any residual synthetic chemicals.
3. Synthetic chemicals must not be used in the production process.
4. Seeds must not be mixed with synthetic chemicals.
5. Genetically modified organisms (GMOs) must not be used.
6. Irregularly acquired animal manure must not be used.
7. External production materials must be certified as meeting standards.
8. The production process must be free from contaminating synthetic chemicals.
9. Biodiversity and environmental conservation should be promoted.
10. There must be an official organic farming certificate.

Organic farming has a few different benefits, but it cannot be conducted everywhere or on every occasion. Some soil types, sites or plant types are not suitable for organic production, for example a place which has been exposed to constant chemical contamination or where there is no source of organic fertilizer. When conditions do not support a conversion to organic farming, the investment would be too high, or it would take too long to get certified. Therefore, it is important for farmers and related stakeholders to consider the costs and benefits of organic coffee production before converting to it. In general, organic farm products should not be priced lower than GAP products.

## **Conservation Agriculture (CA)**

Conservation agriculture (CA) is a farming system that can prevent losses of arable land while regenerating degraded lands. CA principles are universally applicable to all agricultural landscapes and land uses with locally adapted practices. Soil interventions are reduced to an absolute minimum or avoided, and external inputs such as agrochemicals and plant nutrients of mineral or organic origin are applied optimally and in ways and quantities that do not interfere with, or disrupt, the biological processes (FAO, 2017). FAO (2017) stated that CA enables good agronomy with complemented by other known good practices, including the use of quality seeds, and integrated pest, nutrient, weed and water management.

The coffee grower can decide freely which farming practices they would like to apply in their coffee farms. At present, coffee farming in Doi Chaang has been CA in general, as it is shade grown coffee. However, some farmers in Doi Chaang have guaranteed their coffee farming with USDA organic certification and EU organic farming certification. Excluding to other Doi Chaang coffee, the organic coffee had passed all process separately. As initial certification and maintaining certificates is costly, only some parcels of land in Doi Chang have been certified as organic. When there were not many organic farms, the monitoring could be fully completed. Mr. Phisanuchai was convinced that organic farming in Doi Chaang should be continued but not convinced that it should be extended widely.

## **Coffee Tourism in the North of Thailand**

Tourism has been considered a significant sector in the Thai economy, producing 16% of the country's GDP (Ministry of Tourism and Sports, 2017). Coffee plantations in Northern Thailand emerged mainly in tourist destination areas and became very popular with both local and international tourists as the trend of Arabica coffee consumption increased. In Thailand, Community-Based Tourism (CBT) has developed throughout the country, and it has been recognized as an approach to improve the quality of life of the community as well as providing a sustained livelihood that can result in positive educational and tourism-oriented values (Tan et al., 2018).

CBT is also conceptually like agritourism, defined most broadly as any agriculturally based operation or activity that brings visitors to farms. Agritourism has different definitions in different parts of the world and sometimes refers specifically to farm stays. Agritourism activities belong to at least one of five categories, and they may span multiple categories. The five categories are: direct-to-consumer sales (e.g. farm stands, u-pick); agricultural education (e.g. school visits to a farm); hospitality (overnight farm stays); recreation (e.g. hunting, horseback riding), and entertainment (e.g. hayrides, harvest dinners) (Chase et al., 2018). Doi Chang had the potential to develop both CBT and agritourism.

For Doi Chang, “Coffee Tourism”, which is defined as tourism related to coffee consumption, the history, tradition, products, and culture of coffee (Joliffe, 2010), can also be applied. Coffee tourism usually involves a visit to coffee farms or coffee cooperatives so that tourists can explore the regional history of coffee. They expect to gain some basic knowledge regarding coffee farming, coffee harvesting, selection of coffee beans and coffee fermentation. In Smith et al. (2019a), coffee tourism destinations are classified into 4 categories: (1) natural attractions, (2) human-made attractions not originally designed to attract coffee tourists, (3) human-made attractions built deliberately to attract coffee tourists, and (4) coffee-related festivals and special events. For the case of Doi Chang, this means natural attractions with some specific attractions for coffee tourists. The coffee bean is the key economic crop of Doi Chang. The local community developed its skills in selecting coffee species and ensuring quality control, with support from academics, resulting in the production of the best coffee bean in Thailand in terms of flavor and taste (Department of Intellectual Property, 2014). Therefore, it attracted all kinds of tourists, not only because of the natural beauty and biodiversity of the location, but also because of the uniqueness of the coffee quality and the coffee production experience.

In Chiang Rai, Chiang Mai, Mae Hong Son and Lampang provinces of northern Thailand, there are Coffee tourism. Foreign coffee tourists from these areas were highly satisfied with the coffee tourism management in northern Thailand

(Smith, 2019a, 2019b). Therefore, the areas have high potential and facilities for coffee tourism. Smith (2019b) stated that for sustainable development of coffee tourism in the northern region of Thailand, a coffee tourism network in northern Thailand should be established. Such a network will probably assist not only in securing uninterrupted operation, but also in exchanging tourist news and information.

Moreover, the carrying capacity to service all tourists coming to Doi Chang, which is in a vulnerable, upstream area, was limited. To embark on coffee tourism, it was necessary to scrutinize the situation carefully and to control the number of tourists and observe strict guidelines for all those visiting the area. There are three types of visitor management techniques at each destination. The first is to control the number of visitors entering the area. Secondly, visitor behavior must be modified, for example in providing signage and clear information about how to protect the environment at the destination. Finally, adjusting resources to the desired number of people who visit. For example, preventing access to some areas for conservation, providing replicas or information in the outer part of the location to limit people coming in the inner protected area. To succeed in these techniques, regulation development and visitor education need to be developed (Diyah Setiyorini, 2018).

### **For Doi Chang-Coffee Tourism or Not?**

Sukkamon Thepin was a typical Doi Chang Akha teenager, who worked on his family coffee farm for several years after finishing high school. His farm was one of the certificated organic coffee farms. His family was very fond of his coffee farm and valued his perennial cash crops. Last several months, Sukkamon underwent training in Agritourism, and CBT offered by the Tourism Authority of Thailand. Besides, Sukkamon has discussed with other coffee growers from different places in northern Thailand. He found that coffee tourism can be an alternative for Doi Chaang. Agrotourism or Coffee tourism will be a good choice for his community. The agrotourism focuses more on education on local agriculture such as rice cultivation, flower cutting, horticulture, animal farming, etc. The local people representing local culture is the unique point of agrotourism in northern Thailand. Community around agrotourism location takes part in contributing a great tourism experience as visitors seek for

authentic local experience. Agrotourism operators make effort in extensively managing local community participant in agrotourism and encourage the expression of local culture. Meanwhile, coffee tourism originates from the coffee farming and bussineses, and focuses mainly on the coffee production of Doi Chaang coffee growers. Coffee farming, coffee fruit gathering, coffee processing and tasting all coffee are included in coffee tourism. Coffee farmers in the community must realize the coming of all tourists and the change of their lifestyle in the community, together with earnings. Comparing agrotourism to coffee tourism, activities, group of farmers and target tourists of these two types are different. Both agrotourism and coffee tourism need strong support and participation from the community.

A talent and full of enthusiastic, Sukkamon had the idea of developing tourism in Doi Chaang together with the balance of social, economic, and environmental attributes. He thought that Doi Chaang Academy of Coffee would be a good place to support for coffee tourism and that his family would be happy to have tourists at home. However, as mentioned previously, service capacity is an important issue, and it is crucial to take community participation and impacts on environment and natural resources into consideration. Since Sukkamon's family are members of Doi Chaang Coffee Original Company Limited, therefore on June 30, 2020, Sukamon had to propose his coffee development concept to the company management board and members of the Doi Chang community in order to receive financial support for his activities which some committees and community members are concerned about the development of the coffee plantation.

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**Appendix 1:** Comparison of Coffee Growing under Shade and Outdoor Coffee Growing

Properties	Outdoor Cultivation	Under the Shade
1. Quality of coffee beans (substance and taste)	Good	Good
2. Productivity (yield per expense)	High	Moderate
3. Coffee tree lifetime	Short	Long
4. Production cost (fertilizer, pesticide)	High	Low
5. Farm environment (moisture, soil conditions)	Not good	Good
6. Cultivation management	Good	Moderate

Source: Angkasith, 2001.

**Appendix 2:** Comparison of Arabica Coffee Production between No Pruning and Pruning

Province	Farming	Yield 2013/14 (kg./Rai)	Yield 2014/15 (kg./Rai)	Average Yield (kg./Rai)	% of Change
Chiang Mai	No pruning	143	147	145	84.1
	pruning	256	278	267	
Chiang Rai	No pruning	200	206	203	95.3
	pruning	383	410	396.5	
Nan	No pruning	116	122	119	79.4
	pruning	205	222	213.5	

Source: Department of Agriculture, 2019.