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The contract farming as a determinant promoting tea production and marketing at farm household in Vietnam: a case study in Phu Tho province

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THE CONTRACT FARMING AS A DETERMINANT PROMOTING TEA PRODUCTION AND MARKETING AT FARM HOUSEHOLD IN VIETNAM: A CASE STUDY IN PHU THO PROVINCE

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Résumé

Le Thi Kim Oanh (2018). L'agriculture contractuelle comme facteur déterminant promouvant la production et la commercialisation du thé au sein des ménages paysans au Vietnam: une étude de cas dans la province de Phu Tho, au Vietnam. (Thèse de doctorat) Gembloux, Belgique, Université de Liège, Gembloux Agro-Bio Tech, 238 p., 43 tabl., 44 fig.

Résumé

Le thé contribue considérablement aux exportations annuelles du Vietnam, aide à créer des emplois et augmente le revenu des agriculteurs. Cependant, les cultivateurs de thé doivent faire face à de nombreuses difficultés et sont très vulnérables en raison de leurs terres de culture du thé modestes et dispersées, de la mauvaise gestion de l'exploitation, du faible contrôle des maladies et de l'instabilité du marché. De nombreuses études ont prouvé que l'agriculture contractuelle offrait de nombreuses opportunités aux agriculteurs, telles que l'accès aux crédits et aux intrants, ainsi que l'accès à un marché fiable. Néanmoins, jusqu'à présent, il n'y a toujours pas de recherche approfondie sur les avantages de l'agriculture contractuelle pour la production de thé dans la province de Phu Tho. Cette thèse vise donc à analyser l'efficacité de l'agriculture contractuelle dans la production de thé à Phu Tho et à déterminer si celle-ci améliore les revenus des agriculteurs.

L'étude a été menée dans trois groupes différents d'agriculteurs: sous contrat complet, sous contrat partiel, sans contrat. Les résultats ont montré que: 1) Plus les agriculteurs sous contrat complet produisaient, plus leurs revenus étaient élevés, même si leur prix de vente était inférieur à celui des autres groupes; 2) Le prix de vente du thé chez les agriculteurs sous contrat complet était le plus bas, tandis que celui des agriculteurs sans contrat était le plus élevé; 3) La superficie moyenne de terre à cultiver du modèle de contrat complet était la plus élevée parmi les trois groupes étudiés et c'est l'usine de transformation qui possédait cette terre, tandis que les agriculteurs sous contrat partiel et sans contrat étaient propriétaires de leurs terres. Dans le premier modèle, les terres ont été fournies aux agriculteurs sous des conditions spéciales auxquelles les agriculteurs des deux autres modèles se trouvaient incapables d'engager; 4) Le rendement de la plantation de thé des agriculteurs sous contrat complet était le plus élevé grâce à la haute qualité des intrants; 5) Les agriculteurs sous contrat étaient, en générale, satisfaits des intrants de production et des activités de commercialisation du thé; 6) L'agriculture contractuelle a aidé à promouvoir la chaîne de valeur du thé noir dans la province de Phu Tho. Néanmoins, les agriculteurs sous contrat devaient encore faire face à divers inconvénients tels que les prix bas, les exigences de qualité et les relations d'obligation avec des entreprises. En outre, il y avait divers facteurs affectant l'agriculture contractuelle du thé dans la province de Phu Tho.

Sur la base des résultats ci-dessus, il y a quelques recommandations importantes comme suit: premièrement, les termes du contrat devraient être améliorés; deuxièmement, le rôle des gouvernements locaux devrait être renforcé; troisièmement, le gouvernement devrait mettre en œuvre différentes mesures pour promouvoir l'agriculture contractuelle de thé; quatrièmement, le succès du modèle d'agriculture contractuelle complète devrait également être encouragé plus

largement; finalement, le modèle d'agriculture semi-contractuelle devrait être amélioré et promu.

Mots clés : Agriculture contractuelle, agriculteurs, thé noir, Phu Tho province, Vietnam

Abstract

Le Thi Kim Oanh (2018). The contract farming as a determinant promoting tea production and marketing at farm household in Vietnam: a case study in Phu Tho province, Vietnam. (PhD Thesis) Gembloux, Belgium, University of Liège, Gembloux Agro-Bio Tech, 238 p., 43 tabl., 44 fig.

Abstract

Tea contributes substantially to Vietnam's annual exports, helps creating job opportunities and raises farmer's income. However, tea farmers face many difficulties and are highly vulnerable due to their scattered tea areas, poor farm management, weak disease control, and unstable market. Numerous studies proved that contract farming brings many opportunities for farmers such as access to credit and inputs, together with access to a reliable market. Nevertheless, until now, there has not been any thorough research on the benefits of contract farmers on tea production in in Phu Tho province. This thesis, therefore, aims to analyze efficiency of tea contract farming in Phu Tho and identify if contract farming improves farmers' income.

The study conducted in three different groups of full, semi and non-contract farmers. The results show that: 1) The more full contract farmers produce, the higher income they get, even though their selling price might be lower than the other groups; 2) Tea price of full contract farmers was the lowest, while that of non-contract farmers was the highest; 3) Average land area of full contract model was the highest in the three studied groups and owned by the processing plant whereas semi and non-contract farmers are self-ownership. Land was provided to full contract farmers with special conditions that semi and non-contract model found it is likely unable for them to engage; 4) Full contract farmers' tea yield was the highest in three farmer groups thanks to the high quality of input materials; 5) Contract farmers were generally satisfied with tea production inputs and tea marketing activities; 6) Contract farming helped promoting black tea value chain in Phu Tho province. Nevertheless, contract farmers still face various disadvantages such as low prices, requirements for high-quality, and obliged relationship with the companies. In addition, it appears various factors affecting tea contract farming in Phu Tho province.

Based on the above findings, there are some important recommendations as follows: firstly, the terms in the contract should be improved; secondly, the role of local governments should be enhanced; thirdly, the government should implement different measures to promote tea contract farming; fourthly, the success of full contract farming model should also be promoted more widely; and fifthly, semi contract farming model should be improved and promoted.

Key words: Contract farming, farmers, black tea, Phu Tho province, Vietnam

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List of abbreviations

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Countries
BTH	Borelli Tea Holdings
CF	Contract farming
CFs	Contract farmers
DARD PT	Department of Agriculture and Rural Development of Phu Tho province
EC	European Commission
EU	European Union
Euro GAP	European Good Agricultural Practice
FAO	Food and Agriculture Organisation
GAP	Good Agricultural Practice
GCO	General Custom office
GO	Gross Output
GSO	General Statistics Office
HACCP	Hazard Analysis and Critical Control Points
HH	Household
HHH	Household heads
HVF	High value food
IC	Intermediate Cost
ISO	International Standard Organization
ITC	International Tea Committee
M4P	Making market systems work better for the poor
MARD	Ministry of Agriculture and Rural Development
mil.VND	Million Vietnamese dong
MPI	Ministry of Planning and Investment
NGOs	Non Government Organizations
NIC	New Industrial Countries
OTD	Orthodox
PB	Phu Ben (company)
PD	Phu Da (company)
Per.	Percentage
PTSO	Phu Tho Statistics Office
Sao	Sao = 360 m^2
SME	Small-and Medium-sized Enterprises

SOE	State-owned enterprises
TC	Training course
UNCTAD	United Nations Conference on Trade and Development
US	United States
USD	United States Dollar
VA	Value added
VBARD	Vietnam Bank for Agriculture and Rural Development (VBARD)
VBSP	Vietnam Bank for Social Policies (VBSP)
VietGAP	Vietnamese Good Agricultural Practices
VINATEA	Vietnam National Tea Corporation
VITAS	Vietnam Tea Association
VND	Vietnamese Dong
WTO	World Trade Organization

1

Introduction

1.1 Background and rationale

Vietnam, especially the mountainous and midland areas of the country, has many favorable conditions to develop tea production and marketing. Moreover, tea industry has remarkably contributed to job-creation and revenue generation for tea producers. In addition, it also greatly assists farmers in the national hunger eradication and poverty alleviation (VITAS, 2016). In 2014, over 130,000 tonnes of tea valuable approximately 230 million US dollars was exported outside Vietnam. Approximately 3 million Vietnamese gain their livelihood on tea through over 400 businesses involved in production, processing, and export. In Vietnam, tea export accounts for 75-77% of the total production and 23-25% for domestic consumption (GSO, 2015). In the structure of exported tea, black tea now makes up about 53%; while green tea and the other types account for the remaining proportion (GSO, 2014). The total tea plantation area of the Northern mountainous province is 97,300 hectares, making up 72% of the country. There are several provinces which have large tea areas including Thai Nguyen, Ha Giang, Phu Tho, Yen Bai, Nghe An, Tuyen Quang, and Son La (GSO, 2015).

However, Vietnam's tea export still remains relatively low as compared to other countries. The export price is only about $ 1,500 per metric ton which is half of the world's average price. In addition to that, the tea exporting market of Vietnam has not remained stable. One of the most important reasons for that is the poor quality management in tea production and export, especially in food safety issues. The tea quality so far is still keeping Vietnam's tea industry far away from reaching global markets' standards (VITAS, 2015). The main reasons lie in the fact that a large number of tea companies have just been established and tea processing capacity increased quickly whereas regions of providing raw materials did not increase correlatively, which led to buying strong competition among companies in buying materials, procured products were not correct with their ranks that reduced quality of fresh shoots, speeded up the price and increased production expenses and costs and affected on processed tea quality (MARD, 2015). On the other hand, the rank of Vietnam's tea has not been high, mainly used for raw materials of processing types of tea. The tea exporting increased but tea products have not been plentiful. Experts in the tea industry said that tea products of Vietnam for exporting are mainly under the type of raw products, processed tea products are so monotonous and not plentiful about types, design and there are few green tea products which left its impressions to consumers on both design and quality. A good variety does not necessarily bring about high yield and quality tea for the regions. This is a popular situation in many areas of the country because of unqualified land for tea plantation, lack of investment, weak management together with new trees cultivation not meeting technical requirements. Additionally, currently, there is weak cooperation between various stakeholders involved in the tea value chain.

Due to small and scattered tea areas and lack of capital, farmers do not find much motivation to totally focus on their tea production. Besides that, the price of black tea not only is low but also fluctuated considerably, leading to the low price of fresh tea leaves and the corresponding unstable outlet. Moreover, the increase of input prices leads to a decrease of farmers's profit. It seems apparent that currently, tea

farmers face many difficulties and are highly vulnerable. They could easily come to the decision of destroying their tea garden once they found it unable to overcome these difficulties. That means a low competitiveness of Vietnam's tea industry in comparison with other tea growing countries in the world. If the farmers establish a collaboration relationship with tea companies, they can enjoy the benefits of various types of supports such as ensured inputs and outlet. The closer the cooperation between the farmers and the company become, the more competitiveness tea value chain would be.

Contract farming has been applied for a long time, especially for the perishable agricultural commodities that need to be processed, such as vegetables, fruits and dairy (Bijman, 2008). Its applicability and necessity as a rural development tool has been recognized and discussed in many empirical studies in the context of its role in linking producers with agricultural markets, especially in the developing countries. For farmers, contract farming also brings numerous opportunities, including access to a reliable market and guaranteed and stable pricing structures; and most importantly, access to credit, inputs, production and marketing services (seedlings, fertilizers, training, extension, transport, and even land preparation).

In Vietnam, the Prime Minister issued Decision No. 80/2002/QD-TTg on policies to encourage the contractual sale of commodity farm produce in the year of 2002. The State encourages enterprises of all economic sectors to sign contracts on sales of commodity farm produce with producers to match production, processing and consumption of commodity farm produce to keep production development steady and constant. The contracts, after being signed, will help not only to ensure the responsibilities and obligations of the parties, but also to protect the rights and legitimate interests of the raw materials producers and the production, business, processing and exporting enterprises. The Decision No.80 brought about a positive impact on the economy including various sectors from agriculture to forestry and fishery. There have been various studies of contract farming from the international supporting organizations, which can be found in Asian Development Bank (ADB, 2005). They involve contract farming examples in Vietnam with specific classifications on the sizes and kinds of goods contracts. ADB (2005) suggested the multipartite model as the most effective way to ensure the benefits to farmers. To better understand the effectiveness of the contract farming, Saigenji and Zeller (2009) took an examination on production and income of tea farmers in north-western Vietnam, and found out that thanks to contract farming, the technical efficiency and income level have been increased. Nham (2012), Nguyen (2014), and Pham (2015) showed that contract farmers highly appreciated the benefits obtained from contract farming, including the company's technical guidance and advanced input support. In addition, Nham (2012) indicated that contract farming increased the access to farmer empowerment (technical and managerial skills). Moreover, good cooperation and ability to organize between farmers are also crucial since it would help to reduce the transaction costs for both contractee and contractor. Additionally, market certainty is another vital benefit of the contract. Jagdish Kumar (2008) reported that contract farmers obtained higher, almost double income in comparison with non-contract farmers. This finding is confirmed by Giel Ton et al.

(2017). Similarly, Dong et al. (2014) found out that formal contract had positive impact on total monthly gross margin (GM) of swine production.

Phu Tho province is one of the top five largest tea areas and also ranks among the top four tea producing provinces in Vietnam that has traditionally been exporting black tea to overseas markets (80% of tea in Phu Tho is black tea to export). Tea growing position was confirmed on the midland region. Tea products are exported to many countries around the world (Phu Tho DARD, 2016). The total tea production area of Phu Tho was 7,893 ha ten years ago, corresponding to 43.5 thousand tons output. In recent years, tea production has become the major agricultural program. At the end of 2015, the total area of the province had risen up to 16,584 ha accounting for more than 12% of the whole country. This brought the province to the 5th place in terms of tea production area of the country. The provincial output has reached 154,753.3 tonnes of tea leaves (Phu Tho DARD, 2015). Like other major provinces that have black tea processing sector in Vietnam, the scale of tea production in Phu Tho is small and dispersing, leading to the fact that fresh tea quality is uneven and difficult to control. Tea farmers for profit has increased the use of pesticides and chemical fertilizers to increase yield, causing poor quality material tea, which then affected quality of the final black tea products.

In general, all of the above analysis presents that contract farming brings numerous benefits for farmers. In the above context of tea production in Phu Tho province, and until now, there has been, however, no thorough research in tea contract farming in Vietnam in general and in Phu Tho in particular to answer the following question: "Will tea farmers who have contract with companies obtain higher income in comparison with non contract farmers?"

This thesis entitled "Contract farming as a determinant promoting tea production and marketing at farm household in Vietnam: a case study in Phu Tho province", therefore, aims to analyze the efficiency of tea contract farming in Phu Tho province, and identify whether contract farming helps to improves income of tea farmers.

1.2 Research objectives and Questions

1.2.1 Research objectives

a. General objective

The general objective of the study is to analyze the efficiency of contract farming as a determinant to promote tea production and marketing in Phu Tho province by improving farmer's income.

b. Specific objectives

- To identify the types of tea contract farming in Phu Tho province

- To analyze economic efficiency of different types of tea contract farming in Phu Tho province

- To analyze the influence of contract farming on tea marketing in Phu Tho province

- To identify the factors that affect tea contract farming in Phu Tho province

- To propose relevant policy implications to promote the tea production and marketing through contract farming in Phu Tho province

1.2.2 Research questions

1. Does contract farming improve the tea households's income?

2. Does contract farming enhance tea marketing channel?

3. What are the factors that affect tea contract farming in Phu Tho province?

1.3 Research hypotheses

- Contract farming promotes tea production by enhancing income of contract farmers in Phu Tho province;

- Contract farming promotes tea marketing channel by enhancing the stability of selling price and market for contract farmers and improve the linkage between farmers and processors in Phu Tho province;

- Socio-economic factors affect tea contract farming in Phu Tho province.

1.4 Scope of the study

This study only focuses on studying black tea which occupies 80% of Phu Tho tea export. Black tea has continued to be one of the highest valued commodities which brings high income for tea producers in Phu Tho. In other words, this study does not focus on studying the production and marketing of green tea in Phu Tho province.

The major concentration of this study is to improve benefits for tea farmers who are the most vulnerable actor in the chain.

This study conducted the sample in the communes that have both contract farmers and non-contract farmers in order to compare the two groups in similar conditions in terms of regions, economics, and society, etc.

In the study site, there was only a group signing contract in a fairly stable manner with Phu Ben Tea Company, which was Minh Tien Cooperative in Minh Tien commune, Doan Hung district. The leader of the Cooperative signed a written contract with Phu Ben Tea Company, a moderately close integration.

However, we will analyze this model in order to find out what encouraged farmers to participate in this contract farming and examine the factors that affect contract farming on tea production and marketing in Phu Tho province.

1.5 Thesis structure

This thesis is organized as follows. Chapter 1 provides the research background and rationale for the study. Moreover, this first chapter also includes research objectives, research questions, and scope of the study as well as structure of the research. Chapter 2 mainly focuses on the tea industry in three different contexts, including worldwide, in Vietnam, and in Phu Tho province. Following that, Chapter

3 presents a short overview of the related literature, while Chapter 4 describes the research methodology employed in this study. Chapter 5 includes the survey results and analysis of the current tea contract farming in Phu Tho province. Finally, main findings and implications are presented in Chapter 6.

2

The context of tea

2.1 Tea production in the world

Tea (Camellia sinensis) was first cultivated approximately 2000 or 3000 years ago, in South East China (Eden, 1976). Tea is a perennial crop which can be grown in tropical or sub-tropical environments. Tea was first consumed in South and South East Asian cultures, and later spread all over the world. In the last century, the increasing demand in the European countries has further pushed up the production in South Asia and some parts of Africa (Innocent Awasom, 2011).

Different countries produce different quantity of tea based on a number of factors such as tea varieties, agro-ecological characteristics of those countries (climate and soil type) as well as the production scale (den Braber et al., 2011). Apparently, weather is the main factor for a successful tea crop (Wijeratne, 1996). Some researchers have identified that increasing temperatures (up to 25-26^0 C) improves crop yields (Carr and Stephans, 1992; and Wijeratne, 1996). Ideal conditions for tea growth are temperate (15-30^o C), high rainfall of 1,500 – 2,000 mm of even distribution during the year, air and land humidity of 70 - 80% lasting for several month, and height of 500 – 1000 m, with the highest of 2000 m (FAO, 2015).

Tea exports represent a considerable proportion of economy of many countries in Asia and Africa, providing employment for over 13 million people around the world (Jason Potte et al., 2014). The tea industry is growing at a rate of about 5% per year on average (FAO, 2017). The industry is facing many issues which becoming increasingly complicated. According to the Intergovernmental Group on Tea (IGG) under the Food and Agricultural Organization of the United Nation, approximately 60% of the total world tea production is produced by smallholders (FAO, 2016), corresponding to about 8 million farmers in Asia and Africa (Ethical Tea Partnership, 2016).

Drinking tea is a tradition in many countries in the world such as Japan, China and Vietnam. Tea has becomes so important for people around the world; in fact, two thirds of the world population chooses tea as a daily beverage (Vo, 2006).

2.1.1 World tea growing areas

Table 2.1. World's tea growing areas by continents (Unit: ha)

Regions	**2010**	**2011**	**2012**	**2013**	**2014**
Africa	295,443	303,283	318,818	360,563	378,767
American	43,975	43,688	44,791	41,735	41,618
Asia	2,799,995	3,047,841	3,137,059	3,209,661	3,374,973
Europe	1,558	1,346	432	596	619
Australia	4,207	3,946	3,871	3,858	3,855
World	**3,145,178**	**3,400,104**	**3,504,972**	**3,616,412**	**3,799,831**

Source: FAO (2015)

As can be seen from Table 2.1, in 2014, Asia made up nearly 89% of the global tea area, followed by Africa with over 9%. The mere remaining proportion was located in America.

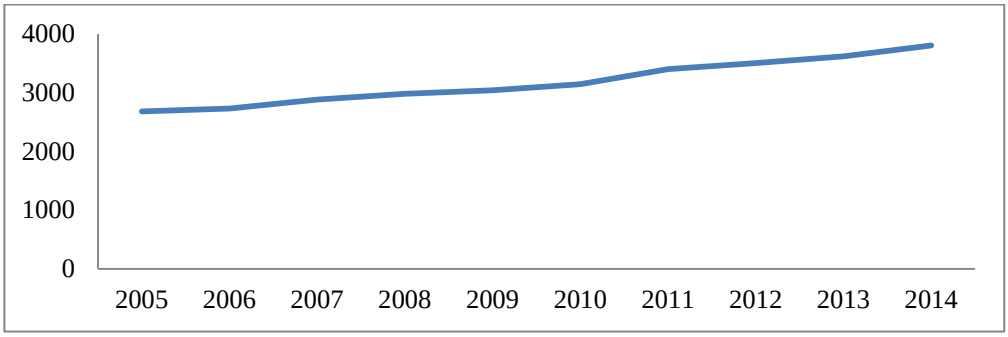

Figure 2.1. World's tea *growing* areas from 2005 to 2014 *(1000 ha)*
Source: FAO, 2017

Although tea is grown in over 50 different countries, among which around 5-10 countries have an insignificantly small tea areas and outputs. Tea is mainly grown in developing countries, and tea output is mainly originated from the world's biggest tea producers, including China, India, Kenya, Sri Lanka, Turkey and Vietnam.

According to the figures released by the FAO (2015), the total world's tea area is estimated to be around 3.8 million ha in 2014, and the total world's tea output is around 5.5 million tonnes, increased by 1.1% and 1.15%, respectively compared to 2009 (Figure 2.1). During the period from 2001 to 2010, the average growth rate of the world's tea area was 2.7% per year, while that of the world's tea output was 3.9% per year. Overall, both the world's tea area and output have experienced a fairly steady growth and an upward trend during the last decade.

However, the tea volume growth depending on expansion of tea area shall be limited in the next decade because the land resources have become increasingly scared and farmers in the world have switched to more profitable production and business activities. The top eight countries with the largest tea areas in the world are China, India, Sri Lanka, Kenya, Vietnam, Indonesia, Japan, and Turkey, accounting for almost 89% of the world's total tea area. China has been maintaining the position of the world's biggest tea grower, accounting for up to 52% of the world's total tea area in 2014 (Figure 2.2).

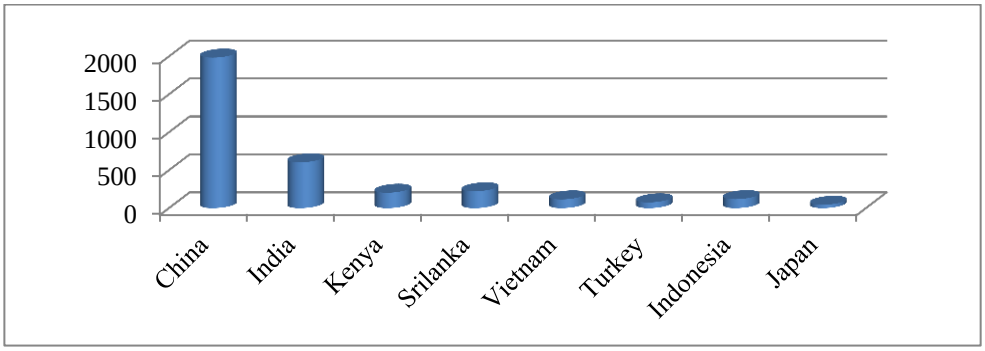

Figure 2.2. *Tea areas of major tea producing countries in 2014 (1000 ha)*
Source: FAO, 2014

2.1.2 Black tea products

Types of tea

Tea can be basically classified into Green, Black or Oolong tea depending on the way that the same basic tea leaf (camellia sinensis) is manufactured. Black tea is the type of tea that predominates in the West. It involves the most processing, including withering, crushing and rolling, and then heating and drying. The manufacture of green tea differs from black in that the withered leaf is steamed and rolled before drying or firing, avoiding the fermentation stage. Oolong tea is, on the other hand, semi-fermented.

The vast majority of the tea trade in the world market is black tea which can further be divided into two main categories, including Orthodox and CTC tea. Orthodox tea is made by rolling the withered leaf under light pressure to create a twisted, wiry appearance in the final product. This is the traditional method for making tea and specialty teas like Darjeeling are usually made in this way. For CTC tea, the withered leaf undergoes the "Crush, Tear, Curl" process, whereby it is shredded and then crushed between sets of grooved rollers to produce a small granular final product. This method revolutionized tea manufacture when it was introduced as it yielded double the cup page per weight and it is ideally suited to tea bags (Adapted from Oxfam, 2002).

Processing of black tea

The main stages of black tea processing procedure include: Withering; Rolling; Roll-breaking (or green leaf sifting); Fermentation (oxidation); Drying (firing); Sorting (grading); and Packing and marking for sale or shipment (Hicks 2001).

After being harvested black tea leaves are dried up by air. After that, they can be processed either by CTC (Crush, Tear, Curl) or by Orthodox methods. A CTC method is generally used for lower quality leaves, which are used to make tea bags and make decent quality products. Meanwhile, Orthodox processing is employed for higher quality tea leaves for the specialized consumers; this processing can be done by machines or by hand. The next step is oxidation (or "fermentation") under a certain temperature and humidity; the time between these stages plays an important

role because how much oxidized the tea is will affect its quality. Tea-producers then use hot air to lock the oxidation process. Finally, sieves are used to classify tea leaves based on their sizes and tea leaves then are classified into: whole leaf, brokens, fannings and dust. They can also be further classified based on other criteria before being packed into packages (Hicks, 2009).

Black tea quality classification

Black tea is often classified based on a four-scale grading of quality which includes whole leaf teas, broken leaves, fannings and dusts (in the order from the highest to lowest quality). As can be told from its name, whole leaf teas are the tea which are produced in a way so that the tea leaf is preserved to the best possible extent, thus is the most valuable. It is even more precious if they still retain leaf tips.

Broken leaves are the loose tea leaves with average quality, while the smaller broken leaves can be used to make tea bags. Fannings, the smaller particles produced from the making of large tea leaves, can be used for the manufacture of bagged teas. Finally, dusts are the smallest pieces of tea which remains from the production of these above tea varieties. Dusts are generally used for making tea bags. These tea bags are fast and easy to be brewed because dusts are more easily diffused in water than the other tea varieties. Lower quality leaves such as fannings and dusts are quickly brewed, thus have a stronger flavor and darker color, but are not as sweet as the other high-grade varieties (Hicks, 2009).

Black tea grading

The classification is done either by hands or by passing the leaves though sifters with graduated mesh sizes to separate them out. The resulting piles of tea are then classified according to size, type and appearance. The method given by the International Standard Organization provides a classification of tea according to their particle size distributions; ISO 11286:2004: Classification of grades by particle size analysis (UNCTAD, 2016).

Tea quality standards

Despite being the most popular drink in the world, there are no internationally valid regulations on tea, however some guidelines do exists such as CODEX, or regional regulations (EU) and national regulations. For exporting countries, they adopt ISO standard as well as national standards, which do not vary too much from country to country.

It is very important for exporting countries to adhere to national and foreign standards, as well as regulations on food safety and quality. Only when their products meet those qualities, can they be exported to other countries for consumption. ISO 3720 has been widely adopted in many countries to regulate tea quality despite only voluntary (UNCTAD, 2016).

2.1.3 World's tea production

Due to the increasing demand for tea in the global market, there has been an increase in tea production. The world tea production reached 5,305, 000 tonnes in 2015 (Figure 2.3). Even though tea is produced in fifty countries worldwide, the majority (about 75%) of the global production is contributed by a few countries,

namely China, India, Sri Lanka and Kenya. Other major tea producers can be listed as Turkey (4%), Vietnam (4%) and Indonesia (3%).

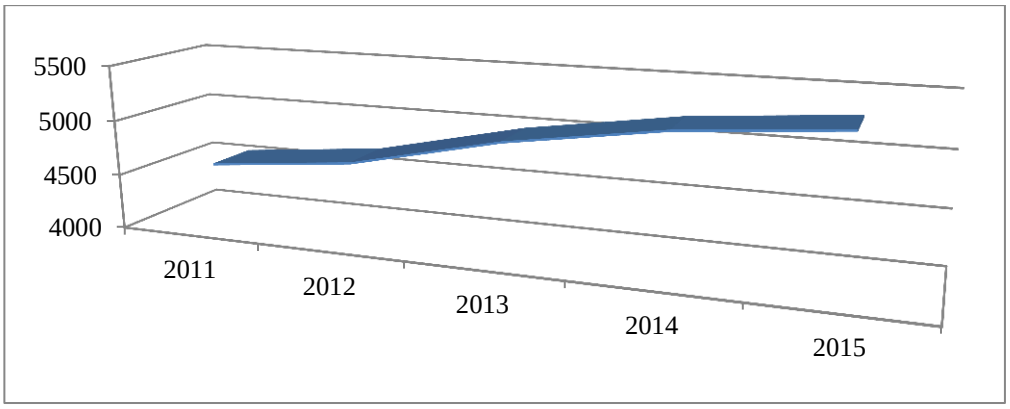

Figure 2.3. *Tea production volume in the world from 2011 to 2015 (1000 tonnes)*
Source: Cyclope, 2017

Tea production has increased quickly over the last ten years. In 2014, the total tea production in the world reached 5,196 tonnes. Chinese tea production accounted for 38% of the international tea market, and those figures of India, Kenya, Sri Lanka and Vietnam were 22%, 8%, 6% and 4%, respectively. Looking at market share, Asian countries made up 85% of the total world market, followed by African countries with 13% and South American countries with 2% (Cyclope, 2017) (Figure 2.4).

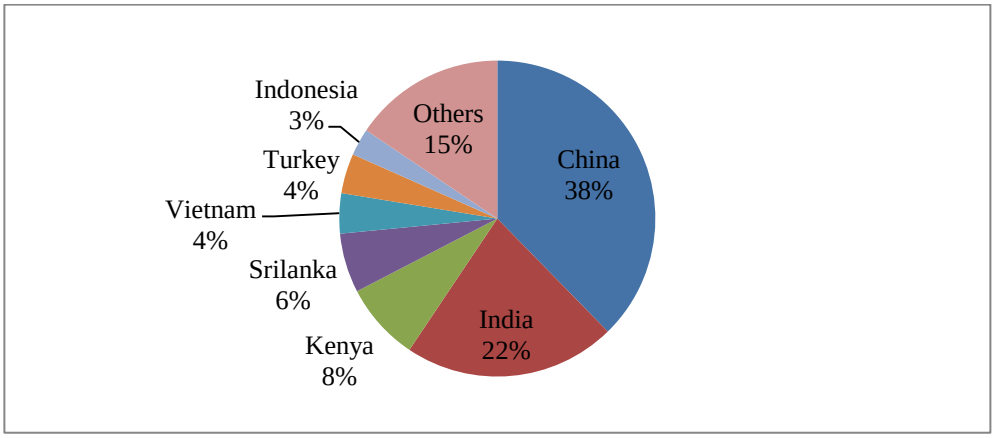

Figure 2.4. Maijor tea producers in the 2014
Source: Cyclope, 2017

Tea production increased in 2016 and was estimated to continue to rise at a growth rate of 2% per year. Kenya and Sri Lanka are the world's biggest exporters of black tea. China, the largest tea producer in the world, also reported an increase in production, with a predicted growth of 3% in 2015. However, this growth was

slower than expected due to period of bad weather and cold temperatures at the beginning of the year, which resulted in serious damage to tea crops (Worldteadirectory, 2017). China is the leading tea producer in the world. In 2015, its production reached 2249 thousand tonnes, increased by 7.3% as compared with and 10% in d with 2014. Its production then increased to 2397 thousand tonnes, increased by 6.6% as compared with the previous year. The country's tea exports went up significantly by 8.9%, 7.5% and 10.3% in 2014, 2013, and 2012, respectively. Since the beginning of the year 2017, Chinese Ministry of Agriculture has started a campaign of reducing the use of chemical fertilizers and encouraging the use of organic fertilizers for tea production. The ministry's objective is to reduce chemical fertilizers by 50% in the coming years (Cyclope, 2017).

Despite accounting for up to 52% of the world's total tea area, China's tea output of accounts for only 37.7% of the total world output. Meanwhile, India – the second biggest tea producer is home for just 16% of the world's total tea area, but its tea output makes up nearly 22% of that of the world. It is mainly resulted from the difference in the tea yield among the world's largest tea producers (FAO, 2015).

Indian tea is recognized all over the world thanks to their unique aromatic flavor. There are three special teas produced by the country which are exported around the world, including Darjeeling Assam, and Nilgris, In addition to that, there are also other varieties produced such as organic and green tea but only in insignificant amount. Tea is mainly grown in Assam, Kerala, Tamil Nadu and West Bengal, accounting for about 95% of the total production. In India, the tea industry provides jobs to a large number of women. The tea cultivation is not only for economic production but also plays the role of social institution for Indian residents (Sukhin Chawlaa* et al., 2016). India is the second largest tea producer, behind China (the leading green tea producer) in the world. India is the leading black tea producer over the world, and also a big consuming market, with a 3% increase in black tea consumption every year. According to India Tea Board, since 2013, Indian tea production has been always higher than 1200 thousand tonnes. The tea production in 2016 reached 1239.2 thousand tonnes, equivalent to a 2.46% increase compared to 2015, which is the peak production level during recent years (Cyclope, 2017).

Kenya is the third largest tea producing country in the world, behind India and China, and the main exporting country of black CTC tea. Kenya's tea production in the year 2015 went down by 10.3% (Cyclope, 2017). In contrast, growth in Kenya continued in 2016, to create this shortage. Total production was predicted to rise by 10-15% to up to 450 thousand tonnes, thanks to thick rain establishing for ideal cultivating conditions (Worldteadirectory, 2017).

In 2015, Sri Lanka's production also dropped by 2.7% as compared with the previous year (Cyclope, 2017). In August 2016, tea volume decreased by 13% from 2015, the lowest figure in ten years. This had a knock-on effect of rising prices which was resulted from lower supply. Tea production in Sri Lanka and India declined because of dangerous dry weather (Worldteadirectory, 2017).

2.1.4 Tea trade in the world

During the last decade, the total exporting tea volume in the world has increased by an average growth rate of 3% per year and its value has increased by approximately 9% per year. It indicates that like other agricultural products' price, the tea price also experienced an increase over the period from 2001 to 2013. In 2013, total tea export volume in the world reached 2.05 million tonnes with the total value of about USD 7.5 billion (FAO, 2017).

According to UNCTAD (2016), tea export plays a crucial role in government earnings (in terms of foreign currencies and taxes), revenues and employment for agricultural sectors and households to exporting countries. The two main types of tea traded in the world market are black tea and green tea. Black tea is mainly grown in and exported by Kenya and Sri Lanka, while green tea is primarily grown and consumed by China.

Recently, because of the impacts of global economic crisis, there has been a shift of consumption direction from the expensive drinking products like cacao and coffee to the average standard products like tea. Therefore, the tea industry will have a higher potential market in the near future.

Despite the impacts of climate change, producers have been striving to reach high production volume. The relative stability of tea price in recent years is an important factor in supporting the development of tea production, especially in the countries that have large tea production areas like China, India and Vietnam. The leading exporters in the world include Kenya, China and Sri Lanka, which together attribute to 61% of the world tea exports in 2014 (Cyclope, 2016) (Figure 2.5).

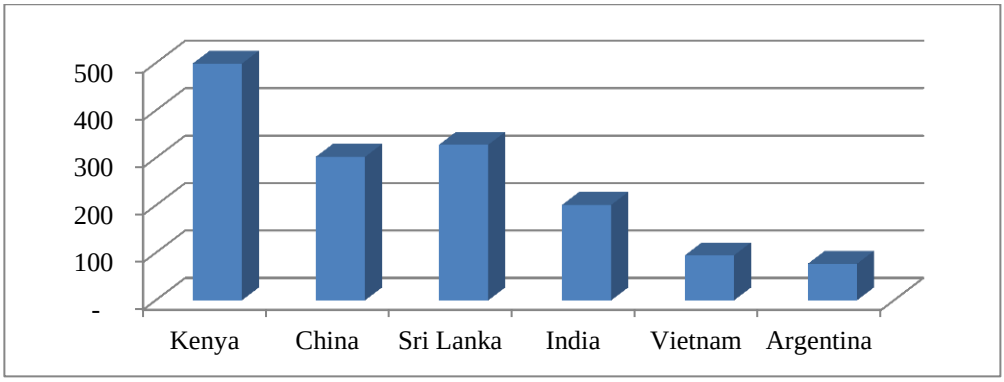

Figure 2.5. E*xports of* major *tea* producers *in 2014* (1000 tonnes)
Source: Cyclope, 2016.

The six biggest tea exporters, including Kenya, Sri Lanka, China, India, Argentina and Vietnam together accounted for approximately 82% of the world's total tea export turnover. Because most of the current main tea producers are also the main tea consumers in the world, despite the high concentration of exporters, importers have been rather scattered (Nguyen, 2016). Kenya was the largest worldwide tea exporter in 2015, making up 25% of all exports, which was followed by China and Sri Lanka at 18% and 17% respectively. India accounted for 12% of the world

exports, with Vietnam, Indonesia, Uganda, and other countries making up the rest (Cyclope, 2016).

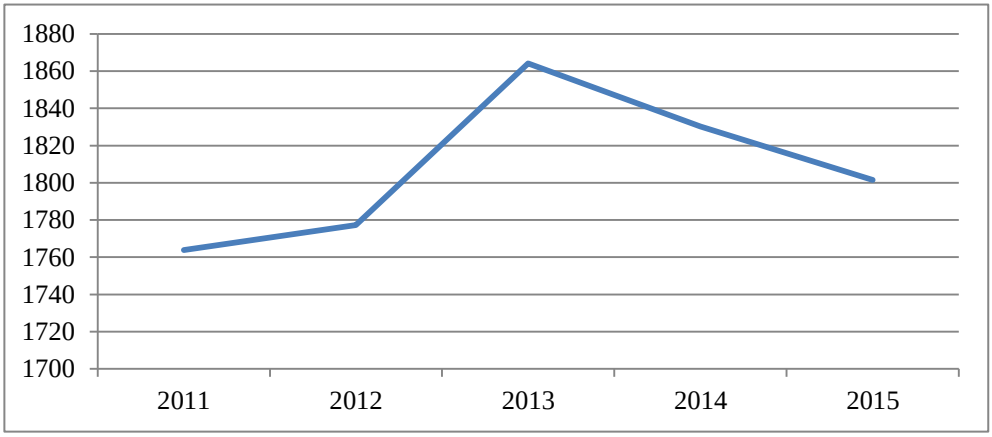

Figure 2.6. *Tea export volume in the world* from *2011* to *2015* (1000 tonnes)
Source: Cyclope, 2017

Sri Lanka's tea export volume dropped in 2016, a decrease of 20% to 289 thousand tonnes in which 286.1 thousand tonnes (about 99%) was black tea and only 3.0 thousand tonnes was green tea. A majority of Sri Lanka's tea was Orthodox black tea. According to Sri Lanka Tea Board, the main causes of the decline in tea production were unfavorable weather conditions and the lower use of fertilizers and pesticides due to the government policies (Cyclope, 2017).

India ranks fourth in tea exporting, after Sri Lanka. Indian exports in 2016 declined by 5.2% compared to 2015, reaching 216.79 thousand tonnes. Their main exporting markets include Russia (accounting for 20.4% of the total exports), Iran (10.5%), UAE (7.7%) and Germany (4.7%). There is a competition between Indian tea and Kenya's tea in Indian traditional markets such as England and Iran. Kenya's tea exports reached 420.5 thousand tonnes. In 2015, which means a decrease of 60 thousand tonnes. However the export value increased since it exported most of its black CTC tea to Pakistan (Kenya Central Bank, 2015).

According to Ian Gibbs, Chairman of the International Tea Committee (ITC), the proportion of tea crop available for export kept on falling. In 2006, the percentage of tea produce exported was 43%. Since then, that percentage has been declining every year. In 2015, only 34% of the total tea produced was exported, corresponding to a majority (66%) of tea consumed within the producing countries (Dan Bolton, 2016). Tea export volume decrease due to high domestic consumption in the largest producing countries. For instance, India currently consumes about 19% of the world's tea but is expected to become a key importer by 2017 and beyond due to their decreasing yields (Worldteadirectory, 2017).

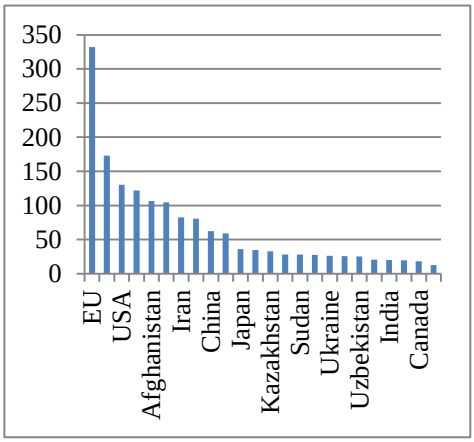

Figure 2.7. Tea imports of big importing countries in 2013 (1000 tonnes)
Source: Cyclope, 2016

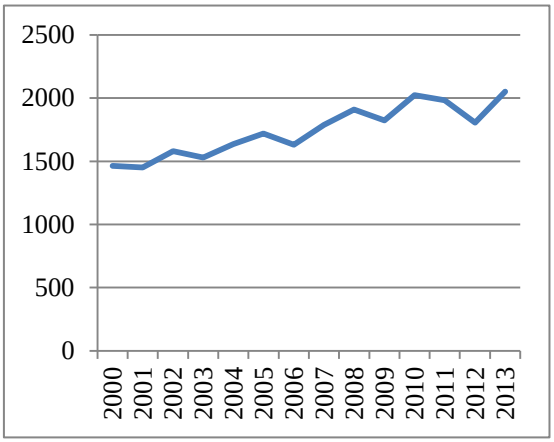

Figure 2.8. Tea imports in the world from 2000 to 2013 (tonnes)
Source: FAO, 2017

The world's six biggest tea importers, namely Russia, the United Kingdom, Egypt, the United States, Pakistan and UAE, accounted for about 40% of the world's total tea import turnover. The main export markets were Russia, UK, USA, and Japan. The next important markets were Iraq and Iran with 173 thousand tonnes of tea. The tea imported volume of China increased by 11.6%, reaching 62.5 thousand tonnes; and the corresponding figure of the UK was 137 thousand tonnes (Cyclope, 2016) (Figure 2.7). During the period from 2005 to 2014, the total importing tea volume in the world experienced a steady increase FAO, 2017) (Figure 2.8).

2.1.5 Tea prices in the world

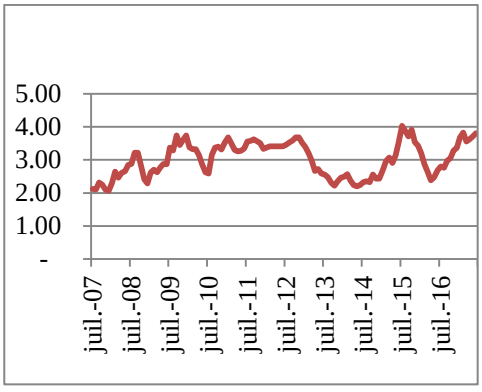

Figure 2.9. World's tea prices in July from 2007 to April 2017 (USD/kg)
Source: International Tea Committee (ITC), 2017

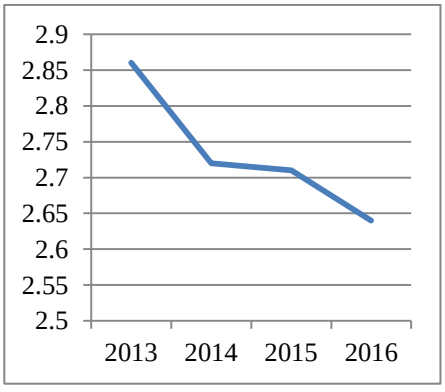

Figure 2.10. World's tea prices from 2013 to 2016 (USD/kg)
Source: World Bank, 2017

The average price of tea in July at the auction was USD 2.64 per kilogram in 2016, according to the World Bank (Figure 2.9). Increasing labor costs and changeable weather are the main reasons behind higher prices, according to the economists. The tea sold at the auction in Colombo, Sri Lanka, remains to be the highest price in the world, averaging 420.90 USD per metric ton (4.21 USD per kilogram) for high planting, according to the International Tea Committee. The price of African tea sold in Mombasa was USD 2.39 per kilo on average of which Malawi tea priced at USD 1.68 at the Limbe auction. Average tea auctioned price in Jakarta was USD 1.73 per kilogram.

The world tea price in 2016 decreased by 4.4% as compared with 2015 (Figure 2.10). The change in tea prices of the major tea producers varied from country to country. In particular, the prices of India's tea and Sri Lanka's tea went up, while the prices of Kenya's tea went down.

Because a global supply deficit and demand continues to grow, tea prices are predicted to increase in 2017 (Worldteadirectory, 2017). According to World Bank (2017), the average auction price of tea is predicted to reach USD 2.80 per kg in 2017 and increase to USD 2.81 in 2018, USD 2.83 in 2019 and USD 2.84 in 2020. The world cost of agricultural raw materials (such as fertilizers and pesticides, etc.) is projected to rise by 4%. The ongoing transformation of emerging market consumers to packaged tea products will ensure capacity growth, but the industry must consider best and improvement formats for price increases and value growth (UNCTAD, 2016). Tea prices in various markets are powerfully close to production and are affected by weather conditions, as well as many other factors.

In Kenya, prices fell during the first nine months of 2016 because of an increased production. High levels of rainfall led to an increase of tea crop up to 24% compared to 2015. Since weather conditions were less favorable and crops were delayed, tea price increased up by 30% during the second half of the year (Worldteadirectory, 2017). Kenya tea is essential in making popular grocery store brands including PG Tips, Lipton, Tetley, and Twining's tea. Over the period from April 2016 to January 2017, there was an increase in tea prices of 13.5% on average because of the shortages resulted from a drought (Cyclope, 2017).

In Sri Lanka, tea prices decreased after the first and second harvest of the year due to an increased supply. In contrast, prices rose by 25% because of the limited supply accordingly. Dry spells throughout the rest of the year resulted in a lower yield crop (Worldteadirectory, 2017). The prices of Sri Lanka's tea started to increase from the beginning of 2016 and continued to increase throughout the year. Sri Lanka Tea Board suggested there were two major reasons for the increase in prices, including lower supply and the devaluation of Rs compare with USD. Price rises have also been encouraged by an increase in demand, which can be possibly due to market-specific factors, such as supply shocks, which explains for most of the fluctuations in tea prices. Drought and pest production constraints have had a greater impact on prices. Any overreaction to the development of tea prices by using uncontrolled yields, especially in bringing tea into new areas, leads to significant price declines. Substantial positive change in supply can increase exports and adjust the demand and supply equilibrium, which in turn would reduce tea prices (Cyclope, 2017).

In India, the bulk tea price of Indian tea increased from USD 2.02 to USD 2.07 per kg. The price of the high quality Darjeeling tea raised from 4.21 USD to 4.8 USD, corresponding to a 14% increase (Cyclope, 2017).

2.1.6 World tea consumption

In general, tea is listed as an important component of the beverage market (Hicks, 2001) as well as functional food market (Hicks, 2001). As there is more and more competition, it is forecasted that more added-value tea products will be made to cater for sophisticated needs. The tea industry should be confident to respond to these future challenges (Hicks, 2001).

With its characteristics such as being cheap and easy to find, it seems that people of all ages and classes drink tea; they drink approximately 3 billion cups of tea a day worldwide. Nowadays, tea is considered as an important part of the beverage industry. Furthermore, tea is also used in functional food thanks to its active ingredients. Some big tea exporters of the world are located in regions such as Africa, South America, the Near East and especially Asia (Hicks, 2009). Tea is the second most prevalent beverage in the world, right behind water (Szenthe, 2015). The global tea consumption went up by 60% over the period from 1993 to 2010, and is projected to increase considerably with an increasing number of people around the world becoming tea consumers (Brouder et al., 2014).

To increase tea sales, it is important to highlight the health benefits of tea, which can only be discovered through scientific research. Some value-added market segments should receive special attention, such as the market for specialty and organic teas. To boost sales and expand markets, the production of tea products must ensure compliance with standards on food safety and quality. According to FAO (2008), applying quality standard to improve tea quality will reduce tea quantity but increase tea prices, which is only a short-term or medium-term consequence.

As mentioned above, tea is one of the most frequently-consumed beverages and also the most affordable beverage in the world. Black tea is the tea variety with the highest consumption.

Tea is considered a healthy drink thanks to a high concentration of antioxidant tea polyphenols found in green tea and black tea. Some compounds found in tea include polyphenols, alkaloids, amino acids, carbohydrates, proteins, chlorophyll, volatile organic compounds, fluorides, aluminum, minerals and trace elements. Polyphenol is one group of chemical which is attributed to the health benefits of tea. They include a group of plant chemicals named Catechins. Many people like to drink tea because the antioxidants in the tea can protect them from oxidative damage, a cause of cancer. As tea contains healthy chemicals, it has made its way into the production of supplements and functional foods.

The reason tea gains its popularity is thanks to its important health benefits. People drink teas for specific purposes such as to lose weight or to consume antioxidants or because they like their new flavors, made from new ingredients (UNCTAD, 2016).

In the future, the demand for tea may go in either direction:

- Black tea, in the form of bagged tea products, continues to gain more popularity in markets with high consumption of tea. This is especially true in the emerging markets.

- People who do not like coffee or caffeine or who look for occasional health benefits will look for alternatives such as fruit and/or herbal tea. This latter group presents a high value proposition.

There are a number of major factors that affect demand for tea: (i) The first factor is prices as any other commodities which have relatively small impact on tea consumption. Nevertheless, the increase in demand for tea bags and soluble instant tea means a reduction in the amount of tea needed per cup and also an increase in demand for plain cheaper tea. All of those have had led to the decline in tea prices; (ii) The second main factor directly affecting tea demand is living standard. The more improvement in living standard, the higher the demand for tea; (iii) Demography is the third factor to consider. Specifically, the development of international cities and increase in domestic tea consumption in tea growing countries as well as large population countries, especially India and China, have an influence on world tea demand as a whole; (iv) Changes in preferences and tastes also affect tea demand, especially when a group of consumers are more health conscious and pay more attention to healthy products; (v) Competing drinks such as coffee, affect tea consumption to some extent. For example, when the price of tea decreases, the consumption of tea might increase and that of coffee might reduce; (vi) Another factor influencing tea demand is advanced technologies; and finally (vii) Seasonal demand affects demand of tea. In other words, more tea is consumed during the cold season (UNCTAD, 2016).

The developed markets only account for 21% of the world's tea consumption, while the developing market make up the remaining vast majority 79%. As reported by FAO, in 2013, the worldwide tea consumption reached 4,042.8 thousand tonnes, increased by 5.6% compared to that in 2009.

Russia, Japan, the United States and the United Kingdom are the biggest tea consumers among the developed markets. Among those markets, only Japan can provide a high tea volume for its domestic consumers thank to its domestic resources, the others mainly depend on imported tea. Russia is the biggest tea importer in the world with a total volume of 173 thousand tonnes in 2013. Although the consumers have increased their use of alcohol-free beverages, they, even those in countries with tradition of drinking tea like the United Kingdom, have gradually moved to use coffee instead. Tea consumption in the United States has been increasing, at an average growth rate of 3.3% per year during the period from 2010 to 2013. The United States is the developed market that has maintained high growths of tea consumption (Cyclope, 2016).

The United States is one of the biggest importers of tea worldwide, coming in third after Russian and Pakistan. Global consumption surpassed production and is growing at a rate of approximately 5% per year. India and China are the world's biggest tea consumers and drive consumption mainly based on a growing population. Tea is the most prevalent beverage in the world, after water and can be found in 80% of all American consumers. In 2016, Americans drank half a pound of

tea per person, on average. Black tea is the type of tea choice in the USA, accounting for 85% of all consumption. American consumption of various tea kind from traditional, specialty, ready-to-drink, and to foodservice) has raised in recent years, most likely thanks to an increased national interest in health and diet overall (the sales of carbonated soft drinks have dropped accordingly) (Worldteadirectory, 2017).

2.1.7 Challenges for the tea industry

The tea industry has to face a number of challenges such as limited land to expand production, increased competition from other beverages, labor scarcity, and climate change, all of which affect tea yield and profitability. Climate change is a foremost challenge for tea producing countries, especially Sri Lanka. Climate change concerns have led to the formation of the FAO Intergovernmental Group on Tea, the goals of which is to find proper and active solutions to mitigate climate change through modeling and impact assessment. Inconsistent rainfall and rising temperatures have been reported as adverse climatic impacts (RP Dayani Gunathilaka1 and Gurudeo A Tularam, 2016). For instance, one project showed that some of the tea producing areas in Kenya are now becoming less proper because of growingly unpredictable rainfall, increasing temperatures and higher occurrence of hail (Ethical Tea Partnership, 2012; FAO, 2014). The considerations about climate change determined that thrilling weather events in the forthcoming would effect the production of tea (Ethical Tea Partnership, 2012; FAO, 2014).

The enemies of tea include more than 1,000 kinds of pests, of which mites are the greatest enemies. Because mites destroy the green tissues necessary for photosynthesis, they decrease the photosynthetic efficiency. Infestation also makes tea leaves discolored. As a result, tea crops will achieve a lower yield if they are under attack by mites (UNCTAD, 2016).

As for the effects on the environment, since the demand for tea is very high, many resources are mobilized for tea production; this process has had considerable effects on the natural environment (Brouder et al., 2013). Forests are cut down to build tea plantations, resulting in a loss of biodiversity in high biodiversity areas. These areas are replaced by monoculture. Also, deforestation happens due to the high demands for logs for tea manufacturing process and habitat conversion. Furthermore, as land is cleared for growing tea trees, there are undeniable damages to the environment, as well as the abundant existence of pests. What is more, pesticides are used to get rid of pests, leading to adverse effects on the surrounding natural habitats. Water and soil are therefore polluted, creating further negative impacts on aquatic and land animals and even human living on biodiversity (UNCTAD, 2016).

Wijeratne et al. (2007) forecasted that a rise in the average temperature and the likelihood of contrary affects in most tea cultivating regions. Besides, Wijerathne (1996) recommends that some of the likely hostile consequences of climate change for the tea growing industry are drought loss, increased incidences of pest and diseases and soil damage in tea fields. Due to increasing climate change, tea yield will certainly decrease, which will then lead to inevitable socio-economic effects. Tea quality and yield are also affected by the deprivation of natural resources,

growing population as well as some social and environmental issues (UNCTAD, 2016).

In terms of production structure, the general feature of the global tea industry is that there are always a large number of small tea producers (UNCTAD 2016). According to FAO, there are many small tea producers in the world who together accounted for around 73% of the total tea production in Sri Lanka, 60% in Kenya, 47% in Indonesia and 36% in India. The FAO claims that tea smallholders keep on facing many difficulties since their total production costs have the tendency to be higher than the prices they achieve from fresh tea produce (Kaison Chang and Margarita Brattlof, 2015). In addition to that, the tea industry has also been facing many problems. The report of the Working Group on Tea smallholders emphasized that the price was generally low for small-scale producers, and that there were many difficulties which must be surpassed in order to change this situation.

It can be seen that tea farmers often have low economic incentive, lack information, have a weak relationship with buyers and insufficient capital for production. As a result, they do not afford to pay much attention to appropriate irrigation or safety solutions in production and harvesting techniques, and usually select the commonly available pesticides without much knowledge of their effects on their land or crops (Blowfield, 2003). That not only directly and greatly impacts their livelihood, but also impacts the environment, the tea quality as well as the sustainability of the tea industry as a whole.

That means there is a need for an international organization of small tea producers which would offer an organization structure as well as operational conditions at an international level. In addition, the use of pesticides needs to be strictly managed and thoroughly examined, helping tea producing countries to establish clear codes of conduct (Cyclope, 2016).

Tea industry needs a labor intensive crop and the ready obtainability of labor for picking and processing is vital. It can be seen that the youth population in rural areas tends to migrate to urban areas for better employment opportunities (Van der Wal, 2008; Illukpitiya et al., 2004; Kingsolver, 2010; Madamombe, 2013). Besides, another challenge for the sector is the changes in the salary and welfare structure of tea plantation workers. Occasionally, even though tea plantation workers may meet the minimum standards of some producing countries, their salaries are relatively low and unattractive. Although benefits that workers are provided with welfare such as accommodation, health facilities, child care and education may help equilibrium the salary structure of plantation workers, salary rates in some producing countries do need to be adjusted (Brouder et al., 2013; Van der Wal, 2008; Groosman, 2011). In addition, current customers are concerned about unfairly produced products that is promoting for the increasing demand for morally produced tea products (Ethical Tea Partnership, 2012).

A part from this, the tea sector also has to compete with other beverage commodities in the context of developed demand. The progress of innovative business models, trading and investment in tea are vigorous to remain industry's competitive advantage over other drink (Brouder et al., 2013). There are trends of renovation in this industry, for example the development of compound products

such as “ready-to-drink” tea and other types of “value-added” (Ganewatta et al., 2005; Brouder et al., 2013).

2.1.8 Projection of world tea production and export from 2013 to 2023

As discussed earlier, tea production is concentrated to a number of geographical areas in the world, especially Asia and Africa. Tea production is extremely sensitive to changes in growing conditions. Under the context of increasing climate change, tea plantation, therefore, has to face high risk and is expected to undergo considerable changes.

There should be careful considerations given to climate predictions, changes of tea growing areas, tea varieties, improved material, and new tea hybrids that better adapt to climate change and advanced technology if the tea industry is to develop in the future.

UNCTAD (2016) proposes a ten-year projection for the world tea production and exports from 2013 to 2023 as follows:

Production projection

Regarding black tea production, FAO suggests that there would be an increase in global black tea production at a slightly higher rate during 2013-2023 in comparison with the previous decade. Production of black tea is predicted to grow at a rate of 2.9% per year, reaching 4.17 million tonnes by 2023.

With regard to green tea production, the prediction is that world green tea production will grow at a faster rate than that of black tea, at 8.2% compared with 2.9% per year, which is attributed to green tea production growth in China whose green tea production is projected to increase to 2.97 million tonnes by the year 2023 (FAO), mainly thanks to improved yield.

Export projection

Regarding black tea exports, the forecast is that black tea exports will have reached 1.67 million tonnes by 2023 (FAO,2015). Specifically, Asia’s export volume is expected to reach 820,921 tonnes in comparison with 743,384 tonnes for Africa. Moreover, the prediction is that there will be no change in the biggest exporters in the world with Kenya being the largest exporting country followed by Sri Lanka, India, Vietnam, Indonesia, Malawi, Uganda, and Tanzania.

As for green tea exports, world green tea export volumes are expected to increase at an annual rate of 7.1% to reach 75,981 tonnes by the year 2023. The first rank is projected to still belong to China, the leading green tea exporter at present with an export volume of 458,579 tonnes, which will be followed by Vietnam, Indonesia, and Japan at relatively considerable distances with 251,024 tonnes; 18,500 tonnes; and 7,631 tonnes, respectively.

2.2 Tea production in Vietnam

2.2.1 Brief history of tea development in Vietnam

The history of tea cultivation in Vietnam dates back over three thousand years. Nevertheless, large-scale production only started when the French came to the country (Wenner, 2011). The French focused on tea plantation as soon as they occupied Indochina in 1882. The French conducted a survey on tea in Vietnam and initiated the first tea cultivation in 1890, in Tinh Cuong, Phu Tho province (Zeiss and Den Brader, 2001, cited by ADB, 2004). In 1898, the French discovered the natives' habit of drinking tea so that they built the first tea plantation with a total area of approximately 100 hectares in Tinh Cuong commune (Cam Khe - Phu Tho) and a research tea farm in Phu Ho. The history of Vietnam's tea cultivation can be divided into three major phases as follows:

(i) From 1890 to 1945: The French established the first tea plantation of 60 ha in Tinh Cuong, Phu Tho province, and 250 ha in Duc Tho, Quang Nam. The total tea area in the country reached 13,405 ha in 1938. In the following year, 1939, Vietnam's total yield reached 10,900 tonnes, helping Vietnam to rank sixth among the top tea producers in the world, behind India, China, Sri Lanka, Indonesia and Japan.

(ii) From 1945-1954**:** The war resulted in the neglect of most of the tea plantations across the country.

(iii) From 1954 until now: This period witnesses a major and positive development in both export and domestic markets for the tea industry. This phase can be further divided into two sub periods based on production scales, including:

- 1954 to 1988: During this period, the majority of tea farms were state-owned and cooperatives. After achieving the independence for the North of Vietnam, some policies for economic development started to be implemented such as setting up cooperatives at various levels, and redistributing the population to develop new economic zones by having King people relocate from the populated lowlands in some provinces in the Red River Delta to the uplands. The total tea cultivation areas increased from 5,400 ha in 1955 to 40,000 ha in 1975, which was an impressive growth. During this period, a large number of tea plantations were set up such as Moc Chau (in Son La province); Van Hung, Van Linh, Phu Son (in Phu Tho province); and Quan Chu, Bac Son, and Song Cau (in Thai Nguyen province) (Tuyen, 2005). The first large tea processing plant was built in Phu Tho in 1957 thanks to the support from Soviet Union (Somo, 2007). After 1975, industrial tea growing zones were established all over the country.

- After 1988: In the late 1970s, there appeared to be drawbacks of the cooperative policy and therefore stagnation of the tea industry. The main drawback is the fact that households's needs were not paid sufficient attention, thereby lowering people's interest, motivation, enthusiasm and leading to limitations in development in tea production. Thus, a reform was carried out by the government from a central planning to a market driven economy and land reform by the distribution of land to individual private households (Huyen, 2010; Huy, 2010; and Minh, 2010).

After a period of extensive farming with low quality and yield, Vietnam's tea industry started to recover and broke out in 1997. Since then, tea exports have been increasing consistently, helping Vietnam to become the fifth largest tea producer in the world, behind India, Sri Lanka, China and Kenya.

Tea needs not to be a major export in Vietnam, even though it is always among the top ten agricultural exports of the country (cited by Robert Wenner, 2011). In Vietnam, rice and coffee keep on achieving the highest output among all of the country's agricultural products, a situation which is not likely to change. Nonetheless, tea is a promising agricultural production which is likely to increase significantly in the next decades since more land is used for tea production and higher investment in tea science and technology would enhance tea yields as well as product quality. Apart from economic benefits, tea also plays a very important role in Vietnamese culture for thousands of years. Tea is drunk every day in every part of the nation, by the old and the young.

At present, there are a number of enterprises which take over the previous state-run tea farms in Vietnam and completely control their own tea businesses.

NMR is the main tea plantation area in Vietnam, with an area of 97,300 ha, accounting for 72% of the total tea area in the country. In NMR, there are 15 provinces, of which the area of the companies having the CF model is about 14,436 ha in total, representing about 15% of the total tea area of these provinces. As for Phu Tho province, this CF model occupies a large area, about 4,300 ha as compared with the total area of the CF model of 14,436 ha in NMR, accounting for around 42% of the total area of the Full CF model in NMR (Vitas, 2015).

For the CF model, although Full CF tea growing area does not make up a large proportion of the total tea growing area in NMR, only about 15%, the absolute number of 14,436 hectares is still relatively considerable, contributing significantly to this region's tea volume. Moreover, the finished products of companies applying Full CF model is of much higher quality than that of the other private small-scaled processing units of the locals. Therefore, their products meet the requirements for exporting to the fastidious markets, which plays a crucial role for the development of Vietnam's tea industry.

2.2.2 Tea growing areas in Vietnam

Viet Nam, the country located in the Northern hemisphere from the 8030' to 23022' North latitude, experiences tropical monsoon climate suitable for the growth of the tea. More than half of the area, including midland, mountainous plateau, the North and South Central plateau, has Ferralic Acrisols with a pH of 4 to 5 and a gradual slope below 250, which is suitable for the growth of tea trees.

The tea area more than doubled from 58,100 ha in 1986 to 122,500 ha in 2005 (Table 2.2). During the first ten-year period, the tea areas increased steadily by 3.78% per year. However, from 1996 to 2000, there was a sharp growth with an average of 5.63% per year. And the highest growth rate of tea land area was 7.13% per year on average in the four-year period from 2001 to 2005. The main contributing factor for that was the sponsor of the Tea and Fruit tree Development Project by Asia Development Bank, at about 40 million USD from 2001 to 2007.

During the period from 1986 to 2008, with the dramatic rise of tea area, Vietnamese tea quantity also witnessed an amazing increase. There was a massive five-fold increase in volume from 30,000 tonnes in 1986 to 166,900 tonnes in 2010 (Table 2.2).

Table 2.2. Vietnam's tea producing areas and production from 1986 to 2015

Content	1986 - 1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015
1. Tea areas (1000 ha)	58.940	64.060	81.000	112.690	127.707	131.037
2. Tea production (1000 tonnes)	30.240	37.840	52.360	105.118	186.440	187.100
3. Tea growth index in different period						
Area	1	1.09	1.26	1.39	1.13	1.03
Quantity	1	1.22	1.38	2.01	1.77	1.01

Source: GSO, 2015

Tea area in the period 2001 - 2005 increased most considerably, by 139% in comparison to the period 1996 - 2000, whereas in the period 2011 - 2015, tea area increased the most slightly, by only 103% in comparison to the period 2006 - 2010 (Table 2.2). The national tea production has increased sharply in recent years. In the period from 2006 to 2010, the volume increased dramatically by 177% in comparison to the period 2001 - 2005. Over the period from 2011 - 2015, dried tea volume increased slightly by 101% per year.

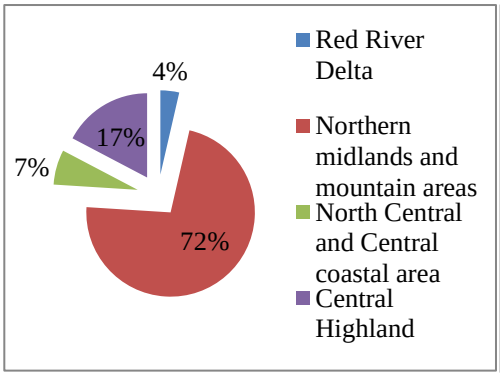

Figure 2.11. *Tea plantation in Vietnam*
Source: Vietnamese General Statistics Office (GSO, 2015)

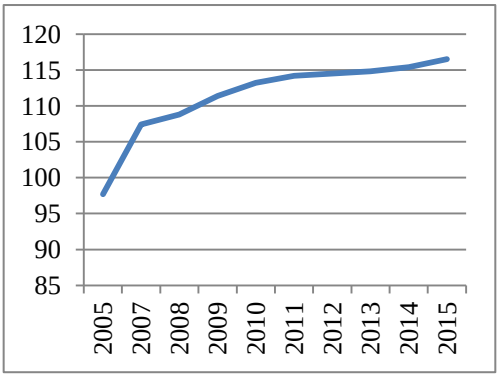

Figure 2.12. *Tea harvested areas from 2005 to 2015 in Vietnam (1000 ha)*
Source: Vietnamese GSO, 2016

In Vietnam, tea is grown mainly in the Northern Mountainous Midland region and the Central Highlands, followed by the Red River Delta, the North Central Coast and the South Central Coast (GSO, 2015).

As can be seen from the statistics in 2015, the tea-growing areas which were distributed in 14 provinces in the Northern Mountainous Midland region accounted for 97.3 thousand hectares (72% of the national area) (Figure 2.11). There are some provinces that have larger tea-growing areas like Ha Giang (accounting to 15.4% of

the national area), Tuyen Quang (6.5%), Yen Bai (9.1%), Thai Nguyen (14.9%) and Phu Tho (12.5%). These five provinces together made up 58.4% of the national area (GSO, 2015).

Red River Delta: Due to the terrain, soil and climate which are not suitable for tea trees, the delta is not specialized in tea production. Therefore, tea is grown only in several half-mountain half-plain areas such as Hanoi, Ninh Binh and some other places, thus with limited area. As of the year 2015, the total tea area in the region reached 5.4 thousand hectares, accounting for a mere 4% of the national area, and the fresh tea quantity obtained was around 39.3 thousand tonnes (Vitas, 2015).

Central Highlands: This region has a total of four tea-growing provinces but only Lam Dong and Gia Lai produce tea products. Among all the provinces in the country, Lam Dong appears to possess the largest tea growing area (Somo 2007; Ipsard/Cap 2006). Lam Dong province is the top tea-growing area in Central Highlands with 23 thousand hectares, accounting for 17.1% of the total tea area (Figure 2.11).

Central Highlands ranks the second place behind Northern Mountainous Midland in scale of tea production, manufacture process and export. Due to Lam Dong's advantages of the natural conditions, landscape and infrastructure for tea production, most foreign direct investment (FDI) projects chose it as the top investment area. Lam Dong has a huge potential for tea growing, however, there are some competitiveness between different crops. Gia Lai and Dak Lak provinces also have small tea-growing areas but they have unfavorable conditions for tea cultivation due to a long and harsh dry season (Vitas, 2015).

2.2.3 Tea production in Vietnam

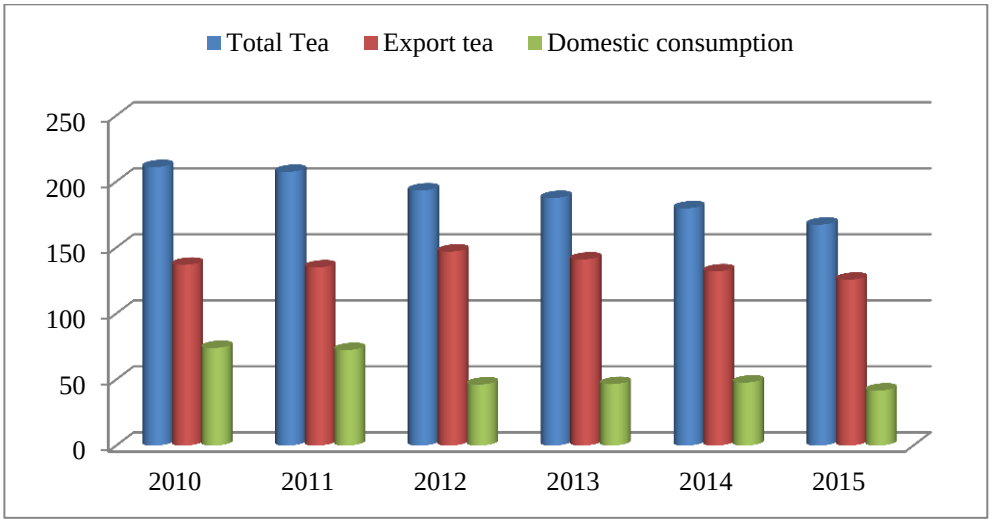

Figure 2.13. Tea production in Vietnam from 2010 to 2015 (1000 tonnes)
Source: GSO, 2015

The conditions for agricultural production, especially tea production in Vietnam are advantageous for the most part. The history of tea plantation in the country has lasted for almost three thousand years with a long and rich tradition and cultural values. Tea is one of the major cash crops in Vietnam and is considered as a crucial national sector which helps to provide job opportunities and foreign exchange earnings, as well as to combat poverty for the country as a whole. Approximately 400,000 small households in rural areas have been employed in the tea industry (GSO, 2011). Vietnam's tea products have been exported to over 100 countries around the world.

Vietnam is currently the fifth largest tea exporting country in the globe with an export turnover of 228.12 million from 132,000 tonnes of tea (GSO, 2014) (Figure 2.13). As of 2015, the country possessed over 132,000 hectares of plantation land suitable for tea cultivation in 39 provinces of 4 regions (GSO, 2015).

The main players in Vietnam's tea industry are smallholders like many other tea producing countries in the world; in particular, 70% of total cultivated areas belongs to small-scale farmers. According to Vietnam's GSO (2003), there were a total of 400,000 households producing tea in total, of which a majority (70%) of all producers have less than 0.2 ha of tea land (ADB, 2004).

In the past, there were a wide range of policies stipulated by the government in an effort to support the tea industry. The total tea yield went up from 3.1 tonnes/ha in 2000 to 7.15 tonnes/ha in 2009 (Le, 2011). Over the past two decades, the country's total production increased from 47,000 tonnes in 1996, to 109,000 tonnes in 2005, then reaching 180,000 tonnes in 2009 (Somo, 2007; Vitas, 2010).

The Northern Mountainous Midland region dominates other regions in the country in terms of tea area, quantity and quality. Many traditional specialty products such as Shan Tuyet tea, Suoi Giang tea, and Tan Cuong tea, etc. have been produced. Thanks to the advantages in tea production, tea plantation area and its yield have continuously risen over the recent years.

Northern Mountainous Midlands Region has the potential for high tea yield. The average growth rate of tea yield from 2006 to 2015 of Ha Giang, Yen Bai, Thai Nguyen, and Phu Tho were 1.5%, 4.6%, 6.1%, and 4.7%, respectively. The Lam Dong and Moc Chau Plateau all have pleasant weather conditions where tea trees were invested reasonably so that the yield reaches 7-8 tonnes per ha, while in Moc Chau – Son La, it can reach up to 9 - 11 tonnes per ha (Vitas, 2015).

In 2015, Phu Tho, Thai Nguyen and Nghe An provinces are the leading accelerators in output in Vietnam. Each of these provinces has the average increase in output from 9 to 12% per year. Lam Dong has the highest tea output, at 208.9 thousand tonnes, followed by Thai Nguyen (184.4 thousand tonnes), Phu Tho (149.6 thousand tonnes) and Yen Bai (91 thousand tonnes) (Vitas, 2016).

Vietnam has advantageous natural conditions for tea plantation, however, if there is no ecological balance in the tea growing area, the yield will be reduced. As a result, the restoring and upgrading of tea farms are now the evitable requirement for the tea industry in Vietnam. One of the factors that help to increase the yield is the species of the tea. The selection and application of high-productive species,

therefore, play an important role in the development of Vietnam's tea industry (Vitas, 2016).

So far, we have introduced about 110 domestic and foreign varieties. The tea species in Midlands are distributed in Phu Tho, Thai Nguyen, Tuyen Quang, Yen Bai, and other Northern Central provinces which are located around 100 m above the sea level. Generally, there is no selective species in Midlands, propagation by seeds which is mainly taken from mass production tea field, is uneven in quality, therefore affecting tea products. Furthermore, inadequate investment and poor management have led to grass invasion, plant diseases, cattle destruction and a yield of only 1.5 to 2 tonnes per ha (Vitas, 2016).

Shan tea is mainly grown in the mountainous provinces including Ha Giang, Lai Chau, Son La provinces, Yen Bai highlands, and Lam Dong province. This kind of tea is selected and planted in TB14 of Bao Loc Centre. It provides higher yield and quality while seed plantation is popular in other areas as well. When applying industrialized farming method, this species provides a higher yield of 6-7 tonnes/ha, in particular, its yield in Moc Chau even reaches 12.8 tonnes/ha. Tea fields also play an important role in forest protection and contribute to the potential clean tea production.

PH1 variety, which is selected from Manipur-Assam tea, ranks the first place in terms of yield among the species that are newly put into production. The average yield of this species is 10 tonnes/ha, which is suitable for growing in many types of soil over the country. However, the characteristics of PH1 are only suitable for black tea manufacturing. Hence, PH1 should not be produced excessively.

TRI 777 is considered as a high-quality species that is suitable for the manufacture of green tea and fragrant tea. It is also a branching variety and has a high survival rate. TR1777 is more suitable for cultivation in Tam Diep than in the Midlands. For example, a tea garden which has the six-year-old TRI 777 species has a yield of 8 tonnes of fresh tea/ha. If the intensive farming receives sufficient investment as well as subsidies for fresh bud purchase, TRI 777 will have higher quality.

Initially, LDP1 and LDP2 hybrids have been experimentally planted in many regions. They both grow well and adapt to natural conditions of the region and provide a yield of 15 tonnes of fresh tea/ha. LDP2 is stronger and more popular than LDP1. Nevertheless, this variety is currently produced in a very small total area of only 300 ha and has no specific final products (Vitas, 2016).

2.2.4 Vietnam tea exports

Vietnam’s tea industry tends to be export-oriented with approximately 84% of total production exported to other countries in 2002 (ADB, 2004). Before the year 1991, the main exporting markets of the country’s tea products were the Soviet Union and Eastern Europe, at that time, exporting activities were mainly dependent on the Vietnam National Tea Corporation (VINATEA). As soon as the Soviet Union collapsed, there was a strong pressure for Vietnam to seek other markets. The market expansion resulted in 80% of the total country’s tea production being exported to Iraq, Taiwan, India, Pakistan and Russia (of which the two countries, Iraq and Taiwan, made up over half of the country’s total export). However, the war

arising in Iraq in 2003 again resulted in a decline in demand for Vietnam's tea, leading to a sharp decrease in tea export volume. The problem of high dependence on VINATEA in exporting, especially State-owned enterprises (SOEs), was recognized and finally the industry put a stop to the dominance of VINATEA in exporting (ADB, 2004).

As of 2007, the industry has exported its tea products to over 90 countries in the world, of which 60% is black tea, 20% is green tea and the remaining 20% is Jasmine and Oolong tea. The main importers of Vietnam's tea can be listed as Pakistan, Taiwan, Russia, India, Poland, Japan, Germany, United States and Belgium, which together account for 91% of the total export volume (Somo, 2007). Across the country, there are approximately 610 companies involved in tea production, of which around 250 enterprises are exporting companies with over two thousand brand names (Somo, 2007).

Table 2.3. Vietnam's tea export growth

	2012	2013	2014	2015
Export value (million USD)	225	229	228	214.7
Index	1.09	1.02	0.99	0.94

Source: GSO, 2015

Vietnam is the fifth biggest exporting country after Kenya, India, China and Sri Lanka; and the second biggest exporter on green tea (right behind China). The country's tea export value increased steadily, however the highest growth recorded for 2012 was only 9 percent (Table 2.3). Vietnam's tea has been exported to 110 countries all over the world. Among these, Pakistan, Russia and China are the largest importers with over 100 million USD value per year (GCO, 2016).

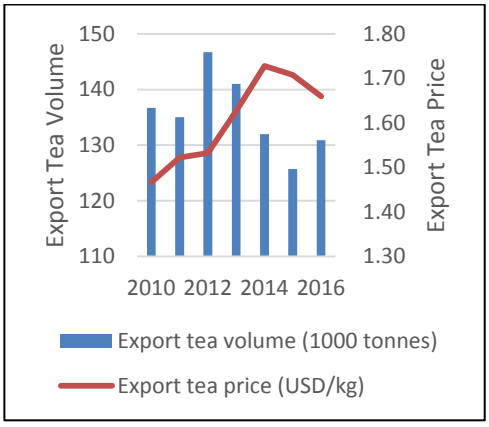

Figure 2.14. *Vietnam's tea export from 2010 to 2016*
Source: Vietnamese GSO, 2016

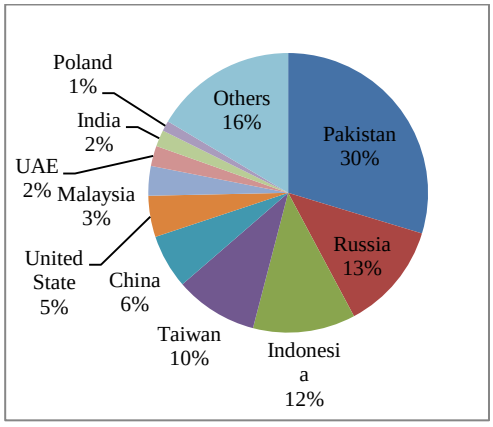

Figure 2.15. *Vietnam's top 10 tea import markets in 2016*
Source: General Custom office (GCO), 2016

In 2016, the country exported 130.904 thousand tonnes (Figure 2.14) corresponding to an export value of about 217.2 million USD, which is equal to

105.1% of the quantity in 2015 and 102.1% of the value in 2015. Regarding the tea export value structure, green tea makes up about 46% of the total export, while black tea accounts for a massive 53% and other kinds of tea constitute the remaining mere 2% (Vitas, 2016).

However, export value of tea increases non-correlatively. This is partly due to the decrease in common tea price in the world's market. On the other hand, Vietnam's tea has not achieved a high rank, currently being mainly used for raw materials of processing types of tea. Moreover, the tea exporting market of Vietnam has not been stable. In addition, building brand name for Vietnam's tea has not been paid much attention. Recently, Vietnam's tea has been known by importers by the three-leave symbol – the transactional name of Vinatea (Vitas, 2016).

Pakistan is still the biggest tea importing market of Vietnam with the importing amount of 38,870 tonnes valued at USD 78,572,834 in 2016, an increase of 7% in quantity and a decrease of 4% in value in comparison with the same period in the previous year. Russia is the second biggest market with the importing amount of 16,369 tonnes valued at USD 22,840,328, a 9.54% increase in quantity and a 2.12 increase in value in 2016; the third most important market is Indonesia market with an exporting amount of 15,514 tonnes valued at USD 13,484,382, a considerable 59% increase in quantity and a relatively significant increase (46%) in value in comparison with the figures of the previous year.

Export volumes in some markets increased in 2016, for instance, China market increased its importing quantity of Vietnam's tea by 7.2% and its value by 123% as opposed to 2015. On the other hand, tea export underwent a reduction in some markets, for example, Taiwan's market reduced its import of Vietnam's tea by 28% in quantity and 33% in value in comparison with the figures for the previous year (GCO, 2016).

In 2016, export price of Vietnam's tea decreased by about 3% compared to the export price in 2015 (Figure 2.14). Besides that, tea price of Vietnam is still low in comparison with tea exporting price of the world (GSO, 2016).

It can be seen that the majority of exported tea of Vietnam is either preliminarily processed or semi-finished products, mainly being exported as raw materials to manufacturing companies overseas. It shows that tea export prices of Vietnam is therefore very low in comparison with the world's export price, which is evenly equivalent to around 70% in comparison with the world's price, depending on each type of tea (mainly for the under 3 kg package). On average, Vietnam's tea export price is equal to only about 45-55% of the world's average tea price (Vitas, 2016).

2.2.5 Domestic consumption of tea in Vietnam

Vietnam's domestic consumption in 2015 was still very limited. In particular, only around 25% of Vietnamese tea production was consumed domestically, while the exported volume accounted for a vast majority of 75% (Table 2.4). However, recently domestic tea consumption has been increasing, not only for the old but also for the young.

Table 2.4. Tea domestic consumption in Vietnam from 2011 to 2015

	Unit	*2011*	*2012*	*2013*	*2014*	*2015*
Total volume	*1000 tonnes*	*207.4*	*193.3*	*187.6*	*179.8*	*167.4*
Domestic tea volume	*1000 tonnes*	*72.4*	*46.3*	*46.6*	*47.8*	*41.7*
Proportion of domestic tea	*%*	*35*	*24*	*25*	*27*	*25*

Source: GSO, 2016

2.2.6 Challenges for Vietnam's tea industry

Besides the advantages as discussed above, Vietnam's tea industry is facing many difficulties and challenges as follows.

Firstly, about 90% of our country's exported tea has been in form of raw and unprocessed, which makes tea value increase only slightly. Tea bags have some certain limits in their models and brands, which means low prices on the market, and difficulties in achieving stable and sustainable markets (Vitas, 2016).

Secondly, the quality of Vietnam's exported tea products is currently not very high in comparison with the world's products. Therefore, the country's export tea value is much lower than the average export tea value in the world.

In a majority of the current tea growing areas across the country, tea growers are using midland small-leaf tea varieties whose yield and quality are low and are being deteriorated. Farmers do not focus on intensive production. They only grow tea under the movements. There have been even cases where traders take unfair advantages of them to produce "dirty tea" for small export, which influences the brand and prestige of Vietnam's tea. Moreover, when demand exceeds supply, in many tea material areas, people do not comply with the tea picking standards as regulated. In contrast, they often cut all the long old foliages. Particularly, the arbitrary use of plant protection products does not guarantee food safety, preventing Vietnam's tea from being exported to a large number of markets, especially when some major markets, such as the EU, are tightening the importance of this issue for Vietnam's agricultural products.

Low labor yield and incoherent production area make the income and life of tea growing farmers unstable, so it is difficult for them to make more investment in tea plantation. Meanwhile, industrial production rather lack skilled labors. Besides that, there are other challenges for farmers, especially in engineering and investments in modern technologies while the functional agencies have only made half-hearted interventions. Furthermore, when troubles come, exporting enterprises usually turn their back on tea growers. They either do not buy anything or buy raw materials at low prices, making famers suffer from single and double damages, low profits, or even be at a losses after each tea season and be no longer able to make reinvestments (Vitas, 2016).

Thirdly, small tea producers tend to dominate in Vietnam's tea production. They are not only limited in capital but also not so skillful in tea growing practices. Therefore, it is difficult for them to apply new technologies to produce tea more effectively. Many studies have examined the effect of new technologies on raising tea producers' yield and income (Hayami and Ruttan, 1971). Due to small scale of tea farmers, the application of these practices is lagging behind (Wenner 2011). This

is a big challenge for Vietnamese tea production. In fact, Vietnam still remains a minor tea producer in the world. Potts et al. (2014) pointed out that Vietnam was ranked behind other big tea producers, such as China, India, Srilanka and Kenya. Output and yield of Vietnamese tea production are quite low (Asian Development Bank, 2004). Besides that, most Vietnamese tea is exported to other markets, which makes outlet of farmers to entirely depend on tea processors and exporters. That requires a close link between tea producers and enterprises. Small tea farmers can not find the outlet for themselves in the context of fierce competition between large tea exporters in the world (Vitas, 2016).

Fourthly**,** oversupply in the tea industry is also one reason why Vietnam's tea quality has gradually decreased. Since 2000, many local governments have allowed enterprises to build tea processing factories without binding conditions. Many factories do not have enough raw materials for production, and the relationships between tea growers and factories are very loose, which causes the strong competition in purchase and sales of tea raw materials.

The imbalance between raw materials and processing capacity: In Vietnam, there are a total of about 250 industrialized tea processing plants with capacity ranging from 1 to 4 tonnes of fresh tea leaves per day and a total capacity of 70,000 tonnes per year. Apart from that, there are even several thousand private tea processing plants (Somo, 2007). The gap between raw materials and the processing capacity as stated above results in many issues such as: (i) strong competition among fresh tea buyers, which leads to low quality of raw material input; (ii) neglect of farmers to fresh tea quality when they find it so easy to sell all of their fresh tea produce; and (iii) processing plants do not find initiatives to make investment in new equipment as the raw material can only meets around 30-40% or 50-60% of the equipment capacity.

The absence of linkages between tea growers and processing trees: That mainly lies in the strong competition in purchasing fresh tea leaves, which leads to undesirable effects on trust building because of the breach of contracts, especially when there is a lack of punishment and penalty system. That is also partly due to the fact that the linkage between farmers and processing trees are based on profit gaining rather than on common interests between the two stakeholders (Somo, 2007).

Fifthly, thanks to the world economic integration, exporting can be done more easily as some tariff barriers are gradually removed. However, it causes some limitations especially because there appear to be many rigorous technical barriers, especially food safety requirements for agricultural commodities (Vitas, 2016).

Sixthly, the cultivating and processing level of tea producing countries is increasingly beyond Vietnam, especially African countries whose labor costs are much cheaper. Thus, Vietnam's tea industry will have to compete with a large number of tea growing and processing countries in the world. For example, in comparison with Kenya, the 2009 data shows great differences in the exporting value. Specifically, Kenya had 110,000 hectares of tea, which was equal to 85% of Vietnam's tea growing area (129,400 hectares), however Kenya's tea yield was 13 tonnes, equivalent to 178% of Vietnam's yield; its total output was equal to 206.6%

of that of Vietnam; its exported tea volume was equal to 269.3% of that of Vietnam; its average exporting price was about 198.5% of Vietnam's tea price; and the number of people living on the tea industry in Kenya was 3 million in total, equal to 150% of that of Vietnam. Additionally, Kenya only had 100 tea processing facilities but the average export turn-over of one processing facility in Kenya was 2,411 times as high as that of Vietnam and the average export turn-over per one ha of tea was six times as high as that of our country (Vitas, 2016).

Finally, climate change is a serious challenge for tea producing countries, especially unpredictable rainfall and rising temperatures. Droughts lead to pestilent outbreaks while pesticides are being overused, leading to the destruction of the tea gardens. As a consequence, there is a decrease in both tea yield and tea quality (Vitas, 2016).

2.3 Tea production in Phu Tho

2.3.1 Tea production in Phu Tho

Phu Tho province is one of the largest provinces in the North Mountain Region. The North Mountain Region (hereafter NMR) covers approximately 103,000 km^2, accounting for nearly one third of the total area of Vietnam. The total population of the region is roughly 12 million people, equivalent to about 15% of the national population. There are 30 ethnic minorities in the region, accounting for over 50% of the ethnic groups around the country (Tran, 2003). The region contains 15 provinces, namely Hoa Binh, Son La, Dien Bien, Lai Chau, Ha Giang, Lao Cai, Cao Bang, Bac Kan, Tuyen Quang, Yen Bai, Thai Nguyen, Lang Son, Quang Ninh, Bac Giang, and Phu Tho, which is the focus of the study.

It is said that the economic development of the country also has a considerable impact on the Northern region. Since "Doi Moi" - the economic reform in 1986, the country has achieved increasingly enhanced economic growth, particularly thanks to the change from an importing country to the second largest rice and coffee exporting country in the world. Despite that, there are still wide gaps among different regions in the country. The NMR is considered to be one of the poorest regions since there are many difficulties in terms of natural characteristics and socio-economic conditions facing the region (Minot et al., 2006; Teerawichitchaiman et al., 2007). In addition, poor infrastructure which corresponds to poor access to roads, markets and mass media, and other public services is also another fundamental reason for the low economic development of the region. The poor infrastructure also means that the region is somehow more isolated from the remaining parts of the country to some extent (Teerawichitchaiman et al., 2007; Tuan and Le, 2008 and World Bank, 2009).

The NMR has a typical rugged topography from hilly to mountainous, where the altitudes range from 500 to 1000 m, and some of its mountains peaks are above 3000m from sea level (Minot et al. 2006). Sloping land makes up around 85% of the total area of the region with large areas of bare hills (Le, 2011). NMR's economy tends to be agriculture-based with scared and scattered flat lands in the terraces and small valleys in many parts of the region. These lands are employed for rice cultivation which is crucially for household consumption only, while the sloping

lands are used for cash crops such as tea, coffee, maize, and fruit trees (Tran, 2003; Minot et al., 2006; and Teerawichitchaiman et al., 2007).

In spite of a diverse range of constraints, the region still has great potential for development because its land resources are rich and suitable for the cultivation of high value cash crops like tea, coffee, fruit trees, vegetables, and flowers. That means a promising possibility for income diversity for people living in the region (Le, 2011).

Nevertheless, there exist a variety of problems for farmers in the region, including the wild fluctuations of the crop market prices, the reliance on fertilizers and pesticides for improved yield, and the lack of information about market demand and the lack of both knowledge and capital. These are the constraints that prevent farmers from increasing their income and enhancing their livelihoods (Teerawichitchaiman et al., 2007).

In 1885, the French made the first survey of tea trees in Vietnam and the first tea plantation of the country was established in 1890 in Tinh Cuong, Phu Tho province (Zeiss and den Braber, 2001). Tea not only is important to the economy but also is the main industrial crop in agriculture. Until 1945, during World War II, the tea gardens were deserted, and post-World War II development of the tea industry restarted with assistance from other tea producing countries. The Vietnamese established a Tea Development Incorporation. The total tea planted area was estimated at 8,400 hectares (21,000 acres) in 2001, 7,200 hectares (18,000 acres) in 1997, corresponding to 9% of the cultivated area of the province. The province has an annual production of 31,000 tonnes of fresh tea (7,000 tonnes of dry tea), although between 1998 and 2001 there was an annual increase of 8% due to the increase in area and yield.

In the period of 2006-2010, Phu Tho gained many achievements in economic development. The provincial annual growth rate of GDP was approximately 10.7% during this period. There was a significant transition in the economic structure which helped the province's economy to transition significantly towards the industry, trade and services sectors. In 2010, the average GDP per capita reached 11.8 million VND (equivalent to 636 USD). By 2010, the total tea growing area of the province reached 15,600 ha, the average yield reached 8 tonnes/ha, and the average output reached 112,000 tonnes. The area and yield obtained in 2010 were as twice as much as the area and yield of 2001, while the 2010 output was 3.8 times as much as the output of 2001. In 2010, the province's tea export was valued at 7.3 million US dollars out of 300 million US dollars of the national tea export. In 2011, the shares of the industry and construction sector, the services sector, and the agriculture, forestry and aquaculture sector in the provincial GDP were 40.24%, 33.02%, and 26.74%, respectively (Phu Tho DARD, 2011).

The main regions for tea cultivation are nine districts, namely Doan Hung, Thanh Son, Tan Son, Thanh Ba, Ha Hoa, Yen Lap, Cam Khe, Thanh Thuy, and Phu Ninh districts. Phu Tho province covers a total area of 353,330 ha, of which agricultural land accounted for 80% (282,178 ha) (Figure 2.16); of which 27.84% (98,370 ha) is the agricultural cultivation land area and 50.58% (178,723 ha) is forestry land area (PTSO, 2013).

As can be seen from Figure 2.17 below, the total tea area of the province increased from 15,718 ha in 2011 to 16,422 ha in 2015, corresponding to a 5.5% increase. Harvested area, which was the tea area with tea trees aged higher than three years, therefore being ready for harvesting, increased from 13,948 ha (in 2011) to 15314.64 ha (in 2015), corresponding to a 9.8% increase.

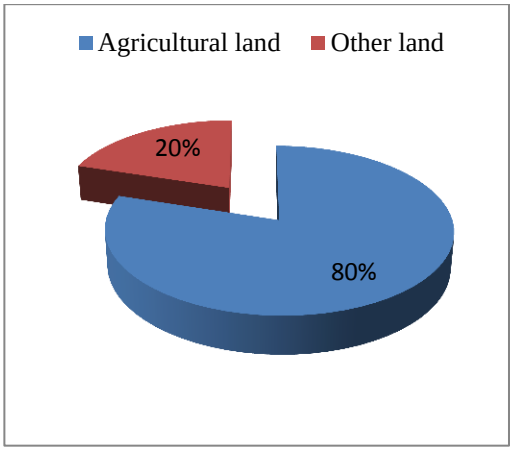

Figure 2.16. *Land area of Phu Tho province (%)*
Source: PTSO, 2013

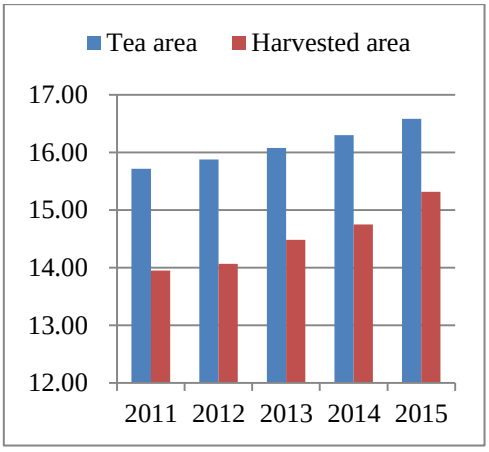

Figure 2.17. *Tea land area in Phu Tho province (1000 ha)*
Source: PTSO, 2013

Fresh tea output increased from 117,071 tonnes in 2011 to 149,653.8 tonnes in 2015, corresponding to a significant 32.1% increase of the total output (Figure 2.18). As of the end of 2015, the provincial tea area reached 16,584 ha, making up over 12% of the total tea area in Vietnam, which made the province rank fifth in terms of tea production area in the country. The province's total yield had also risen up to 154,753.3 tonnes of fresh tea leaves (Phu Tho DARD, 2015).

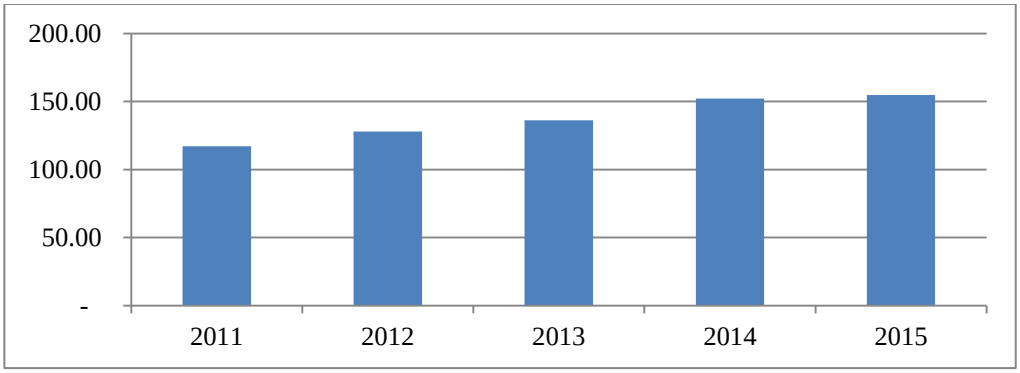

Figure 2.18. *Fresh tea* production in Phu Tho province *(1000 tonnes)*
Source: PTSO, 2016

2.3.2 Tea processing in Phu Tho

Phu Tho province is one of the top four provinces with highest tea output that has traditionally been exporting black tea to foreign markets (with 80% of Phu Tho's export volume is black tea). The provincial position in tea cultivation is confirmed on its midland region. The province's tea products are exported to many countries around the world, such as Russia, Middle East, China, Taiwan, United States, Germany, and United Kingdom, etc. (Phu Tho DARD, 2016). Phu Tho province also has the tea processing industry that typically symbolizes foreign investment in the tea sector. Currently, the province has 54 tea processing companies with capacity of one ton of fresh tea bud per day (out of a total of 400 tea processing companies in Vietnam). Some of which have applied ISO & HACCP quality management systems. For processing households, it can be seen that there are many processing households which produce green tea to sell their own processed tea directly to consumers or sell it through dry tea assemblers (Phu Tho DARD, 2016).

In the field of processing, in recent years, many enterprises have developed quite well, especially FDI enterprises and private enterprises. Phu Da Tea Company is a joint-venture company, between Vinatea - Vietnamese Tea Company and Foodstuff Trading Baghdad Corporation of Iraq, having 1,483 ha signing contracts with Full CFs. Phu Ben Tea Company is a 100% foreign invested company with a total area of 2,200 ha. It is invested by Borelli Tea Holdings (BTH) - the UK. BTH is a subsidiary of McLeod Russel India Co.Ltd of the Williamson Magor Corporation which is the company producing the largest amount of tea in the world.

At present, there are many good processing enterprises in the province and in the tea industry in the whole country such as Phu Ben, Phu Da, Tan Phong and Hai Yen Tea Companies. Besides large tea processing enterprises, in Phu Tho province, there are also some tea processing craft villages that also generate considerable income and output which are recognized as craft villages. However, in general, most of the processing plants did not satisfy quality requirements of tea materials because they are lacking the conditions to control quality of tea materials. In addition, almost all processing plants in Phu Tho are in a cut-throat competition in purchasing tea materials with internal and external processing plants of the region. They are now running below the design capacity, at only 50-60% of the design capacity (Phu Tho DARD, 2016).

Overall, there are a fairly clear difference in raw materials of different tea processing enterprises depending on the types of ownership, investment level and business strategy of each enterprise. For instance, as for Phu Ben limited Company, approximately 80% of the company's tea material is grown in its tea plantation areas, whereas the majority of tea materials for Hung Ha limited Company is obtained from non-contract farmers and several collectors. There are a fairly large number of households who own their own small-sized processing facilities, thereby significantly impacting the tea processing industry in terms of both quality and reputation. On average, these processors manufacture about 400 tonnes of dry tea per year, with a maximum production of about 1000 - 2000 tonnes per year, and a minimum of around 100 tonnes per year. Black tea is produced by the two following technologies:

- OTD Technology and its facilities come from Russia. The facilities of this technology are not being maintained or replaced properly, making the tea quality and the price decrease.

- Black Tea Processing Technology CTC was imported by India. As for facilities of this technology, although it is an imported modern facility and technology with a good standard compared to others in India or Kenya. However, private companies have usually low management level. Their processing worker's level and quality controlling level is low. As a result, CTC Black Tea's quality is as not good as black tea quality in the world.

Most of the private companies do not have their own raw material areas, thus they have to buy fresh tea in the spot market which have lower standard. In addition, facilities are not good. It is noteworthy that most black tea output is directly exported in the raw form (packed in 50 kg bags), and the majority of the domestic processing enterprises are not strong enough to establish a distribution channel in the export market, thus brand building for black tea will not be effective (Phu Tho DARD, 2016).

Below is an overview of the various tea grades:

Whole leaf tea

Whole leaf tea refers to a type of tea that has not been broken or torn during production. The size and shape of the leaf vary widely, according to the types of leaves used, and how it is processed. It includes different types, such as P, FP, OP, and FOP, etc.

Broken-leaf tea

Broken-leaf tea is a tea that has been torn or broken, but is still in large enough pieces to be recognizable as pieces of leaf. It includes many types, such as BP, BOP, and FBOP, etc.

Dust

Extremely small pieces of tea, sometimes called dusts, are left over after higher quality grades of tea. It includes various types, such as OPD, BOPD, BOPFD, FD, D-A, OD, and OPD, etc.

Fannings

They are finely-broken pieces of tea leaf. They have a recognizable coarse texture and are the grade of tea used in most tea bags. Fannings, which are traditionally treated as the rejects of the manufacturing process, have experienced a huge demand in developing countries in the last century, mainly because they are low-priced and produce a very strong brew. It includes different types, such as FOF, BOPF, and FBOPF, etc.

2.3.3 Tea value chain in Vietnam and in Phu Tho

Tea value chain in Vietnam

Merely, value chain of the tea includes tea leaf producers, wholesalers, retailers, and exporters. Nevertheless, the value chain for tea, in fact, is a compound one. Even though only three key activities are involved in the production, a large number

of stakeholders are required in any process. It draws the whole value subgroups of actors and their interactions. Each stakeholder can be divided into different groups. For example, four types of tea producers are recognized, including unlinked farmers, contract farmers, worker farmers, and cooperative farmers.

(i) Worker farmers are mainly workers of state plantations or state companies. Worker farmers are now allocated land for up to 50 years on the condition that they produce tea leaf according to company dictates.

(ii) Contract farmers are tea farmers who own their land but sign contracts with companies to sell a portion of or all of their output.

(iii) Cooperative farmers are member of cooperatives producing tea.

(iv) Unlinked farmers account for the majority of tea farmers, and produce and sell tea on the open market, either to traders or processors.

Likewise, processors can be further classified as household processors, private processors, joint venture companies, and state-owned companies (Nguyen et al., 2015).

Figures 2.20 and 2.21 illustrate the tea marketing channel for worker, contract farmers and unlinked farmers in Vietnam (ADB, 2004).

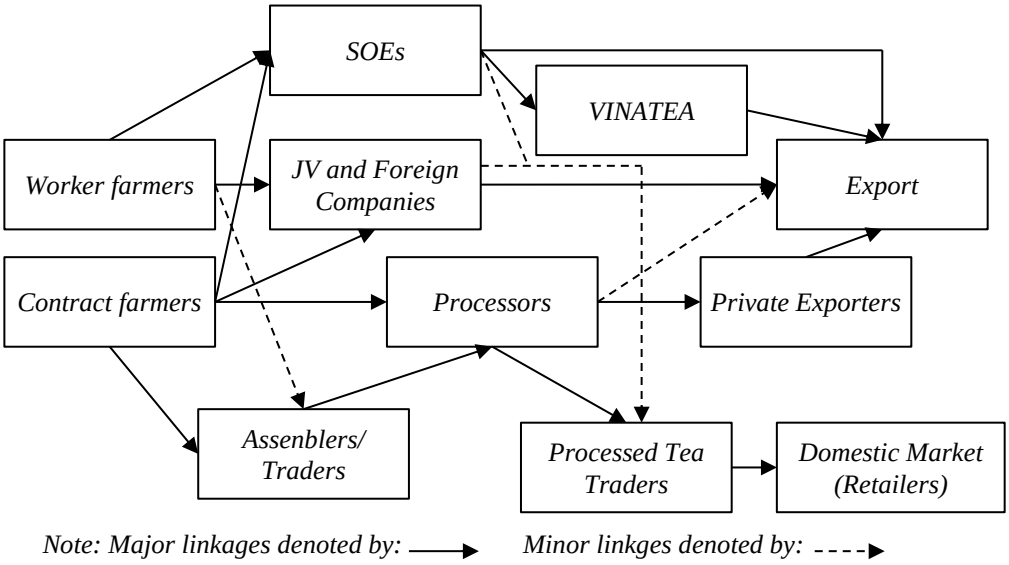

Figure 2.19. The marketing channel for workers and contract farmers (ADB, 2004)

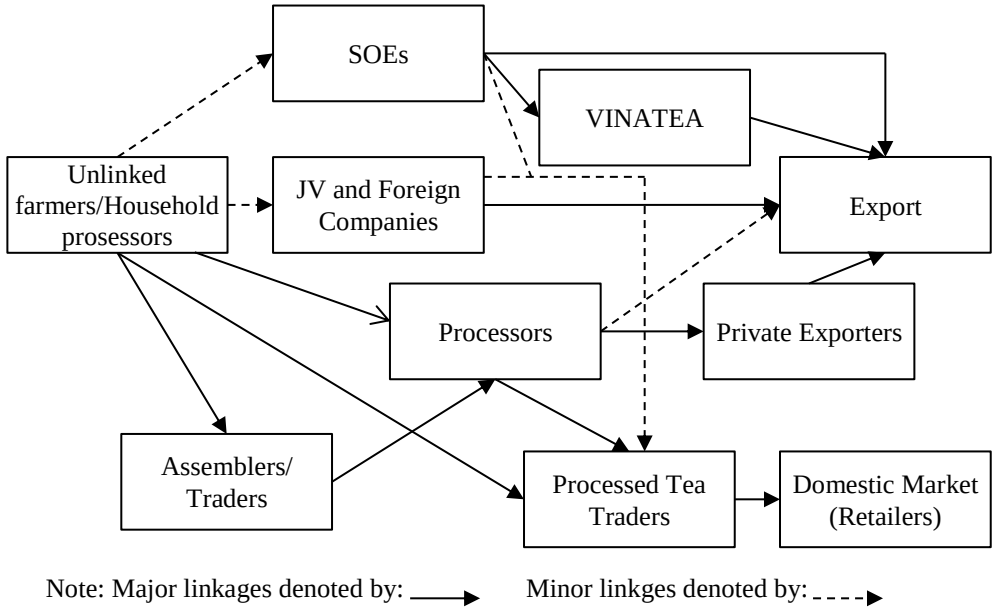

Figure 2.20. Marketing channel for unlinked farmers (ADB, 2004)

As can be seen from Figure 2.19, worker farmers sold the majority of their fresh tea to SOEs, JV and Foreign companies. In addition, part of their products was also sold to assemblers or traders. Meanwhile, contract farmers only sold fresh tea to SOEs, JV and Foreign companies, processors, and assemblers.

In contrast, unlinked farmers/household processors (Figure 2.20) mainly sold fresh tea to Processors, Assemblers, and Processed tea traders, while SOEs, JV and Foreign companies were just majority customer of this sector.

SOEs (Figure 2.19 and 2.20) produced dry tea from fresh tea, then the majority of their final products was sold to Vina tea or directly exported, while only a small amount of their products was also directly to Processed tea traders.

JV, Foreign companies (Figure 2.19 and 2.20) exported tea products directy to foreign countries. However their fewer products were also to the Processed tea traders.

Processors (Figure 2.19 and 2.20) sold dry tea to Private exporters or Processed tea traders. However, they can export directly as minor linkages denoted.

Assembler/Traders (Figure 2.19 and 2.20) sold fresh tea to Processors.

Processed tea traders sold dry tea to the domestic market (retailers)

Tea processed in Phu Tho consists of black tea and green tea. The province's total volume of tea processed in 2015 reached 36,000 tonnes, in which black tea volume made up about 85% (Phu Tho DARD, 2016). Up to present, Phu Tho has confirmed its central position and is considered as the leading processor and exporter of black tea nationwide. 80% of Phu Tho tea products are for export, and these products have been delivered to various markets in the world (Phu Tho DARD, 2016).

Tea producers, fresh tea collectors, black tea and green tea processors, tea exporter wholesalers, and retailers are the main actors in the tea value chain in Phu Tho. This chain is also supported by the secondary actors such as NGOs, QSEAP, MARD, VITAS and financial providers as well as NOMASFI (Figure 2.22).

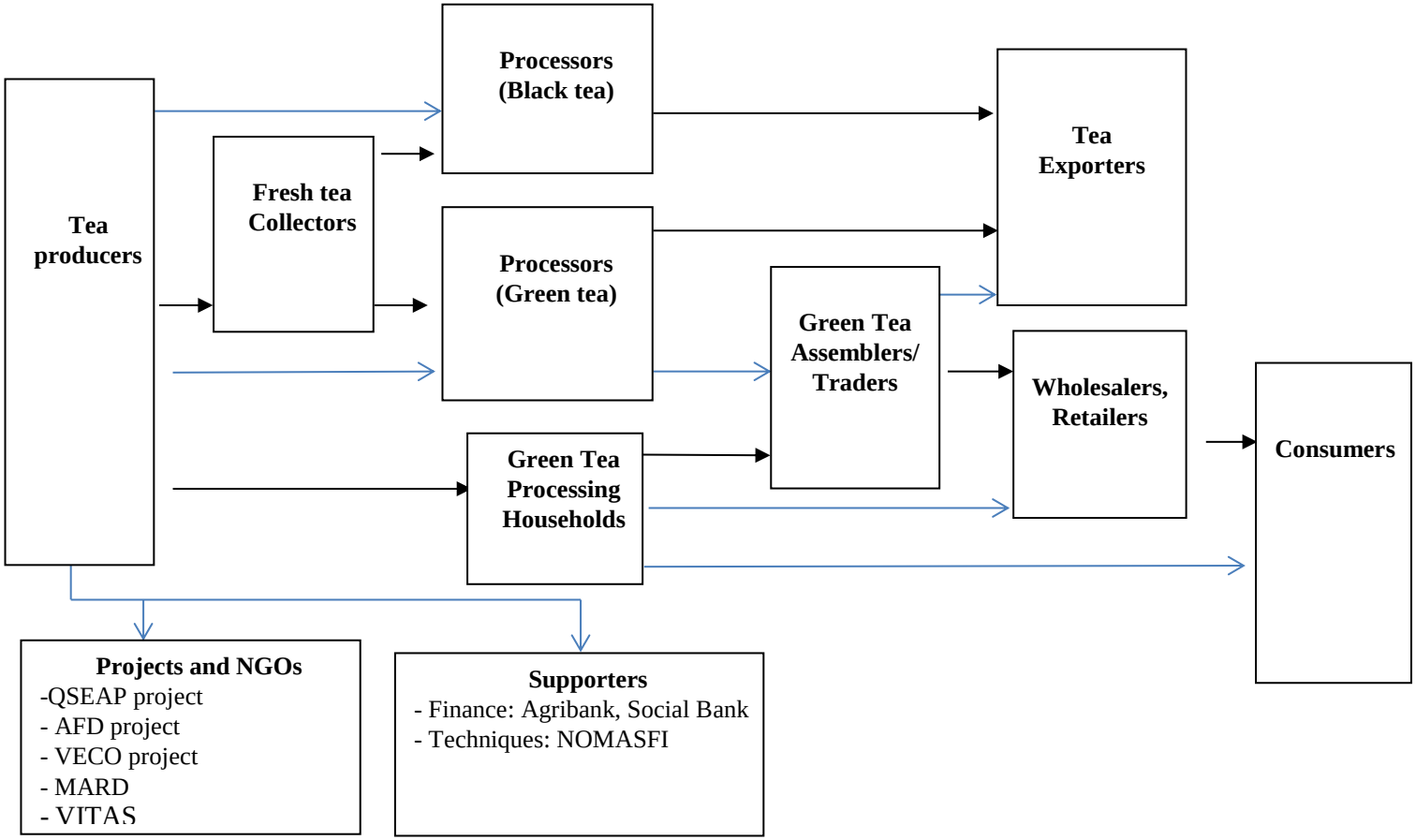

Figure 2.21. Tea value chain in Phu Tho province

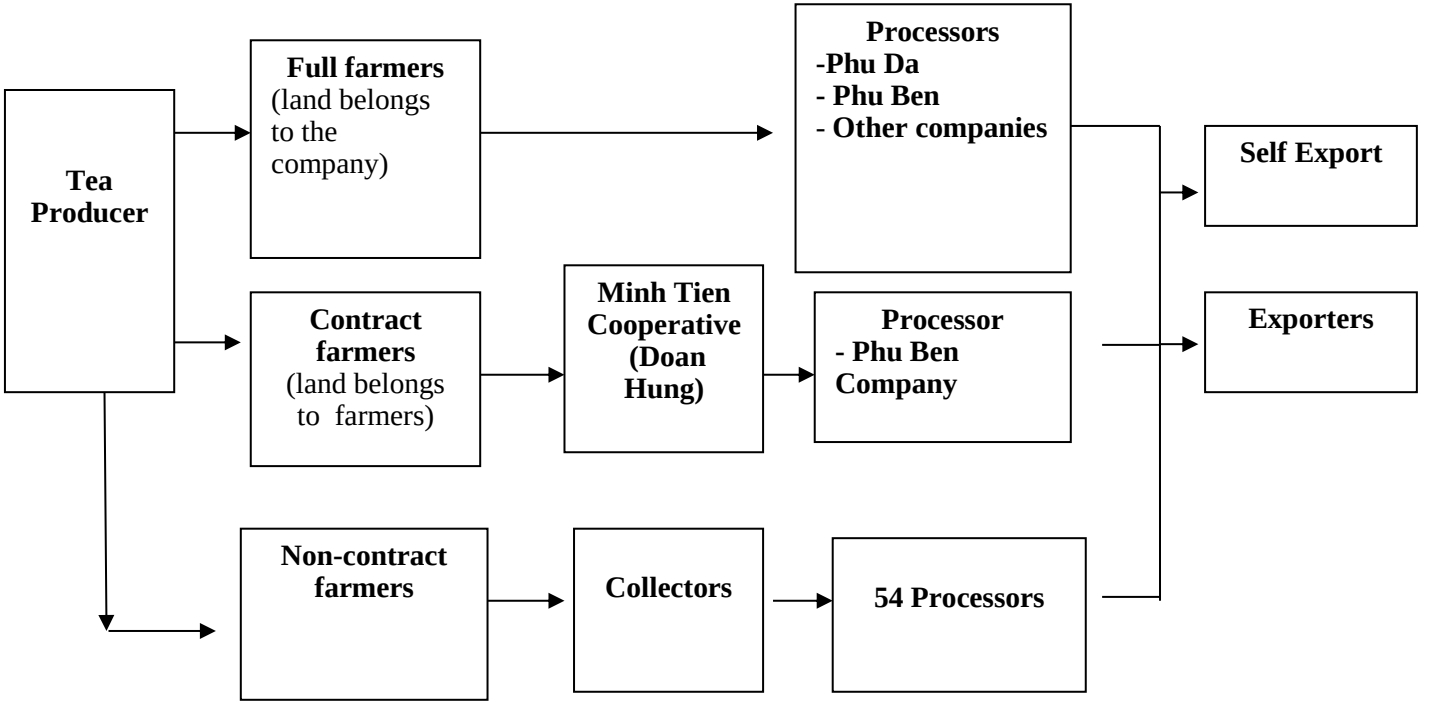

Figure 2.22. Black tea value chain in Phu Tho province

As can be seen from Figure 2.22, the black tea value chain in Phu Tho province is as follows:

For black tea value chain: Processors buy fresh tea from collectors to process black tea. Then, they export the final products either directly or through exporters. Black tea products are exported under raw products.

For green tea value chain: processors buy fresh tea from collectors or tea producers to process green tea. There are main two types of processor depending on their scale, including processing households and processors. Green tea are exported or sold in domestic market. In this chain, there is another actor called assemblers (traders). They collect green tea from processing households to sell to exporters or to wholesalers and retailers in the domestic market.

Input suppliers

They are the actors that provide fertilizers and pesticides to farmers. Some large input companies organize seminars to introduce fertilizers and pesticides or demonstrations (focusing on the large farms such as Full CFs). The small agents providing input services are also important information sources for farmers, especially the poor when they need advices on using pesticides and fertilizers or other farming inputs. However, the quality of inputs, such as fertilizers and pesticides, is currently not guaranteed; more specifically, many of them have no clear origins, are often sold freely on the market, and are not managed strictly by the competent agencies. That greatly affects black tea quality in particular and reputation of the tea industry in general, while at the same time causing disadvantages for tea producers.

Tea producers

Overall, there are about 45,000 tea farmers that produce 130,000 tonnes of fresh tea per annum. They are the main actors in the tea value chain. They play the most important role in the production chain (Phu Tho DARD, 2016).

Tea farmers are generally classified into three groups, including Full contract farmers, Semi contract farmers and Non contract farmers.

Collectors

The other actors depend on tea farmers' operation. There are many collectors in the region. In most cases, they work independently. The fresh tea collectors buy fresh tea from farmers in the local areas as well as the nearby areas to resell it to tea processing companies. They generally have rich experience (from 10-20 years) in collecting quality tea leaves. They often have relatively strong financial ability, having a constant working capital of about 200 million VND. Several big collectors even own trucks to transport collected fresh tea from households in the remote areas to the processing company.

Collectors play an important role in the processing chain of black tea, with the majority of tea material obtained from these collectors. They often collect an annual amount of 500-1000 tonnes of fresh tea per year. The large collectors transport tea leaves by trucks, while the small collectors transport fresh tea by motorbikes; however there are only a small number of motorbikes. The collectors classify fresh

tea into young and old tea leaves. The younger the tea leaves are, the higher the prices they are sold at.

Processors

The most powerful actor in the tea value chain is the tea processing company. Theoretically, processing companies are actors to be depended on tea farmers. Even so, in reality, it has become the decision-making actor for the chain. It links tea farmers with input suppliers, tea collectors, and assemblers (traders).

There are 54 processors that have the capacity of more than one ton of fresh tea per day in the province. For processing households, we can see that there are many processing households producing green tea to sell directly processed tea to consumers or sell it through dry tea assemblers (Phu Tho DARD, 2016).

Tea exporters

There are two main categories of black tea exports, including direct export with large-scale enterprises and indirect export with small-scale companies. Nevertheless, with the aim of lowering the intermediate costs and increasing the added value, processing companies have the tendency to strive to export directly.

There are some relevant stakeholders within the chain. Some organizations and projects from QSEAP, VECO, MARD, DARD, and VITAS provide support to tea farmers. The major fields of support from QSEAP involve Quality and Safety Enhancement of Agricultural Products and Biogas Development. VECO support smallholder farmers to organize themselves and develop the necessary capacities to create economies of scale, guarantee quality, food safety and sustainability.

Financial institutions such as the Bank for Agriculture and Rural Development (AgriBank), along with the Policy and Social Bank provided them with small loans for enhancing tea yield and encouraging transferring new varieties. The Government and local authorities created the environment to produce tea through various decisions, resolutions, directives, and decrees, etc. (Phu Tho DARD, 2016).

Problems in tea production in Phu Tho

Similar to Vietnam's tea industry, the tea industry in Phu Tho has to face many difficulties such as low tea price, perishable cash crop, weak cooperation between related stakeholders and low competitiveness. Many factories in Phu Tho do not have enough raw materials for production, and the relationships between tea growers and factories are very loose, which causes strong competition in the purchase and sales of raw materials.

Similar to other main provinces processing black tea in the country, Phu Tho's tea production scale is relatively small and scattered, thereby resulting in low and uneven quality of fresh tea. Because farmers always strive to increase their profit, they use more and more pesticides and chemical fertilizers to improve their yields. However, one important consequence to be noted is the resulting low quality of tea materials, which then negatively influence the quality of the final black tea products. In addition, husbandry practices in many areas are not good, in particular, the techniques of cutting, picking, fertilization, and especially safe use of pesticides are not in accordance with current regulations, leading to the poor quality of fresh tea leaves therefore being not appropriate for processing or exporting. Of which, tea

consumption is considered to be the most challenge and the main reasons for that is the low cooperation between farmers and other stakeholders in the tea value chain.

Besides that, the exporting of tea faces many difficulties because there appear to be many severe technical barriers, especially food safety requirements for agricultural commodities. Moreover, like other tea growing areas, the province in particular and Vietnam in general have to cope with rising climate change which can cause unanticipated rainfall and increasing temperatures. Pests and diseases for tea trees occur more and more due to droughts. In addition, the overuse of pesticides in many tea fields further depreciates these tea areas. Consequently, tea industry in Phu Tho has to face with various problems, such as lower tea yield and quality.

3

Literature review

3.1 Contract farming

3.1.1 Concepts of contract farming

Contract farming is applied especially for the perishable agricultural commodities that need to be processed, such as vegetables, fruits, and dairy (Bijman, 2008). Its applicability and necessity as a rural development tool has been recognized and discussed in many empirical studies in the context of its role in linking producers with agricultural markets, especially in developing countries.

Contract farming has been defined as an agreement between one or more farmers and a contractor for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton and Shepherd, 2001). Minot (2007) defined contract farming as agricultural production carried out according to a prior agreement in which the farmer commits to producing a given product in a given manner and the buyer commits to purchasing it.

According to Catelo and Costales (2008), contract farming can be understood as an arrangement between a farmer and processing and/or marketing company with well-defined conditions and remuneration for tasks done, usually specifying details on product properties such as quantity, quality and shipment time.

Rehber stated that contract farming is a contract, either oral or written, between farmers and other companies with specific details on production and marketing of an agricultural product, which is non-convertible (Rehber, 2007).

According to Binswanger et al. (1995), with a contract, farmers are assured of the sales of the crop and provided with technical assistance, credit, services, and inputs by the purchaser.

Da Silva (2005) defined contract farming as "An intermediate mode of coordination, whereby the conditions of exchange are specifically set among transaction partners by some forms of legally enforceable, binding agreement. The specifications can be more or less detailed, covering provisions regarding production technology, price discovery, risk-sharing and other product and transaction attributes".

3.1.2 Types of contract farming

There are a range of classifications for contract farming. Eaton and Shepherd (2001) classify contract farming into five models, including centralized model, nucleus estate model, multi-party model, informal model, and intermediary model.

However, currently, there are only two types of contract farming in Phu Tho province, namely the nucleus estate model and the intermediary model.

In the centralized model, the contract signed between the company and the farmers has strict terms and the production quality control and quantity are determined at the beginning of the contract.

Companies usually provide inputs and technical support to contract farmers to produce high value agro-products.

The similar features between the nucleus estate model and the centralized model consist of directly-signed contracts by that company with farmers, input supports, technologies and strict compliance with product quality. However, in the nuclear company model, the company owns assets and farm facilities; while contract farmers only contribute their labor and inputs into the production process. In the centralized model, the company does not own farm property, which means that the land belongs to the farmer, not to the company.

Contracting appears frequently in Africa and even more in the less developed world in general, in a wide range of institutional forms as can be seen below.

A common form is the large, centralized, and frequently state-owned nucleus-estate scheme, typically having a central processing unit and contracting with thousands of farmers. Significant economies of scale are characterized by classic exports (sugar, palm oil, and tea), with respect to requirements of processing, coordination, labour-intensive maintenance and husbandry. Farmers in Malawi and Zimbabwe produce only one third of tea production, and the rest is produced by the estates. It is common that farmers often belong to a wealthy middle class, seriously complying with request for producing sugar in Kenya, tobacco in Nigeria, and palm oil in Côte d'Ivoire, which systematically exclude poor farmers by stating the area to be contracted among other stuff (Watts, 1994).

The intermediary model consists of intermediaries (such as representatives of farmer groups or cooperatives) between the company and the farmers. This model can be considered as a combination of centralized and informal models, which are common practice throughout Southeast Asia. Due to the indirect links with farmers, this model has many disadvantages mainly because of the company's control over quality, quantity, and price.

Multipartite contracts include different stakeholders, such as governments and companies organized in relationships between producers and companies. Therefore, in these contracts, the farmers may be represented by a farmer group with a government unit responsible for providing extension services. Multipartite model, known as the "four-stakeholder link". Each stakeholder has different roles and responsibilities, in which the company plays a key role in guiding the model and collaboration of scientists and farmers, credit providers and farmers, and most importantly, product purchase.

The informal model applies to individual entrepreneurs or small companies who normally make simple, oral contracts with farmers on a seasonal basis, particularly for crops such as fresh fruits and vegetables. Crops usually require only a minimal amount of processing, such as sorting, grading, and packaging.

From farmers' perspectives in developed countries (Bijiman, 2008; and Kohls and Uhl, 1985 cited in Rehber, 2007), there are three types of contract farming as follows:

(i) Firstly, market-standarized contracts or marketing contracts. This is a pre-harvest agreement between the producers and the contractors on the schedule and place of sales and the conditions governing the sales of agricultural products, especially conditions regarding the quality of the products. With regards to quality conditions, although several decisions on production of the farmers are affected by

marketing contracts, farmers still mainly control production (Minot, 2007; and Bijman, 2008). As a results, farmers are more at risk in production due to their control over production activities.

(ii) Secondly, certain physical or specific inputs included in production-management contracts are provided and inspected by a company (contractor) who is committed that products are marketed by themselves. Producers agree to follow the correct production methods and input modes. Farmers give up a degree of control over the production process on the farm and delegate a substantial portion of their decision-making rights to cropping and harvesting activities for contractors who are exposed to market risks.

(iii) Thirdly, the contract provides the resources for which the contractor supplies both the market for the product and the key inputs. The cost of providing credit in kind is recoverable upon delivery. The transfer of decision-making and risk from farmers to the contractor depends on the actual contract. Contracts for the supply of resources may include production management, in which the right to decide and arising risk are transferred to the contractor. Contracts focus on input and output markets and leave most production decisions as well as a significant portion of the risk to farmers (Bijman, 2008). This reduces farmers' costs of arranging and using inputs, and the company ensures product quality and returns. Resource supply contracts are typically used for specific input crops or quality standards and in the case of farmers experiencing difficulties with incomplete input markets.

It is deemed as formal contract and informal contract with fixed and unspecified prices:

(i) Formal contract (in written form): In this contract, stakeholders are identified and clearly acknowledged. It may include a private contract. A fair contract should include reciprocal obligations with a balance between rewards and risks for each party and obvious provisions (Rehber, 2007).

(ii) Informal contract (in oral form): This type of contract is mainly used in agriculture, and is simple, verbal and inadequate (Bijman, 2008) because the contract has variables that can not easily be verified by the court in case of a breach of contract. Another reason, beyond simplicity, is efficiency. Self-made contracts are preferred rather than substitutes for third-party protection.

According to this classification, five types of Charles Eaton were divided into formal group for centralized model and nucleus estate model; and the informal type for informal model. The remaining types were multi-party model and intermediary that could be formal and informal contract.

Singh (2002) suggests three types of contracts, including:

1. Procurement contract in which only the terms of sales are regulated by the company;

2. Partial contract where some inputs are provided by companies and products are purchased at pre-determined prices, and;

3. Total contract in which companies provide and manage all of the needed inputs and farmers only provide land and labor.

However, the above mentioned types of contracts are not disjoint; in fact, its relevance and suitability tend to vary from product to product (Singh, 2002).

3.1.3 Experiences of contract farming in the world

The initial analysis of contract farming schemes shows that the majority of them helped to improve the earnings of both parties despite the lack of careful evaluation and relatively high risk of failure of contract production plans (Minot, 1986). A series of seven case studies in Sub-Saharan Africa focuses on the disputes between farmers and contracting companies, the power imbalance between the two parties, the tensions between members of a house over distribution of new turnovers, and the increasing rural inequality when contract farmers can afford to hire farm workers (Little and Watts, 1994). Nevertheless, Little (1994) concludes that "incomes from contract farming increased for a moderate (30–40%) to a high proportion (50-60%) of participants". A study on contract production in Africa in the early 1990s conducted by Porter and Phillips-Howard (1997) leads to the conclusion that small-scale farmers usually achieved a better financial capacity if they entered into contract farming, despite the occurrence of different social issues in the communities. A lot of problems relating to contract vegetable farming such as power disparity between farmers and companies, breach of contract terms, social differentiation and environmental unsustainability were discovered in Punjab state in India (Singh, 2002). Nonetheless, the study reveals that most of the contracted farmers who earned a higher income were generally satisfied with the contract agreement.

The proportion of contract peasants as smallholders was examined by a number of studies. Moreover, the determinants of contract production involvement were investigated using farm-level study data from China (Guo et al., 2005). It could be seen that the probability of small farmers entering into contract farming was lower than that of larger farmers. By contrast, in Mexico, it was evident that at first, multinational tomato processors signed contracts with large farmers, but then included small farmers because side-selling appeared to be a problem with larger farmers (Runsten and Key, 1996). Likewise, World Bank (2006) confirms that a Thailand exporter started to grow their own garden cultivation products on company land and then later shifted into contract farming with smallholders. The development of several contract production plans, such as Del Monte pineapple, stopped farming and changed from large-scale to small-scale farming (Minot and Ngigi, 2004). Maertens (2006) identified that green bean exporters in Senegal moved from small-scale contract production to large-scale contract production. These findings together demonstrate that the comparative advantage of smallholders is not a fixed idea, but, in fact, may vary as farmers and firms experiment and learn from their experience. Furthermore, it shows that large farmers have no inherent advantage, and therefore pubic policy may favor the engagement of small farmers in these supply chains.

Other surveys assess how contract farming influence gross margins, crop earnings, and total earnings. For instance, the gross margins for contract dairy farmers in India more than doubled in comparison to that of independent dairy farmers; and the main contributing factors that helped to enable that difference were lower farming and marketing costs (Birthal et al., 2005).

Several studies take into account the fact that contract farmers are usually not an arbitrary representative of the population; and what diffirentiate them from the population is that they can affect earnings. Their noticeable characteristics such as farm size or education and/or non-perceptible characteristics, such as hardworkingness and intelligence, can vary significantly. On the other hand, the income gap between contract farmers and other farmers will not only illustrate the effect of contracting per se but also the effect of those characteristics.

A standard regression analysis can be employed to assess the impact of noticeable characteristics, whilst in order to eliminate the bias of non-perceptible features, it is necessary to use a Heckman selection-correction model or a model of instrumental variables.

The contract production of peanuts in Senegal was studied by Warning and Key (2002). NOVASEN, a private company, entered into contracts with 32,000 farmers and produced about 40,000 tonnes of peanuts per year. After applying a two-step Heckman procedure, researchers find that there was a large and statistically substantial increase in gross agricultural revenues with contracting farmers, which corresponds to about 55% of the average revenue of noncontract farmers.

Simmons et al. (2005) examine contract farmers of poultry, maize seed, and rice seed in Indonesia. By employing a Heckman selection model, it was found that poultry and maize seed contracts showed increasing returns to capital, while no significant effect was seen in rice seed. The number of contract seed farmers was usually higher than that of independent farmers, whereas the number of contract poultry farmers seemed to be lower than that of the independent ones. The researchers concluded that contract farming helped to improve earnings and welfare, and at the same time immitigate absolute poverty.

3.1.4 Experience of contract farming in Vietnam

In 2002, the Prime Minister of Vietnam promulgated Decision No. 80/2002/QD-TTg which aims at promoting contract farming (agricultural contracts) between farmers and processors/traders. The Decision offers favorable conditions that encourage enterprises to sign sale contracts with agricultural producers to develop a link between production and processing as well as consumption of commodity farm produce. This link would help to motivate the development of agricultural production in a stable and sustainable way. Provisions and conditions are provided clearly in the contract to force parties to fulfill their responsibilities and obligations, as well as to protect the rights and legitimate interests of the raw material producers and the production, business, processing, and exporting enterprises. There have been several documents issued at the ministerial level in order to facilitate the implementation of this Decision, such as Decision No. 52/2002/QD-BNN of the Ministry of Agriculture and Rural Development on guideline and agricultural sample contracts.

In order to give support to contract farming, a number of supporting policies have been enacted, including: Circular No. 05/2002/TT-NHNN of the State Bank dated September 27, 2002 on guiding loan capital provisions for producers and enterprises entering into agricultural contracts; and Circular No. 04/2003/TT-BTC issued by the

Ministry of Finance dated January 10, 2003 which provided a guideline for finance issues to implement the Decision No. 80/2002/QD-TTg. In addition, in 2008, the Prime Minister signed a Directive (Directive No. 25/2008/ CT-TTg dated August 25, 2008) to enhance the implementation of contract farming. Moreover, other policies such as the Law on Association, Law on Cooperatives, and various programs to support specific commodities, the New Rural Program and public private partnership promotion policies have helped to develop a legal environment for contract farming.

According to Nham (2012), since the issuance of the Decision No. 80, researchers and practitioners have begun to paid more attention to contract farming. In Vietnam, production contracts for a wide range of agricultural products such as staple food (rice), industrial crops (cassava, sugarcane, and fruits, etc.), forestry products (timber and herbs, etc.), livestock (poultry and milk, etc.), and fishery products (shrimps, shell, and fish, etc.) have been recorded. One of the first comprehensive documentations was carried out by the Asian Development Bank (ADB, 2005). In this documentation, contract farming examples in Vietnam were classified into the following categories: multi-partite, centralized, nucleus estate, informal and intermediary models for merchandises such as vegetables, jute, cotton, tobacco, rose, pineapple, and pork. The ADB (2005) encourages the use of multipartite modality mechanisms which would effectively protect farmers' benefits. Costales et al. (2008), on the other hand, believe that the informal form of contract farming with cooperatives, especially in pig production, would potentially help smallholders to overcome barriers to credit and access. In addition, by studying different circumstances when conducting contract farming, other researchers such as Dang et al. (2005), Pham et al. (2004), Tran et al. (2005), Nguyen et al. (2005) and ADB (2005) have provided a variety of general remarks to illustrate that contract farming is likely to be an efficient way to drive the poor into commercialized agriculture. Saigenji and Zeller (2009) carried out a study on the effect of contract farming on production and income of tea farmers in northwestern Vietnam. The report indicates that contract farming was an effective way for the development of tea production in Moc Chau district. This was illustrated by higher technical efficiency and a slightly higher income for the households. The effect of contract farming for small-scale farmers has been assessed by a list of criteria provided in the contract. This assessment was based on a thorough review of the experience of agricultural contracts in ASEAN countries, where the contract classification took into consideration of economic, agri-economic production and management, governance and environmental aspects, environmental and development aspects. Some of the criteria in the list are applicable in this study to guide the analysis of the pro-poor. Furthermore, this study uses a governance analysis that allows for the incorporation of rules and regulations, enforcement and services of the contract to the analysis.

3.1.5 Contents of contracts

Charles Eaton (2001) stated that the contract shall have to determine some or all of the following conditions of the sponsor-farmer agreement:

(i) The duration of the contract;

(ii) The quality standards required by the purchaser;

(iii) The production quota of farmers;

(iv) The cultivation practices as required by donors;

(v) The delivery arrangements for crops;

(vi) The price calculation method;

(vii) Payment procedures for farmers and credit reclamation;

(viii) Insurance arrangement.

According to Clapp (1994) and Watts (1994), to proponents of agricultural business, the contract guarantees a cooperation among stakeholders. Freely participated in, the contracts allow growers to perform better in imperfect markets and give them the opportunities to combine their income, effort and risk showing their resources and tastes. The contracts are mainly valid for one year but can be wildly varied in content and legality. In the heterogeneity of the contract, the three central aspects which are price, labor process, and enforcement are absolutely related.

First of all, price is identified in either one of the following two main ways: fixed price and formula price contracts. The first way involves the pre-determination of a fixed price in advance. A fixed price is often associated with a higher risk for the processors (purchasers) and ensures a price floor (stabilizing income) for farmers; but perhaps at the cost of the average income. Formula price is calculated as a surplus after deducting the processor's expenses from the net revenues. It is thus unlikely for the company to lose money or make large profits. As a result, it appears that formal price contracts are more suitable with state-owned or state-controlled organisations; therefore, the price relations allocate various risks for farmers and processor purchasers. The second feature of the contract is ability of establishing, adjusting, and punishing the grower's production and labor procedure. Thirdly, a written agreement between both parties is made in the process of contract farming which leads to a problem of whether prices and conditions of the contract can ever be fully enforced. It is likely the case that farmers violate the contracts, particularly when the monopoly conditions are not met. The transaction costs arising when suing the small-scale farmers are economically and socially exaggerated. Therefore, the only practical way is to suspend grower contracts. In this case, applying fixed prices is considered as a way to decrease the motivation for farmer to conform to the signed contracts.

If the spot prices increase and local outlets are available (for example, because the crop is not required to be processed and is relatively nonperishable), farmers will breach their contractual obligation. That means the company would have no crop supply, while the farmers have non-recovered costs. In addition, farmers can breach contractual terms by mixing the product (for instance, to raise weight of the product, they can add stone to the product) or by using the inputs for the crop in the contract to the other crops or even by selling the inputs. In contrast to the leakage of crops, it is also likely for the produce from outside sources to enter the purchasing system when farmers without contracts want to take advantage of the higher prices set by a company and find a way to put their products into the purchasing system via family or acquaintances that have a contract. These practices create challenges for donors

when controlling production targets and managing chemical residues and other quality aspects.

3.1.6 Attention in management of contract farming

According to Charles Eaton (2001), failure of contract farming promises may be resulted from poor management. Some specific organizational and administrative activities must be conducted prior to the commencement of production. The main issues that should be paid attention by managers first, include the following:

(i) The determination of suitable production areas;

(ii) The selection of farmers;

(iii) The establishment of working groups;

(iv) The supply of inputs;

(v) Logistic support;

(vi) Product supply.

3.2 Contract farming and farmers

3.2.1 Farmers' benefits from contract farming

Provision of inputs and production services

According to Charles Eaton (2001), contract farming provides not only inputs but also production services. A large number of contractual arrangements include the supply of main inputs such as seeds and fertilizers, as well as significant supports in terms of production. In a production chain, seeds and fertilizers play an important role, which is stated in many existing documents. The contractors can even help with land preparation, cultivation, and harvesting practices in addition to the supervision of free training courses and agricultural extension. The main reason behind that is to achieve the expected crop qualities. Nevertheless, there is also a risk that the number of workers might be higher than that of the cultivators in his own land.

Smallholders who do not enter into contract farming tend to face more challenges in obtaining the needed inputs. Particularly, structural adjustment measures interfered with fertilizer delivery contracts in Africa, where the private sector had not completely taken place the position of the parastatal agencies. There has been a development of a vicious circle in many countries, in which there is no motivation for the development of commercial distribution networks due to the low demand for inputs, which continue to negatively impact input availability and use. Many of the above obstacles can be avoided in contract farming through management's large quantity orders.

Introduction of higher-value crops

What discourage small farmers from applying new technologies and diversifying into untraditional crops are potential hazards and costs (Baumann, 2000).

Enterprises, however, are able to provide the small-scale farmers with the essential support through production contracts to shift from subsistence agriculture to market-oriented farming (Eaton and Shepherd, 2001; Patrick, 2004).

The agro-business enterprises with a vested interest in producing high-value crops, their contractual agreements usually facilitate the introduction of new production techniques and boost methods for the enhancement of agricultural goods (Baumann, 2000). There are many ways to improve yield during the process of crop preparation so as to obtain high quality standards required by the international markets. Through close supervision and instruction on crop management, farmers in Thailand, who were contracted to grow palm oil, pineapples, and asparagus, acquired new technical knowledge from training programs funded by the contracting firms (Manarangsan and Suwanjindar, 1992).

The agriculture companies support smallholders through training and assistance in crop production, soil and water management, maintaining record-keeping of inputs and outputs and even training for gender awareness. Traceability systems have been introduced into contractual agreements lately. The desirable benefits of the skills provided to the farmers remain even after the agreement duration. Glover (1987) claimed that farmers are able to experience "the system" through production contract in addition to technolgy transfer. Moreover, farmers can quickly acquire knowledge on the operation of the markets as well the proper way to manage accounts and their farms.

Access to credit

Charles Eaton (2001) stated that contract farming helps farmers to access the credit source they need. It is difficult for most small-scale farmers to gain credit for production inputs. The difficulties even elevated when a variety of agricultural development banks and various export crop marketing boards (mainly in Africa), which used to provide farmers with inputs on credit, closed down or restructured.

When engaging in contract farming, farmers have the opportunity to obtain access to different forms of credit for the acquisition of production inputs. It is common that sponsors are the ones who advance credit through their managers. On the other hand, commercial banks or government agencies may also advance credit to farmers through the crop-lien system ownership guaranteed by the sponsors; such as the production contract as collateral. When farmers have to invest large sums of money, such as packing or grading sheds and heavy machinery, banks will provide credit in advance only when the sponsor guarantees.

Some farmers tend to take advantage of credit agreements by selling agricultural products to other purchasers rather than the sponsor or using production inputs provided by the sponsor to other objectives. This makes some donors have to reassess the idea of investing most of the production inputs to farmers, and therefore often end up deciding to supply only seeds and basic chemicals.

Technical assistance

According to Bijman (2008), in the agricultural agreement, there are usually terms and conditions on technical support to help farmers improving their product quality and thus obtain a higher price range. If there is no support, farmers will be reluctant or will not dare to make innovative crop and livestock enterpises because they have higher risks. Simultaneously, this technical support can assist farmers to improve farm production and management skills, while various undesirable effects may arise if crop and livestock activities are not clarified in the contract done by farmers.

Access to markets

According to Simmons (2002), the expansion of contract farming over the recent years is often considered as part of a broader globalization trend whereby trade restrictions has been removed, increasing the flows of agricultural commodities, particularly from developing to developed nations (Jaffee, 1995). Runsten (1994) reports on a variety of contracts since 1989 for HVF (High Value Food) agricultural products, including strawberries, melons, and frozen vegetables, which were processed in Mexico before being exported to America by both domestic and multinational companies in the agribusiness. Goodman and Watts (1997) show the development of contract farming in other multinational activities for products such as pineapples and bananas from Central American countries that are exported to America and Europe. Glover and Kusterer (1990) document similar activities in Central American countries. Porter and Phillips-Howard (1997) also investigate various new forms of contractual arrangements related to the international trade from Africa. According to these studies, agribusiness companies are responsible for 'opening' markets for small-scale households. These companies have more advantages than smallholders in market knowledge and experience, legal expertise, economies to size and information links in processing and transport and have a good financial capacity to support their international trade relationships. For small-scale households, without contracts, these markets are "lost" in the sense that the transaction costs to reach them on a small scale are extremely high.

Increased incomes

Another benefit of contract farming is to develop the production of non-traditional agricultural products that can be sold at a higher price and may be grown without considerable extra effort. Although contract farming is not applicable to all crops in all the market development periods, various empirical studies all over the world show that contract farming is often associated with higher income for farmers without contract farming who cultivate the same crops. In Thailand, the income generated by organic rice cultivation is between 70% and 100% higher than the conventional one (Setboonsarng et al., 2006). According to Glover and Ghee (1992) and Glover and Kusterer (1990) in their studies in Southeast Asia, Latin America, and Africa, most of the efforts of contract farming tend to contribute to the famers' welfare by enhancing their income. In addition, thanks to these contractual arrangements, farmers are able to predict their income, which is good for planning (White, 1997).

Monitoring and labor incentives

According to Setboonsarng (2008), production contracts with small-scale farmers are asserted to be more efficient than other forms of organizational production contracts since the efficiency in farming is mainly decided by the individual job efforts. Eswaran and Kotwal (1985) claim that the supervision costs for large farms are frequently high because employees may neglect to perform their duties. According to Hayami and Otsuka (1993) and Hayami (2003), in family farms, workers are generally motivated to work harder to serve their family's well-being. Thailand started producing canned pineapples and its production exceeded that of Philippines, which was the leading export country for pineapples in the world

(Booth, 1998; Hayami, 2003). Thai farming apply a production contract system, whereas that of the Philippines is mostly based on the plantation system. It can be seen that family-run business projects seem to be more efficient than those using hired employees and production contract appears to be developed in order to significantly lower the monitoring and labor supervision costs that might arise.

Provision of information

According to Simmons (2002), the collection of information can be expensive, however information can not be depleted when used. Therefore, an agribusiness company disseminating information on many contractual agreements has many advantages in supplying specific information over smallholders collecting their own information. Most agricultural production agreements described by Glover and Kusterer (1990) consisted of visits by company extension officers to farmers or farm groups several times during the first year of the contract but usually less in the following years. During these visits, the officers not only provide farmers with information with management suggestions but also collected feedbacks to companies on the problems arising between them and famers. Government extension services exist in nearly all of the developing countries in order to disseminate information about traditional crops. Nonetheless, due to the limited nature of state resources in developing countries, such agencies are unable to offer specialized information on new crops. Such specialized information may relate to chemical restrictions on food safety requirements in certain markets, planting and harvesting timing to meet the market requirements, product quality management as well as other technical and market information.

3.2.2 Problems of contract farming

Despite many advantages of farming contracts, it does not neccesarily mean that contract farming has the power to address all of the issues of agrarian commercialization as well as poverty reduction. In terms of poverty and equity, a few issues have occurred in relation to the appropriateness of agricultural contracts, particularly given the opportunistic nature of such agreements. These issues are outlined below.

Monopsony control

According to Setboonsarng (2008), as a development tool, contract farming has been criticized because of the unfair effects of monopsony control, whereby growers are tied to a buyer (Grosh, 1994). The companies normally have more resources, information, and organizational ability than smallholders. Their strong negotiation position gives them the means to potentially extract considerable rents from famers, leaving them only marginally better off. There have been various examples highlighting farmers' vulnerabilities whereby their bargaining authority is lowered since the contractor practices are generally coercive (Little and Watts, 1994).

As soon as growers invest in new crops and production according to the contractual requirements, the financial and time constraints prevent them from easily shifting to other types of crops (for instance, it takes a long time to establish and grow tree crops). Without other options, growers are dependent upon purchasers, and companies are then able to draw out more self-serving contractual terms.

Furthermore, switching from subsistence farming to cash crop cultivation can potentially make smallholders vulnerable to nutritional loss as well as food shortages. A lot of contract farming arrangements are based on monocropping of a non-traditional crop, making farmers reliant on income from the sole cash crop. If the company does not fulfill the contractual obligations, farmers may thus be vulnerable because they no longer grow a range of edible crops and do not have cash to buy food (Key and Runsten, 1999).

The burden of labor management

Even though contract farming is likely to help lowering labor management costs for agro-business companies, labor management burdens are in fact transferred to poor famers. In fact, purchasing directly from farmers rather than hiring wage workers moves the labor recruitment burden and control onto the farmers (Baumann, 2000). That means even though contract farming is beneficial to the agro-business companies in terms of the reduction of land cost and labor management, it may also result in labor exploitation taking into account the fact that family labor often includes women and children. According to White's (1997) who carried out research on dairy contract farming ventures in West Java, women and children together made up approximately 60% of all labor inputs in a household with dairy farming. Nevertheless, it is very common that contractual agreements are signed and the profits are controlled by the male head of the household. The weakest members of the household may be the ones who have to stand the burden of farming practices.

Contract enforcement

There have not been adequate legal and regulatory systems in many developing countries to assist contractual agreements. These agreements might not be easily applied or legally restraining, and both parties can take advantage of it. According to Glover and Ghee (1992), in most of the third-world countries, contract farming agreements are conducted in accordance with common values and standards in the society rather than lawful negotiations. Without legal contracts, companies can be adversely affected by extra-contractual sales of outputs obtained from the additional contracts (Eaton and Shepherd, 2001). When there is a rise in the availability of buyers, the number of contract defaults by farmers also tends to increase. Coulter et al. (1999) suggests that if there is a development of alternative markets, and buyers offer competitive prices, then growers are driven to breach the agreements and in many cases, they fail to repay the input credit to their signing contractor. A lack of a strong juridical framework and the absence of monetary guarantees on the part of small-sized farms may give rise to significant risks for agribusiness companies entering into contract farming. Eaton and Shepherd (2001) and TDRI (1996) claim that there is a problem relating to input provision under the contract when farmers are tempted to use inputs provided by the company for other purposes.

There are different feasible solutions that can be adopted in order to control this kind of practice of the farmers and purchasers. At local level, farming organizations and NGOs can play a key role in the protection of the farmer assets by establishing systems to control quality and input manufacturing, such as fertilizers, traceability, and certification (IFAD, 2005). NGOs and local government agencies could ensure the ability of a company to offer lucrative contracts to farmers by carefully

examining the financial and management capacities of a contracting company entering into contract farming.

Increased risk

Companies must take full responsibility for increasing the risks in contract farming. Most agreements demand the corporation to buy all the production, generally at a higher price than the competitive market price. The agribusiness might have to bear both the price risk and the risk of crop failure as a result of mismanagement or seasonal problems. According to Patrick (2004), in order to reduce possible risks, the company can maintain a strict control and provide seasonal or annual agreements to dismiss ineffective farming workers in the upcoming agreements. In addition, farmers must cope with much uncertainty about new crops that they may need more time to adapt to the new conditions and methods of production. For instance, the contract farming of cashew nuts in Thailand was successful at the beginning of the production, but in the following years it failed due to unexpected pests associated with non-traditional agricultural trees.

Health and environmental implications

In countries where contract farming has been functioning for the last few decades, it is often seen that the poverty reduction effects should be evaluated in a global framework. In circumstances where contract farming of cash crops (monoculture) started to be highly dependent on agro-chemicals, yields generally showed a significant increase at the beginning period. Accordingly, there was a significant improvement of the household income in the first decade, but then the yields started to stagnate or decline due to soil degradation caused by the overuse of agro-chemicals. The overuse of these chemicals has also resulted in serious medical conditions for farmers and has threatened the environmental resources, including water and aquatic species. Many types of pesticides, which are forbidden or strictly managed in the West, have been proposed to and used by farmers in developing countries through contract farming, consequently negatively affecting the health of farmers.

Even though there are many opportunities in farming contracts for both farmers and enterprises, there are also undeniable risks, especially for small-scale producers and smallholders. According to Prowse (2012), there are five risks which are particularly important for smallholders, including: (1) Contract farming may contribute to the loss of autonomy and control of agricultural enterprises and a form of dependence on the contracting company; (2) significant production risk if the technology or company forecast is inappropriate; (3) the exclusive right of the company to reduce the price of the product, or to delay payment and/or in part; (4) contracts can be verbal, and even if they are written, it is not always in the mother tongue - this can lead to manipulation of conditions, with small farmers in a weak position to challenge the difference is said to be false; and finally (5) internal distribution of labor/income may be altered to the detriment of the interests of women.

Watts (1994) indicated that even though farmers can withdraw from the contract whenever they want to, for many farmers, it is not possible to withdraw. Particularly, in the stagnant economic and remote areas where there is no practical choice for

small farmers, no farmesr can refuse access to credit, technology and markets. Under such circumstances, farmers simply sign contracts at whatever price the purchaser offers, which is obviously wrong and the possibility of farmers being exploited would increase.

According to Eaton and Shepherd (2001), introducing a new crop grown under strictly controlled conditions of a company can lead to the disruption of existing farming systems. For instance, managers may determine traditional land for food crops as the most proper to harvested crops or crops that may not be suitable for the existing crop. Duration of harvest may be the same as crop recovery and other food crops which results in competition for scarce resources.

Contract farming, in many cases, involves differences and social inequality. In the first place, the occurrence of accumulation in contract programs often concerns rich farmers who have had plenty of capital and non-farm investment. Daddieh (1994) and Watts (1994) specified that the poorest farmers in the area are rarely recruited as contract growers. In the second place, agricultural contracts regularly happen in areas where commercial agriculture has been set up, partly because infrastructure and market access is relatively reliable in these areas.

3.2.3 Farmer-related issues

The threats to contract farming can be settled in a number of different approaches. According to Prowse (2012), methods used for mitigating the possible threats to contract farming consist of contract renewal, technology, finance, institutions, politics and legislation.

Modification of contract design

A contract is expected to guarantee the lowest costs of coordination and incentives. Farmers as well as production organizations should make an effort in negotiation to guarantee both parties would gain benefits.

Innovation and development

Technology plays a crucial role in evaluating quality standards when the products arrive at a company (not any other points in the value chain) (Young and Hobbs, 2002). That could be for taste as well as texture quality (so-called experience attributes) in contrast with process-based attributes (such as the use of organic methods). Technology used at this stage will permit enterprises to be able to pay farmers more earlier(when applying a split-price schedule) and decrease the possibility of conflicts arising from disagreement with the subjective quality standards.

Financial innovation

There exist only few examples of financial innovations which may be likely to alleviate the threats to contract-farming arrangements in the contract-farming documents.

Institutional innovation

The major institutional innovation that helps to overcome threats to contract farming is the producer organisations. Penrose Buckley (2007) specified the increases in the number of production organisations in various developing countries

over the past years. For instance, from 1990 to 2005, the number of production organizations rose from 1,000 to 2,850 in Ghana, from 4,000 to 7,000 in Kenya, and from 29,000 to 50,000 in Nigeria. Moreover, Penrose Buckley (2007) indicated the recent emergence of producer-owned, market-orientated producer organisations, which are very different in origin and outlook from the old state-owned cooperatives. Therefore, the term "production organisation" (PO) means member-owned, market-oriented cooperatives (Rivera, 2008).

In terms of farmers' options, the power relationships between businesses and farms can be balanced by producer organizations through collective bargaining as well as developing relationships with credit and transportation providers, which can help to lower the risks for farmers. In addition, the PO organizes a forum for farmers' dissatisfaction (to reflect on price, time and extension), therefore, the company is more likely to recognize its responsibility for the society and environment.

Political and legal innovation

This approach concentrates on the potential role of the government apart from supplying public goods (such as infrastructure, research and development, etc.), including the two following parts: firstly, taking political and legal measures to provide supports to production organizations; secondly, taking broader measures to address the risks to agricultural contracting initiatives.

FAIDA (1999) and Porter and Phillips-Howard (1997) showed that farmers should be attentive not to focus too excessively on producing the certain raw material for a firm, especially when the firm offers a tempting price because they are likely to not only fail to look after their food crops but also paying no attention to environmental protection. They should maintain an appropiate balance between food and cash crops.

Position of of farmers can be improved by keeping and/or creating alternative chances for producing and income beyond the contracted crops (FAIDA, 1999; Phillips-Howard, 1997). Glover and Kusterer (1990) indicated that "the availability of alternatives is one of the most significant prerequisites for a contract farming situation that benefits small farmers" and that the contracted crop ought to be the second or third cash crop (i.e not the only alternative to the farmers' livelihood) and may best be added to the current operations rather than request for specialization.

In order to help farmers decide to join a new business and to make sure a success when deciding to cultivate a particular crop, it is essential for farmers to be aware of: (1) the husbandry practice they will have to follow to attain successful crops; (2) the arising production costs and the potential profits they can receive; and (3) the risks they may face and the benefits they may gain through the new business (FAIDA, 1999; Eaton and Shepherd, 2001).

3.3 Contract farming as a determinant in the promotion of production and marketing

3.3.1 Contract farming as a determinant in the promotion of production

Timely inputs and production markets

Having access to inputs at a proper time is of fundamental importance for smallholders who live in remote areas and have deficient access to inputs and transport infrastructure. The scarcity of modern inputs and production resources such as enhanced seeds, fertilizers and tools usually slow down their yield growth. Therefore, companies might find it hard to receive the expected quantity and timely delivery of crops due to undeveloped inputs and product markets. FAO (1999), Baumann (2000) and Eaton and Shepherd (2001) believe that in order to attain the predicted yield and expected quantity, contracting companies usually take measures to ensure so that the contracted farmers can get sufficient access to inputs, including seeds and fertilizers on time, besides training support and supervision of proper crop husbandry practices. Farmers profit from well-timed access to inputs and markets, whereas companies obtain benefits from ensured delivery of the quality products.

Technical assistance

Dasilva (2005) suggests that companies participating in contract farming tend to offer support in terms of technological advances so as to reduce risks in livestock and crops, especially in case of high-value products. Furthermore, farmers who receive technical guidance will have the chance to change the way from subsistence to commercial farming.

Credit and financial intermediation

Scarce access to credit sources is still a fundamental disadvantage in raising agricultural yield. In the rural areas of developing countries, formal credit markets are rare and banks are reluctant to give loans to smallholders. In some areas, microfinance institutions tend to provide loans for microenterprises and not for agriculture production enterprises.

Producing non-traditional cash crops generally costs more than producing traditional subsistence ones. Companies have better conditions to provide more credits than banks since these companies often have a better ability to supervise and enforce credit, and therefore, they can overcome difficulties suffered due to financial market problems. Moreover, companies can deduct the debts that farmers owe from the payment of the procured crop (Key and Runsten, 1999). Companies can also provide in-kind loans to farmers, such as seeds and modern inputs (Baumann, 2000). Banks usually accept contracts as collateral when the companies do not extend the contract to smallholders (Glover and Ghee, 1992). For instance, , governmental policies also play a key role in promoting such a strategy in Thailand.

Reduction of production risk for farmers

One of the benefits of contract farming arrangements is that they help to promote risk sharing if the production fails due to unmanageable conditions such as bad weather or diseases. Based on contractual arrangements, farmers may have lower risk of total income loss due to crop failure. When there are widespread production issues as a consequence of uncontrollable events, companies will often postpone the repayment of production advances until the next season (Eaton and Shepherd, 2001).

Furthermore, based on contract authorization, the new enterprise may be provided with subsidies to reduce risks during its startup period . Glover and Kusterer (1990) claim that for small-scale farmers whose contracts were subsidized in the beginning

of their participation, extension from the contracting companies was important in lowering yield risks.

3.3.2 Contract farming as a determinant in the promotion of marketing

Market access

According to Setboonsarng (2008), the assured market with fair price is the most important challenge for small-scale farmers. Market restraint is considered to be more inhibiting to farmers than the restraint in transforming from a traditional crop to a new one. As a result, one of the main reasons for smallholders to sign a contract farming arrangement is that they will get a greater and more stable income when participating in an assured market. Contract farming arrangements will help farmers to link to distant markets where the demand for agricultural products is higher and they are often sold at more suitable prices.

Market access can also lead to the development of cultivating areas. For example, in a banana contract arrangement in Thailand, farmers who did not have any contract were cultivating crops in smaller areas because market opportunities were limited and it was difficult for them to sell their products. Farmers who signed a contract farming often increased their cultivating area and made unused land become productive.

Reducing marketing risks

Producers are also easily exposed to marketing risks such as price volatility and market approachability. Producers also suffer different types of institutional and price risks in addition to production and marketing risks such as changes in laws and regulations made by the government, declining yields and output price. Studies on the agricultural supply chain and risk sharing has highlighted the impact on producers (Gray and Boehlje, 2005). Gray and Boehlje (2005) explain the relationship between the capacity to control risk and transaction costs while distinguishing between internal and external transaction costs. Internal transaction costs are related to agency costs, influence costs, increased production risks and employee risks. External transaction costs are related to producer moral hazard (shirking behavior) which is caused by improper alignment of incentives and producer risk averse (adverse selection) characteristics.

Reduction in the risk of price fluctuations

In addition to increasing income, contract farming often helps to reduce price risks for farmers. Prices of agricultural products can undergo wild fluctuations from place to place and within a cultivating season. Small-scale farmers have limited access to information and may suffer from losing decent income if the price decreases. However, under contractual agreements, a prearranged price for the agricultural products is generally set during contract negotiations at the beginning of the cultivating season. Usually, companies buy the crop output that satisfies the quality and quantity requirements as specified in the contract, and farmers will not suffer losses in sales because of significant price changes. That means farmers can reduce their price risks while obtaining market access (Binswanger et al., 1995; Baumann, 2000; Eaton and Shepherd, 2001).

3.4 Factors affecting contract farming

3.4.1 Internal factors

3.4.1.1 Farmers

Agribusinesses often prefer large-scale farmers in personal agreement as shown in the research of Key and Runsten (1996). Baumann (2000) suggests that agricultural business organizations might have the incentive to enter into agreements with larger farms in order to reduce transaction payments and allow the purchase of other similar commodities. In this context, the price of controlling many small-scale farms can certainly influence how companies decide to build up such relationships. Nevertheless, contract farming carried out in developing countries between companies and small farms has been confirmed to be profitable in some cases.

Most agriculture -corporations prefer limited land because of simple maintenance and better quality control of crops, for example in the case of asparagus and cucumber grown in Thailand. With the appropriate technical support, small-scale growers can often harvest a high yielding and high-quality crop and the entire workforce.

In accordance with Eaton and Shepherd (2001); Jaffee (1994); Poulton et al. (1998) and Watts (1994), there are some factors undermining sustainability of contract farming schemes. On the contrary to the leakage of crops to other purchasers, non-contract farmers sometimes even try to put their crops into the trading system so as to obtain the higher prices of the company by filtering their products into the purchasing system through their friends and family who participate in contract farming. It is therefore difficult for the companies to adjust production objectives, chemical residues as well as other quality standards.

A common problem that might arise during contract farming is input divergence. Farmers are tempted to use inputs supplied by the company for other purposes rather than their intended purpose. Specifically, farmers can either use the inputs for other crops or even resell them, which is unacceptable for the company because the intended crop yields and quality will be affected.

Issues may also occur when farmers have little or no guarantee of land use rights as there is a risk of sponsor investment being wasted as a result of disputes between land owners and farmers (Eaton and Shepherd, 2001).

3.4.1.2 Companies

Contract default

According to Simmons (2002), like any other contracts, a farming contract is largely dependent on its effectiveness. The farming industry is characterized by legal constraints in case of contract default. To be more specific, the current advanced and sophisticated credit system does not allow small-scale producers in developing countries to use land or other farm inputs as collateral. Additionally, since farming land lots are often small, they cannot be used to recover small loans because of the conventional nature of land titles, as well as stagnant legal procedures. While contracted farmers in advanced economies are subject to various penalties in case of contract default, small-scale farmers in developing economies are not. The latter

might transfer the production inputs provided by agricultural companies to other farmers or they might even sell or transfer the contracted production to other buyers while not facing the same forms of penalties applied for contracted farmers in the developed countries. For this reason, agricultural companies are obliged to ensure minimal default on their contracts. To these agricultural companies, it is crucial that small-scale farmers expect and want changes in their contracts so that they can carry out contracts with a higher level of compliance. To do this, small-scale farmers should use their income as collateral instead of their assets so that the advances are preserved. In an effort to make a small farmer contract, companies often make the cost of the farmer so that they make future contracts higher than the benefits of default. For example, farmers may be entitled to receive cash in advance. If the contract focuses on sales only, the danger level will be higher.

There are also other ways that the companies can choose to reduce potential defaults in contract farming. For instance, agribusiness companies can grant loans to small-scale farmers via farm groups on the condition that the group does not default as a whole, which could further result in social costs. Another way to enhance the compliance of contracts is to supervise and communicate with the contracted farmers. Eaton and Shepherd (2001) proposed that those breaching a contract should suffer strict regulations and companies can also cooperate with buyers to avoid diverted production.

Conflict resolution

It is of importance that those in charge of controlling farm contracts can effectively resolve any arising disputes. In fact, various misunderstandings and conflicts might arise in farming contracts (Glover and Kusterer, 1990). For instance, in Indonesia, there were more small farmers' problems arising from regulations than from exceptions during the contractual period. To be more specific, the company may act in a way that causes problems of misconduct or misunderstanding by small farmers.

Glover and Kusterer (1990) and Fulton et al. (1996) studied cases of contract farming related to the production of potatoes in Canada and Australia and found that such issue also occurs quite frequently in farming contracts in developed countries. After signing a farm contract, the first easy period may be soon followed by more severe rules for contract execution. Despite a lack of data on subsidization statistics (in terms of prices and effective rates) over the duration of a contract, contract regulations are perceived to get more severe because of the following two reasons. The first reason is that during the initial period of a farm contract, small farmers may receive support from the contracting firm to reduce the cost of implementing the contract. To do that, companies can provide farmers with financial resources, supporting staff and supervision, which can only be inferred from the contract if the company offers preferential prices and input support. The second reason why contracts often become stricter later on is that agricultural companies do not necessarily ask high-cost contracted farmers who produce less profits to renew contracts. To preserve its procurement base, the company may tighten the negotiation rules in case the foresaid farmer wants to leave the contract. In this case,

small-scale farmers perceive that contract terms and conditions are becoming more demanding and therefore, they tend to complain about the situation.

Requirement for increased management skills

To participate effectively in contract farming, it is requests agro-business companies to have excellent managerial skills. Even though supervision level is likely to be considerably lower than that required for plantation operations, highly-skilled management is necessary to supervise farmers. Lack of communication between contractual parties and poor management may result in farmers's discontent and contract farming failure (Eaton and Shepherd, 2001; TDRI, 1996). When employing community leaders or local staff to manage farmers, contracting companies can achieve better management over conflict resolution and at the same time being able to avoid cultural challenges as shown in one company's hiring expatriate management in Africa.

These findings are comfirmed by Jaffee (1994); Poulton et al. (1998) and Watts (1994). The schemes with top-down management and limited engagement by farmers are more likely to deal with alarming difficulties over time. Any shortages arising under these schemes, for instance staff shortages, and mismanagement of input distribution can also cause serious issues.

Financial strength of enterprises

According to Konishi et al. (2015), many businesses are still in a growing stage. It is difficult for a start-up company to attract farmers by setting a contractual price higher than that of market if the company does not have sufficient established sales channels for high-value products. The company's capacity to face the risks will directly influence the prospects of contract execution and continuity. Qingzhou Quancheng Food suffered poor sales because of bird flu. Thanks to a strong financial power and vertical integration, the firm was able to overcome risks and purchase ducks from farmers at the price set in the farming contract. This allowed the company to gain the farmers' trust when the contracting price was much higher than the market price. However, most start-up companys often lack capital and are not yet established in a steady market, causing difficulties for them to fulfill their purchase contracts. If they break their contracts, their reputation will be affected, and also adversely influence their long-term development. As a result, the whole concept of agricultural contracts may be therefore underevaluated by the local farmers.

3.4.2 External factors

In addition to the internal factors, there are also a number of external factors that help promoting the participation in contract farming.

According to Bijman (2008), there are a number of encouraging conditions for smallholders to join in and obtain advantages from CF. The existing research on CF proposes that the following conditions may bring about benefits of CF arrangements to farmers: a seller's market, encouraging governmental regulations, a balance of power between farmers and companies, firm's collective action, standard crops as well as supports given by NGOs.

There are several conditions associated with market structure that must be attained before signing the contract (i.e., contracts for credit provision) and that may be helpful to both the contractor and (small-scale) farmers (Dorward et al., 1998):

- The demand for crop output must be high (i.e., a seller's market), aiming at encouraging traders with access to capital to participate in CF. This will typically relate to traders who make investments in several forms of particular assets in crop trading, an investment which requires to be serviced by a high turnover. These particular assets may consist of investments in plants (such as in processing) or in a specific relationship (including reputation) with a big retailer or exporter. This finding is confirmed by Eaton (2001), Jaffee (1994), Poulton et al. (1998) and Watts (1994). On the other hand, unsteady or depressed markets for final products can destroy feasibility of contract farming schemes. A lot of crops grown under the farming contract capture special market niches which are closely affected by international forces. If there are frequent changes in market conditions for the contracted goods, then well-organised schemes can easily become impractical.

-Competition among traders must exist to help farmers avoid being trapped in an unfair relationship with a specific trader.

- Farmers must be provided with effective repayment incentives, which means that they will suffer income losses if they fail to repay the loan. The crop must then brings about higher returns compared to other income opportunities. When traders are competing for the farmers' production, there must either be (a) an effective two-way transfer of information on farmers' reputation, or (b) particular investments by farmers to build a reliable relationship with a particular trader over a period of time.

Governments may have two essential roles in mitigating the negative impacts of CF (Eaton and Shepherd, 2001; Simmons, 2002). This finding is later confirmed by Giel Ton et al. (2015).

Firstly, the government may regulate the market in order to prevent contractors from using their market power for improper purposes, such as the enforcement of competition policies, the enactment of special contractual laws and the supply of inexpensive arbitration options. Secondly, the government may create favorable conditions for contracting by giving agribusiness companies the incentive to start new contracts and give smallholders the assistance and supports needed so that farmer can be qualified for contract selection. Those favorable conditions may consist of providing training (such as negotiation), extension services which provide information on pros and cons providing information on pros and cons, and research on CF practices and their effects. In addition, providing further information about markets and prices may significantly support the position of smallholders on the participation in CF schemes. Lastly, subsidies given directly to smallholders may be useful. According to Glover and Kusterer (1990), smallholders that entered into contracts were given subsidies during the early years of their participation to mitigate yield risks. South Africa's Agriculture Broad-Based Black Economic Empowerment (AgriBEE) aims at enhancing access to productive resources and comprehensive participation in agriculture by black people, and facilitates the initiation of contracts between black smallholders and contractors (Sautier et al., 2006).

Another fundamental condition is the power distribution of producers and contractors.

Since there are significant differences in resource endowments between small-scale farmers and contractors, CF arrangements tend to be characterized by an unequal power relationship between the two parties. This may easily result in exploitation of the less powerful party by the more powerful party (Little and Wattts, 1994). Glover (1987), Porter and Phillips-Howard (1997), and Warning and Key (2002) offer several suggestions for addressing unfair power relationships. First, the availability of an alternative market option may probably be of crucial importance. Farmers who manage to maintain alternative production opportunities and income in addition to their contractual obligations, are placed in a much more powerful bargaining position compared to farmers who have used their entire land for the contractual crop. Second, a low asset specificity avoid the overdependence of farmers on contractors. When farmers can employ the same assets for the plantation of other crops and if they are not satisfied with the contract provisions, they can easily take their assets away from the contracting scheme. Third, having experience in CF helps famers enhance their bargaining position, particularly with foreign contractors. Fourth, farmers having control over land and irrigation system are in a more powerful bargaining position than farmers who lack control over these resources. Fifth, since most of the production work are done by women (at least in Africa), if contracts are signed with women, and they can receive the payments, these contracts can be more sustainable. Finally, farmers will reduce the considerable power of the contractor provided that they have some options for acquiring inputs and credit for their production.

The previously mentioned problem with asset specificity is also relevant to the problem of innovation. It is argued by Glover (1987) that farmers certainly receive advantages from CF in crops whose production technology is not experiencing any quick innovation. Compared to larger farmers, small farmers will face more challenges in adopting innovations due to limited access to information and inputs, a higher risk aversion and lower savings capacity. However, this results in a Catch-22 situation since CF can be an efficient way to transfer technology to smallholders. Glover (1987) has underlined that: “To exclude small farmers from CF involving technologically dynamic crops is to exclude them from one of their few opportunities for exposure to new techniques. Furthermore, CF may be able to overcome some of the impediments to rapid adoption by smallholders (e.g., lack of access to credit, information or inputs)”. This problem also arises given the introduction of strict food safety and quality standards. CF can help smallholders follow the (private) food safety standards and provisions by providing them with technical support. However, production under these strict requirements requires substantial (human capital) investments, which are highly relationship-specific when there is only one contractor. External assistance, such as from (international) non-governmental organizations or governmental authorities, may be necessary to make CF for high quality products a possible option for smallholders.

Domestic and foreign non-governmental organizations can be considerably helpful for smallholders to participate in favorable CF arrangements. On one hand, these NGOs can undertake the public sector role when the government is unable or

unwilling to render the needed services for making CF feasible and sustainable. On the other hand, these organizations can help to temporarily provide farmers and/or contractors with services, expertise and credit to successfully initiate a new CF arrangement. For example, according to the World Development Report 2008, as participating farmers are inclined to get substantial benefits, "the payoff from assisting farmers to make the "threshold investments can be high" (World Bank, 2007, p. 127). In addition, NGOs can support the establishment of a producer association, thereby enabling the reduction of transaction costs for contractors and, therefore, making the contractual option with smallholders more appealing.

Macro institutional policies

HVF: high value food

As asserted by Simmons (2002), governments in developing economies issue and put into implementation a variety of policies to solve strategic concern, increase income and prosperity and maintain social stability as well as economic stability. These policies are applicable to the entire society and are developed so that they can meet the demands of most of the people instead of benefiting only some specific interests of particular economic sectors such as agriculture or exporting. As a result, these policies may undesirably affect particular interests. Contract farming tends to be affected by major macro policies such as land ownership regulations, tax regimes, exchange rates and food security.

Contract farming can be facilitated by land ownership regulations which prevent foreigners from owning land. Therefore, multinational corporations are often not eligible to get involved in farming activities.

Macro institutional policies are put into place to ensure stable exchange rates to support farming contracts because, in many cases, export or import farm contracts are made based on foreign exchange rates. Strong exchange rate fluctuations can consequently have a negative impact on the parties involved as their relative costs or income are calculated in a different currency.

Policies on food security is another external factor influencing contract farming, which are the policies of which objective is o ensure sufficient supplies of food for people in developing countries through self-sufficiency production and food price control. In a self-sufficient production scheme of staples, the state either subsidizes farmers with inputs like agro-chemicals or authorizes some agencies to sell staples at lower prices compared to those in the marketplace. Food security policies will not affect farm contracts as the state subsidies are generally good for high value food (HVF) and the production of exotic staple food. Nonetheless, it should also be noted that while the subsidy of traditional farm production may be reasonable at a macro scale, non-traditional farm producers may encounter a stronger competition for both inputs and outputs, and hence, the expansion of the production of modern staples can be affected. Key and Runsten (1999) also argue that policies demanding farm producers to intercrop may be helpful in ensuring food security but may also potentially discourage them from engaging in contract farming.

Bijman suggested that CF can be an appropriatetool for a range of products and markets in order to reduce transaction costs.

Minot (2007) has made a useful distinction in the factors that influence the need for vertical coordination and therefore the suitability of the CF arrangement: (1) the type of product; (2) the type of buyer; and (3) the type of destination market.

Type of products

Which type of agricultural product is more likely to be produced within a CF arrangement?

Low transaction costs when a product is of uniform quality and does not decline rapidly when product quality is easily recognizable and when farmers are familiar with the production methods and requirements of the market. In these cases, the spot market will be the most efficient arrangement. These factors are the reasons why so many goods, such as cereals, root crops and pulses, are often sold through market agreements.

It is necessary to enhance vertical coordination between sellers and buyers for products with the following characteristics (Minot, 2007):

• Economically important quality variation/high-value products. Vertical coordination is more probable when customers (e.g., manufacturers, retailers) are willing to make a premium payment for a product, variety or attribute. This premium should be enough to cover the extra production and the CF arrangement costs. Farm-level investments in human and physical capital, or specialized inputs are necessary for quality improvement. CF will supply farmers with the incentives and the means to engage in these investments.

While several authors claim that all economic actors are characterized by an opportunistic behavior, in the sense that they will break the terms of an agreement if they are presented with an opportunity for personal benefit, other authors have stated that opportunistic behavior does not mean that all actors always seek personal benefit, but that they will put personal benefit above mutual benefits in case of insufficient information about the relationship between the two.

High perishability. Perishability raises the need for farmers and buyers to enhance coordination in harvest and delivery timing. Furthermore, the farmer's bargaining position is severely weakened when the product is harvested. Within several contractually guaranteed outlet, the farmer is not likely to produce such perishable products.

• Technically difficult production. Farmers may not undertake the production of technically difficult crops, since they lack the technical skills, the inputs and the credit necessary to do so. As part of a CF arrangement, buyers can supply technical support, specialized inputs and credit. As farmers in developing countries may not have enough cash to buy inputs at planting time, the contract allows the buyer to provide them on credit and to recover the input costs by deducting them from the payment to farmers after harvest.

These factors suggest that CF (as an instrument to enhance vertical coordination) is more likely to be applied for the following products: high-quality fruits and vegetables, organic products, spices, flowers, tea, tobacco, seed crops, and other quality sensitive and perishable commodities. In animal production, CF is mainly used for dairy products and poultry; in dairy products, due to the high perishability

of milk; in poultry, due to the production's technical difficulty that requires specialized inputs and technical support.

Type of buyer

The type of buyer that is likely to organize its sourcing through contract farming is directly associated with the type of products previously mentioned. Buyers who are specialized in processing and marketing high value-added crops, highly perishable crops and products requiring specialized inputs and skills, are most likely to enter into a CF. Since the establishment of a CF arrangement requires high fixed costs, generally it is not worthwhile for traditional wholesalers or small-sized and medium-sized collectors. Instead, the buyers in CF schemes are more likely to be large-scale processors, exporters, or wholesalers who are preferred to become suppliers to supermarkets. Furthermore, buyers with large capital-intensive processing trees are more motivated to enter into contracts with farmers as they need a steady and reliable flow of raw materials so as to maintain a high capacity-utilization rate. This is the typical case of the sugar industry where mills generally enter into contract with sugarcane or sugar beet producers.

Type of destination market

The third factor that affects the appropriateness of contracts as the preferred arrangement between sellers and buyers is the type of market. If the final market is more quality-sensitive, including higher demand for food safety warranties, there will be more incentives for buyers to enhance control over the production process. Typical high-demanding markets are international markets (developed countries) and local supermarkets (particularly supermarket companies owned by foreigners). Therefore, the production of vegetables and fruits for export markets is usually under contract, while vegetables and fruits for local markets are often sold through spot market arrangements.

Sometimes, the same product may be sold through both spot markets and CF arrangements when the market target is both the local market and the foreign market. For example, apples are sold under three different marketing arrangements in the Shandong Province, China (Miyata et al., 2009). Vertical integration (i.e. production on farms owned by the packing company) is applied for high-quality products which are sold in export markets (mainly Japanese market).

Spot markets sell to the less discriminating local markets whereas contracts are used for sourcing the apples that are sold to supermarkets.

The development of domestic and international supermarket chains in a lot of developing and transition countries results in a growth in contracting arrangements. Miyata et al. (2007) give an example of the type of contracting arrangement that the company Carrefour (a foreign-owned supermarket) had with its local suppliers of apples in China.

3.5 Experiences of contract farming in the tea industry

3.5.1 Experiences of tea contract farming in the world

Tea is the type of agricultural product that is highly perishable, therefore it should be processed as soon as possible, ideally in big processing facilities for the purpose of obtaining economies of scale. Due to its commodity characteristic, it is essential for the application of vertical coordination. The reason is that small-scale farmers have to pay for the initial costs occuring at the early stages of the production (non-harvest period) when advanced production inputs are often required to be provided by contractors. Furthermore, the management of large-scaled processing integration helps to obtain effective processing operation. Hence, the early stages of tea production often include strictly aligned coordination like cultivation system or contract farming which is defined as the production with the companies' fixed arrangements and strict quality control (Glover and Kunsterer, 1990; and Baumann, 2000).

Tea contract farming has been carried out in a number of countries in the world. Below are several cases of tea contract farming which have been reported and studied.

In India, contract farming was first applied in the British colonization when the East India Company used contractual farming agreements in the tea and coffee estates. Hence, contract farming is not new to India, but new forms and models of contract farming have been involving after the country's independence (Manjunatha A.V et al., 2016).

Contract farming in India is emerging towards the corporate contract model. A large number of multinational corporations such as Cadbury, Pepsi, Unilever, ITC Ltd., Cargill and Frito Lay as well as various domestic corporations such as Ballarpur Industries Limited (BILT), JK Paper, and Wimco, Green Agro Pack (GAP) Ltd., VST Natural Products, Global Green, Interrgarden India, Kemps City Agro Exports and Sterling Agro, United Breweries (UB), Nijjer Agro, Tarai Foods, A I M Todd, McCain India all participate in contract farming. According to Eaton and Shepherd (2001), there are five main contract farming models in India. The contracting enterprise (referred as a sponsor) will decide to follow one model based on the specific requirements of market demand, production and processing as well as farmer's socio-economic situations.

In tea industry, there are two types of contract farming, namely centralized model and nucleus estate model. Centralized model is the type of contract farming in which a sponsor (a processor/packer) buys tea leaves from many small-sized farmers. The purchase volume is normally predetermined at the start of a sowing season provided that quality is strictly ensured. The contract farmers are provided with input materials such as seeds, fertilizers, pesticides, credit access and machines, etc. This model is employed for annual crops and crops that need a high level of processing. This model can also be found in the production of products that require frequently-updated technology and more thorough support from the sponsors. Sponsors in the Centralized Model contracts either only provide inputs for the production or in some

cases control almost all of the production like tomato processing by PepsiCo in Punjab. This contract model is equivalent to the Type 1 contract farming as in the categorization in a study by the National Institute of Agricultural Marketing (Manjunatha A.V et al., 2016).

Besides, as for nucleus estate model: This type of model is actually an alternative to the centralized model. In this model, the sponsor is also in charge of a central estate or plantation. This model is often employed with the aim of ensuring throughput for the processing trees but in some cases, the estate is employed only for scientific or breeding purposes. In this model, the farmers are provided with a considerable quantity of material and are helped with the management inputs (Manjunatha A.V et al., 2016).

In conclusion, in India, contract farming was first carried out in the British colonization when the East India Company applied contractual farming agreements in the tea and coffee estates. Two types of contract farming, including centralized model and nucleus estate model, are applied in the Indian tea industry. Nucleus estate model is an ideal model for crops like tea, coffee, rubber, cocoa, sugar and oil palm, the crops with which farmers might not have much experience. Substantial long-term investment as well as immediate processing are the shared characteristics of these crops. The company can sometimes purchase crops of the surrounding farmers.

Kenya has a large farming sector with the largest and most efficient small-scale farming sector in Africa (Baumann, 2000). Kenya has a very high rate of population growth (above 4% per year) while its levels of poverty, underemployment and malnutrition are increasing to a concerning level. There are too many people in the working which will continue to increase with population growth when there are no alternative sources for off-farm employment. In the mid-1980s, more than 230,000 households were engaged in contract farming of tea, sugar, vegetable oil, tobacco and gardening. Approximately 15.5% of Kenyan small-scale farmers participated in contract farming, they produced 40% of tea, 50% of sugar cane and 80% of tobacco output. The center of the contract system, and its most famous part is the sugar and tea production, both dominated by large parastatals. Tea was started to be grown in the 1920s on plantations. Since then, tea production has increased by 700% with considerable contribution of the smallholders. Over the past three decades, this development has been driven by the Kenya Tea Development Agency (KTDA) which was established in 1964 (CDC, 1989).

The production of tea, coffee, sugar and tobacco was extended under the control of the government, and later by the CDC and the World Bank. Watts (1990) argues that the expansion of small tea production is best understood by examining the political motives that emphasize it. KTDA was established in 1964 by the Government of Kenya, CDC, OPEC and EEC. In two decades, KTDA has planted 57,000 hectares of tea planted by 151,000 small farmers. The cottage industry accounts for 45% of annual tea exports, of which 87-90% is grade I tea, leading to high prices in the world market (Baumann, 2000).

In general, tea contract farming in Kenya is really popular. The success of KTDA is due to effective control at all levels of activity: quality of planting material

through nursery control; production quality through selective registration; the effect of expansion; leaf quality monitoring; and critical, through the implementation of monopoly purchase. The reason for the success of the KTDA is that the state supports the program, quality checks and incentives for quality tea and management structures that allow farmers to participate. Some observers argue that there are specific reasons for the success of the KTDA that cannot be replicated, and moreover, the level of success is a matter of controversy and must be assessed in context. More seriously, it is claimed that the KTDA has concentrated its resources on one area and focused on relatively prosperous small households. The income effects of smallholder farmers in Kenya are positive with average living standards in the normal year (Baumann, 2000).

In Srilanka, there were various problems associated with switching the investment in green leaf production to other uses. While the cost of setting up green tea areas is the highest among the perennial crops, the generated revenue is not much different from other crops. It takes around seven years for farmers to be able to harvest tea leaves, which makes it rank second in terms of waiting period among all the perennial crops in the country. According to Grosh (1994), because of the investment, high production costs at the early stage and large switching cost, green tea farmers find it more favorable to enter into contract farming rather than participate in the spot market (Deepananda Herath and Alfons Weersink, 2006).

Thanks to the contractual arrangements, the disadvantage of higher transaction costs for family farms has declined partly. Management costs are defined as the costs of resource allocation within the company and are often high in vertically integrated units because of agency cost, influence costs and competition. When the companies become bigger, agency costs tend to increase in most cases (Deepananda Herath and Alfons Weersink, 2006).

In a study in 2009, Herath and Weersink carried out an investigation of the role of legal framework in Sri Lanka's tea industry during the transition from vertically integrated cultivation system (with company's management of land and production with hired labor) to independent traders' purchases from different producers. The study suggested three cost factors influencing this change, including transaction, production and management costs. First, transaction costs are lowered due to the decline of uncertainty linked with pricing of the finished products that is guaranteed by legal regulations. Second, the production costs, whose big proportion is labor cost, particularly depend on the cultivation category. That is because thanks to labor unions, producers tend to achieve a stronger voice in protecting their labor rights instead of enduring low wages. Third, the management costs for cultivation are often higher in case of larger and more integrated productions due to the complication of supervision tasks and the higher risk of work. It can be concluded that tea production needs vertical coordination because of its unique features such as high level of perishability, high processing requirement and long non-harvest periods.

One research presented the history of Malawi's tea industry from the establishment of Smallholder Tea Authority (STA) (Chirwa and Kydd, 2009). STA was originally funded by the state and helps to provide services to small-scale farmers. Besides production expansion, there was also a need for establishing a

larger scaled organization in order to enhance tea processing. The establishment of a joint venture estate led to not only financial instability which was derived from ineffective management and political problems, therefore resulting in the corruption of the system as a whole.

Chirwa and Kydd (2009) suggested that the major problem is contract enforcement of the state government-owned companies because the government did not make a legally written contract to be enforced. The consequences are severe, specifically, producers ended up stop trusting the government-owned companies and the other institutional arrangements appeared thanks to the elite producers when the government started to restructure the government-owned companies. Eventually, there are three ways for small-scale farmers to be integrated into vertical coordination as follows: through a state-owned enterprise, through a commercial enterprise, through a farmers' union.

There has been corruption in the state-enterprise system which began because of its disruption. As for farms, corruption is resulted from the delay in delivery and payments which are the causes for severe damage to tea leaves as well as undesirable impact on farmers' lives. Regarding state level, the failure in tea industry urged tea producers to make a change in the current vertical coordination in terms of their decision making process along with the setting up of other processing organizations. It appears that a well-functioning legal systems and institutional settings are essential for contract enforcement for not only enterprises but also producers in the case study in the research by Chirwa and Kydd (2009).

In Laos, a total of 520 households were involved in tea contract farming in Phongsaly province, corresponding to about 400 ha of tea production area. The provincial authority signed the contracts with Chinese traders and then organizes farmers to produce tea at a pre-agreed price. Farmers were provided with seeds and technical support for cultivation and processing practices by the Chinese traders who bought all of the tea produce to sell in the PRC market (Setboonsarng et al., 2008).

Prowse (2012) mentioned that contract farming has been on the rise in sub-Saharan African countries. Contract farming has been on the rise in sub-Saharan African countries. Many contracts in the late 1980s had involved state ownership to some extent (with several biggest projects belonged to the state – according to Little and Watts, 1994), whereas the reverse is true for the present with the majority of contract farming projects initiated by the private enterprises. Contract farming helps to produce more than half of all tea and sugar in Kenya, while agricultural exports are also dominated by a huge amount of contract farmers. It can therefore be concluded that private sector is currently the main driving force in contract farming in the developing nations; for example, Nestle signed contracts with over 500 thousand farmers in more than 80 developing and transition economies in the world in 2008.

3.5.2 Experiences of tea contract farming in Vietnam

Like other key agricultural commodities, fresh tea is produced via contract farming in a number of major tea growing areas in Vietnam. However, there has not been much research into tea contract farming in Vietnam. Below are some examples

of contract farming models across the country which were analyzed and assessed in a report by ADB (2005).

Hai Yih Tea Company is a company with one hundred percent capital from Taiwan. The company is located in Xuan Truong Commune, Da Lat City, Lam Dong province. Hai Yih Company has achieved some successes in contract farming thanks to the following factors:

(i) It has ensured its inputs and obtained high profits, thereby being able to offer competitive prices in the contract;

(ii) It has traded high quality tea like “"O Long Tea" and "Tu Quy Tea" which are fairly well-known. These products need technical processing facilities that the smaller enterprises could not possess. As a result, there is almost no competition with other small private traders;

(iii) There are professional staffs in charge of production monitoring who work at tea gardens every day and are readily available to provide farmers with technical advice in time and in an efficient manner;

(iv) It has established a good relationship with contract farmers in order to promote good use of pesticides. The company does not hinder farmers in case of quality checking or breach of contract which can be done thanks to financial measures;

(v) Farmers entering contracts with the company can enjoy risk insurances and are motivated to expand their tea land.

From the example of Hai Yih Tea Company, some important lessons can be drawn as follows: (i) First, professional and effective management and competitive advantages of which high price and quality are of importance for the success of contract farming; (ii) Second, some other crucial factors can be listed as financial potential and stable production outputs.

Another case is Cau Dat Tea Company which was established on Cat Dat Tea Factory under Lam Dong Tea Company in 1927. The company used to be a state-owned company but was newly equitized in December, 2005. Cat Dat Tea Company has been carrying out contract farming with farmers by giving them tea field and purchasing all of the harvested tea leaves. In addition, the company also provides tea trees and all input materials. That means farmers only contribute labor and harvest. The tea price called floor price is estimated and fixed by the company at the beginning of the year and is subjected to increase over the year. The contract lasts for 30 years, enabling the stipulation of solid regulations as well as forecast of difficulties that might arise. Since tea requires complex processing line, there is not strong competition from private companies in collecting tea materials without investment like in the case of vegetables, or milk.

Overall, it appears the company has achieved some success in contract farming. Particularly, stable material input and output have been achieved by both sides, the company and farmers. However, risk sharing has not been well obtained, therefore leading to little profit for the company. Besides, the farmers can earn more income if the company is able to enhance tea plantation areas and find direct export market.

Established in 1967, Thanh Binh Tea Plantation is a state-owned enterprise, whose cultivation area was fairly large with over 1600 workers. After a period of management problems, in 2000, the farm changed its operational structure by selling land to farmers so that the farmers gained a full control over the land, and the farm also signed a contract with farmers that specified that farmers grow tea on their land and that they would sell all of their products to the farm.

Entering the contract helps to ensure input provision for enterprises, especially in case of the tea industry since it is a product that is not easily available in the market. Farmers who purchase land for tea cultivation, on the other hand, have almost no reason for refusing to engage in contract farming since they do not have to invest too heavily in the production. In addition, they do not have to worry about output market when the harvest season arrives. Another important benefit for the contract farmers is that payment for the material inputs will be subtracted later from the final payment made by the enterprise to the households. Tea price can be adjusted to match the change in market price but have to be higher than the floor price. A good example for tea contract farming in remote areas is Thanh Binh tea production: There is an export market which brings about considerable profit. Furthermore, the floor price also enables the contract to be more appealing than the spot market. Because tea production there is not carried out in densely populated region, the competition for inputs is not strong and contract defaults are not common and not too serious.

Over the past few years, contract farming model has been applied in North Mountain Region (NMR). In the Northeast part of Vietnam, tea is considered as a major industrial cultivation with great potential for contract farming. In a study in Tuyen Quang province by Do and Tran (2013), about 43% of fresh tea leaves were sold via contracts. The logit model employed in the study indicates that the main enabling factors for contract farming engagement include farmers' education level, the age of the household head, tea cultivation area and infrastructure for fresh tea leaves delivery to the collection point of the state company. On the contrary, the factors that have adverse impact on the possibility of contract farming participation were production capital of the households and the average distance from household's tea gardens to the company's collection sites. In addition, as can be seen from the logitic analysis, the possibilities of entering into contract farming of the sample households at very high, high, neutral, low and very low levels were 32.6%, 8.7%, 10.9%, 17.4% and 30.43%, respectively.

A study into contract farming's roles in tea industry was carried out in Thai Nguyen and Phu Tho provinces, two largest tea producing provinces in the country (in terms of yield and area) by Nguyen et al. (2014). The study focused on analyzing various motivations and benefits for farmers when they entered into contract farming.

Having examined farmers' motivations to join in tea contract farming in Thai Nguyen and Phu Tho provinces, the study found out some factors behind farmers' participation in contract farming in tea production in the study provinces. As for the farmers themselves, their motivations were ranged from information asymmetry, the need for credit accessibility to have sufficient inputs for production, the need to

enhance market accessibility and the need to obtain better access to advanced technology. Despite that, there were also other important factors, such as risk reduction production, reduction in labor and production cost. In addition, another important factor was better access to information relating to plantation skills provided by contractors. On the other hand, all of the interviewed farmers claimed that social insurance was not crucial when they considered the option of engaging in the contracts. Moreover, farmers did not consider a reduction in labor and production cost as an important factor. The reason behind that was that they had to comply with specific steps in production process to meet contractors' requirements. That means they needed to pay more attention in their cultivation practice and have more available credit to do so.

In brief, in this research, farmers's motivations to join in tea contract farming include some factors like the need for credit accessibility, need for market accessibility, need for advanced technology, plantation skills. Also, the study shows that the majority of farmers were satisfied with contract farming because they had the chance to obtain different benefits from entering into the contract as expected. However, the research results illustrate no statistically significant difference in technical benefits for contract and non-contract farmers. Hence, it can be concluded that contract farming did not bring significant benefits to income of tea farmers (Nguyen et al., 2014).

As can be seen from some research on typologies of contract farming, the common model in tea production in Moc Chau district include the informal contract model (Eaton and Shepherd, 2001) or input providing contract (Minot, 1986). On the other hand, state-owned enterprises choose to employ another model which has a stricter arrangement associated with the centralized management (Yoshiko Saigenji, 2010). The risks of arising contract default in the informal contract model is the highest in comparison with the others because of lack of management over input supply and technical advice for tea cultivation (Eaton and Shepherd 2001, cited in Yoshiko Saigenji, 2010). Having examined the tea contract enforcement mechanisms in Moc Chau district, it can be seen that informal trust-based contracts are commonly used across the region. Those contracts involve fairly poor management of the enterprises and, at the same time, show relatively weak collective sanction in case of breaching the contracts or conflicts. However, the state-owned enterprises have been employing a more constraint contract arrangement in which there is a more complete default resolution procedure and stricter penalty scheme (Yoshiko Saigenji, 2010).

Also, Yoshiko Saigenji (2010) showed that tea contract farming in Moc Chau not only helps to improve technical efficiency in the production process but also slightly enhances household income.

In a study by Le et al. (2011), contract farming for different commodity zones in Son La, a mountainous province in the North of Vietnam, were investigated. Among the commodities grown there, tea and sugar-cane were the two major crops. The relationship between processing enterprises and contract farmers varied from one production zone to another. The study results show that there were four different models of contract farming in the province, including commitment of production land by the company, commitment of input investment, commitment of input

materials supply, and output contract. The research results show that Type 1 ranked the first in terms of the GO, VA, and Pr (net profit), followed by Type 3, Type 2 and finally Type 4. A considerable percentage of tea materials (84%) in Moc Chau's tea plantation area were derived from different types of contract farming. Take Moc Chau Tea Company as an example, there was almost 52% of tea inputs from CF Type 1 and over 32% of tea materials from CF Type 2 and 3.

As for Type 1 of contract farming, the relationship between the enterprise and households was dominated by the control of the enterprise. Regarding its flexibility, the contract was relatively inflexible because farmers were only allowed to focus on one crop as required by the enterprise. Regarding its possible risks, the company bore lower risks in performing the contract. And finally, contract breaching was less likely to occur since the farmers would have to return production land to the company in breach of contract cases.

4

Research methodology

4.1 Analytical framework of the study

This study referred as the scientific method. Based on the hypotheses, the analytical framework of the study is presented as follows (Figure 4.1):

Contract farming models in Phu Tho include nucleus estate (Production-Management contract) and intermediary (Marketing contract) model. Full contract farmers in nucleus estate model are now allocated land for up to 30 years on the condition that they produce tea leaves based on company requirements and instructions. Semi contract farmers in intermediary model have their own land but sell part of or all of the volume to Phu Ben Company through Minh Tien Cooperative who signed contract with Phu Ben Company.

The characters of contract farmers and non-contract farmers include age, education, tea production years, household size, labor, tea yield and tea land area, etc. Different tea contract farming types in Phu Tho province are compared in terms of tea production with using inputs: fertilizers, pesticides, techniques and tea marketing with tea marketing channels, tea price, tea value chain. Appreciating efficiency between contract farmers and non-contract farmers includes the following indicators: selling fresh tea price, yield, gross output (GO), value added (VA), intermediate cost (IC), return to family labor. Factors affecting tea contract farming in Phu Tho are also examined in order to find out what factors promote and what factors prevent tea contract farming. Based on overall analysis in the analytical framework, recommendations to promote tea production and marketing at farm household level in Phu Tho province through contract farming will be given.

Internal factors affecting agricultural contracts for tea production and marketing include factors associated with farmers and companies as mentioned in figure 4.2. The external factors as mentioned in the figure 4.3, comprise market of black tea, macro policies, roles of local authorities, and material competition of private processing facilities.

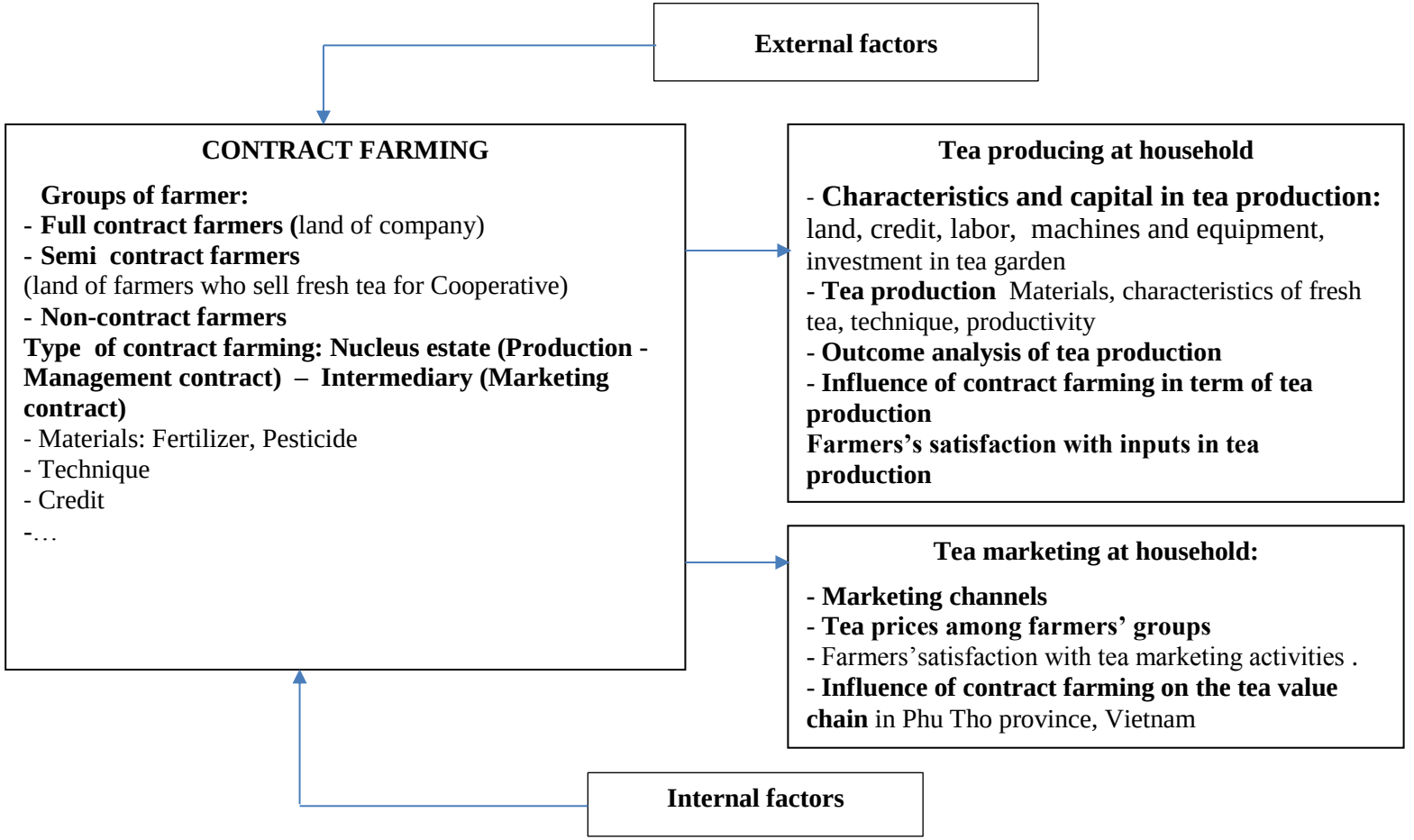

Figure 4.1. Analytical framework of the study

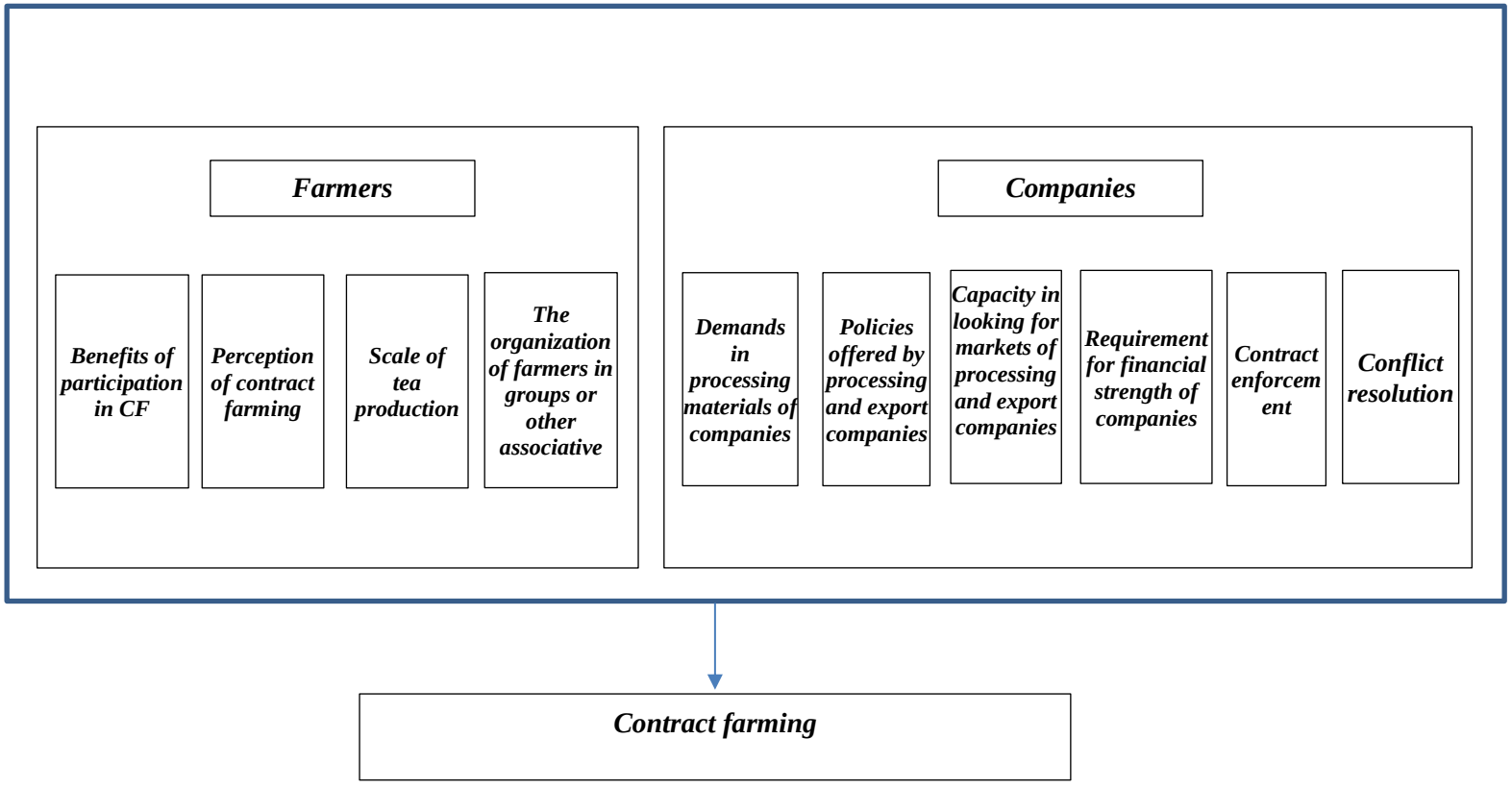

Figure 4.2. Internal factors affecting tea contract farming

The internal factors as mentioned in figure 4.2 consist of farmer-related factors and company-related factors. The farmers-related factors include benefits of contract farmers in contract farming, perception of farmers about contract farming, production scale, the role of organizations or groups of farmers in production. Firstly, benefits acquired were important attraction of farmers to participate in tea contract farming. Secondly, farmers' perceptions of agricultural contracts is factor affecting their participation in contract farming, such as the limited education level and knowledge of some farmers are generally associated with the potential risks arising for the companies. Thirdly, as regard to scale production, farmers who have larger tea area are more suitable to join in contract farming. Fourthly, regarding the roles of farmers' group or organization, it is quite apparent that contract farming model will be more successful thanks to the connection with large and powerful farmers' organizations such as cooperatives.

Company-related factors include demand for raw materials, policies offered by the processing and export companies, capacity in looking for markets of the processing and export companies, requirement for financial strength of the enterprises, contract enforcement, and conflict resolution. Firstly, companies who need raw materials (fresh tea) for processing and export usually want to sign contract with farmers. Secondly, policies in technical support and pricing introduced by processing and exporting companies are important factors to promote the linkage between the companies and contract farmers. Thirdly, market availability is an important element that directly affects contract farming. Fourthly, the financial strength of the business plays an important role in their potential to attract farmers to engage in contract farming. Fifthly, as regard to contract enforcement, if the enterprise offers reasonable contract terms, the contract will be valid and effective. Finally, if companies have the ability to resolve conflicts and disputes in the contract, contract farmers will be not usually breach the contract.

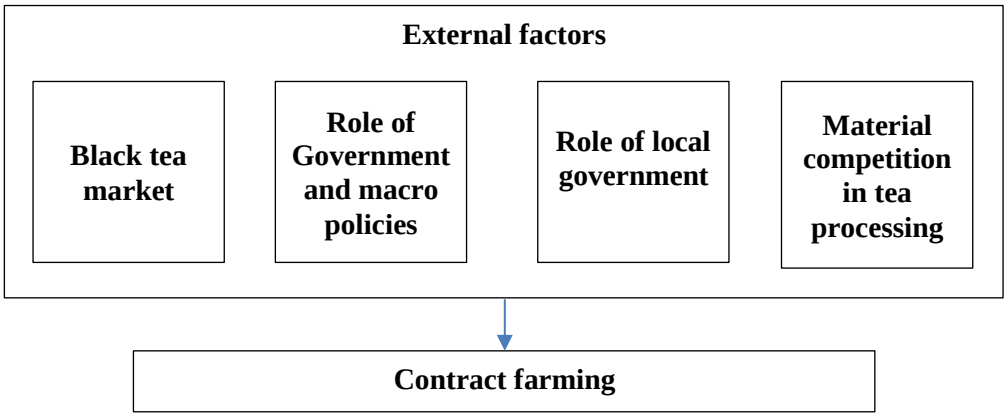

Figure 4.3. External factors affecting tea contract farming

The external factors as mentioned in the Figure 4.3, comprise market of black tea, macro policies, roles of local authorities, material competition of private processing facilities. Firstly, black tea market can be broadly classified into strict markets (such as USA, and EU, etc.) and easy markets (such as Middle East, and Asia, etc.). Popularily, strict markets should encourage companies invest in material zone in order to have higher fresh tea quality, thus process higher black tea quality. Secondly, contract enforcement and macroeconomic policies that may affect agricultural contracts, promoting or preventing tea contract farming in Phu Tho. Thirdly, local authorities (at village and commune levels) play an important role in promoting the linkages between farmers and processing companies. Finally, the current competition in material purchasing of private processing facilities is extremely intense. The large number of tea processing facilities with a capacity that exceeds local tea production leads to intense competition in purchasing or sale of tea produce, consequently resulting in an easy breach of the contract.

Analysis of factors that affect tea contract farming is needed to promote contract farming as well as encourage farmers and companies to participate in contract farming.

4.2 Selection of the study sites

Phu Tho province is chosen as the study site for this study because it is located in the Northern and mountainous area that came across many difficulties in agricultural production but has traditionally been exporting black tea and is one of the top five tea producing provinces in terms of total areas and one of the top four biggest tea producers in terms of volume in Vietnam (Figure 4.4)

Phu Tho has a total natural area of 3,533.4 square kilometers, including 13 district-level administrative units (1 city, 1 town and 11 districts) with 277 communes, wards and townships. It lies between 20055' to 21043' North latitude and 104048' to 105027' East longitude. Its center is Viet Tri city, which is 82 km away from Ha Noi

capital. It shares the border with Vinh Phuc province to the Northeast, Hoa Binh province to the South, Son La province to the West, and Tuyen Quang and Yen Bai provinces to the North. Phu Tho is located in the area where the Red River delta meets the Northern midland and mountainous area, in the restricted area called Ha Noi – Hai Phong – Quang Ninh economic triangle. It has a favourable traffic network with various advantages with railway, roads and river way connecting to Ha Noi capital, Noi Bai International Airport and also to Yunnan province of China. It can be evaluated as one of the provinces having the most favorable conditions for facilitating goods circulation, tea development in the province and exchanged with adjacent provinces as well as tea export to other countries in the world.

Phu Tho is characterized by the tropical monsoon climate, separating into four distinct seasons of spring, summer, autumn and winter. The winter, which lasts from November to February of the following year with the cold and dry weather, is not ideal for the growth and development of tea. The annual average temperature in the province is 23.9^0 C. The highest temperature is recorded in June and July, while the lowest temperature is recorded in January and December. The total average number of sunshine hours is 1,316.4 hours annually. The average rainfall is 1,436.7 mm annually with uneven distribution, mainly from May to August. The province's annual humidity is 85%. The given tropical monsoon significantly influences tea seasons, manual plantation, husbandry practices and processing. The sustainable period for tea growth and development ranges from the first of March to the end of April, the tea harvest season is in July and August. Due to uneven distribution of temperature and rainfall, areas of tea hills are often washed out by heavy rains. In contrast, little rain causes draught for winter-spring crops, which enhances the lateralization of tea hill soil.

Phu Tho takes a great pride to be the cradle of Vietnamese tea. The tea industry of Phu Tho experienced a long history for hundreds of years, the first tea farm covering an area of 60 ha, which was established in 1890, and the first tea research center established in 1918 are both located in Phu Tho. Together with the ups and downs of the national tea industry, the tea industry of Phu Tho province has overcome various difficulties and challenges to join a strong development with significant increases in terms of both quantity and quality. Furthermore, it occupied a great position in the domestic and international markets (as mentioned in section 2.3).

Since 2001, the tea development program has always been identified by Phu Tho province as its core agricultural program had drawn guidelines and incentives for investment to attract more resources and diversify participants in tea planting and processing. Accordingly, the tea industry of Phu Tho province showed a strong development: strong increase in area, yield and output. The area of Phu Tho province is 353,330 ha, of which agricultural land is 282,178 ha, accounting for 79.86 %; of which, 98,370 ha (27.84%) is the agricultural cultivation land area and 178,723 ha (50.58%) is forestry land area (PTSO, 2013).

In the period of 2006-2010, Phu Tho gained many achievements in economic development. The annual growth rate of GDP was approximately 10.7% during this period. There was a significant transition in the economic structure has transitioned significantly towards the industry, trade and services sectors. In 2010, the average

GDP per capita reached 11.8 million VND (equivalent to 636 USD). In 2011, the shares of the industry and construction sector, the services sector, and the agriculture, forestry and aquaculture sector in the provincial GDP were 40.24%, 33.02%, and 26.74%, respectively (Phu Tho DARD, 2011). In the end of 2015, the total tea area was risen up to 16,422 ha. Hence, the output has reached 149,653.8 tonnes of tea leaves, about 36 thousand tonnes of processed tea (Phu Tho DARD, 2015).

The main tea producing regions are nine districts, namely Doan Hung, Thanh Son, Tan Son, Thanh Ba, Ha Hoa, Yen Lap, Cam Khe, Thanh Thuy, and Phu Ninh.

Population and labors

The population of Phu Tho province in 2010 was 1,322,652 people, with 23 ethnic groups, of which the Kinh people occupied the highest proportion. The average population density was 374.4 people/km^2 with an uneven distribution (240,396 people in urban areas, accounting for 18.2% of the the total population; and 1,082,256 people in rural areas, occupying 81.8%). The natural growth rate of population was 1.23% per annum.

The total number of laborers who are in the working age was 700,000 people, accounting for 52.9% of its population, in which the number of laborers in agriculture, forestry and aquaculture was 448,800 people, accounting for 65% of the total number of laborers of the province. The labor force of the province was still quite abundant, but its quality is rather low. The number of trained laborers accounts for only about 40% of the total workforce, including 26% with vocational training.

This study only focuses on studying black tea which occupies 80% of Phu Tho tea export. Black tea has continued to be one of the highest valued commodities which brings high income for tea producers in Phu Tho. In other words, this study does not focus on studying the production and marketing of green tea in Phu Tho province.

Since 2000, developing tea production has been chosen as the key agricultural economic program of Phu Tho province. More and more farmers shifted from cereal cultivation to tea cultivation. Tea production has brought about more income, created jobs for thousands of farmers in the province, helping them to escape from poverty and become better-off (Phu Tho DARD, 2014). In Phu Tho, the two largest tea production districts, Thanh Son and Doan Hung, were chosen for this study.

Dich Qua commune in Thanh Son district and Minh Tien commune in Doan Hung district are the two communes chosen for this study. They have the following satisfied criteria: (1) Tea is the main crop in the production system of large scale and concentrated areas, which plays an important role in the socio-economic development of the province; moreover, (2) there are numerous tea marketing channels in this area; (3) This study conducted the sample in the communes that have both contract farmers and non-contract farmers in order to compare the two groups in similar conditions in terms of regions, economics, and society, etc; (4) Only Minh Tien commune in Doan Hung district has applied a semi contract farming model in Phu Tho province, which specializes in producing tea. There was only a group signing contract in a fairly stable manner with Phu Ben Tea Company, which was Minh Tien Cooperative in Minh Tien commune, Doan Hung district.

In Thanh Son district, Dich Qua is the third largest tea producing commune, with about 335 ha. The commune is located within the major material area of Phu Da Company and is closed to the head office of Phu Da Company. Therefore, the tea cultivating area of the commune is strictly controlled by the company. That explains why it is more convenient for us to collect reliable information from this commune.

Doan Hung district is the largest tea growing area in Phu Tho province with 3074 ha, while Thanh Son is the third largest tea growing area in the province with 2369 ha.

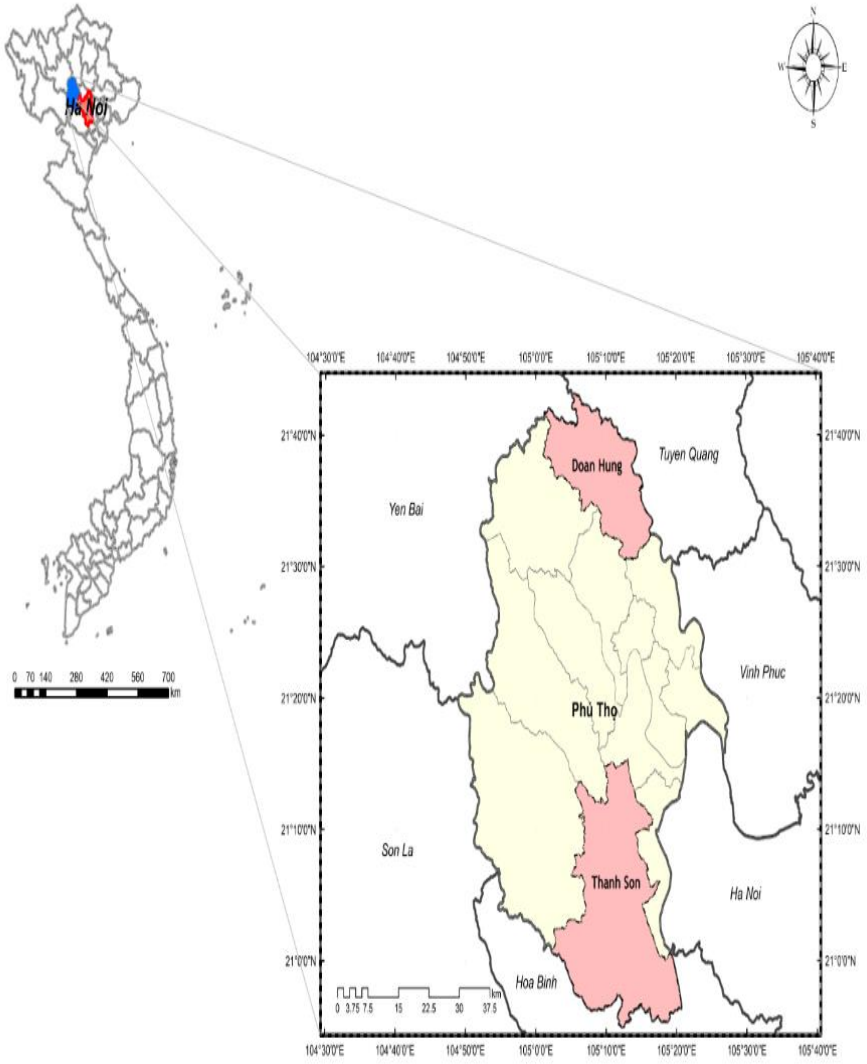

Figure 4.4. Study sites

4.3 Data collection

4.3.1 Primary data

Data collection at farm level

Basing on the secondary data and information provided by experts, provincial officials and interviewing key contact persons, the study samples were selected from 5 - 10% of the tea-growing households in the study area due to the fairly uniform characteristics of tea cultivation practices, tea-growing experiences, professional qualification, production conditions of farmers as well as land and climate in the survey area. Particularly, for Semi CFs, there is only one cooperative which has signed a fresh tea sales contract with the black tea processing company (Phu Ben Company), which is Minh Tien cooperative in Minh Tien commune, Doan Hung district, all 18 members of the cooperative were therefore included in the survey. The selected households represent each studied group with adequate characteristics on the production conditions, including production scale, tea varieties, and type of contract, thereby ensuring representativeness and information sufficiency.

(According to Salvatore and Reagle (2002), a random sample size (n) is satisfied if it is at least equal to 5% of the population size (N) and the number of observations is at least equal to 30 ($n \geq 30$)).

The primary data came from a survey of 98 tea production farms, which represent for the whole region based on the semi-structure, standard questionnaires and group discussion method. The survey sample is shown in Table 4.1.

Table 4.1. Sample of the surveys

Communes	***Full contract farmers***		**Semi contract farmers**		**Non-contract farmers**		***Products sold to company***
	n	*N*	*n*	*N*	*n*	*N*	
Dich Qua commune, Thanh Son	*20*	*200*					*Phu Da - join stock company*
					20	*380*	*2 processors*
Minh Tien commune, Doan Hung	*20*	*50*					*Phu Ben - foreign company*
			18	*18*			*Phu Ben - foreign company*
					20	*210*	*2 processors*
Total	*40*	*250*	*18*	*18*	*40*	*590*	*6 processors*

40 full contract farmers (as the nucleus estate model definded by Charles Eaton (2001) or production – management contract as classified by Bijman (2008)), 18 semi contract farmers as the intermediary model (Charles Eaton, 2001) or marketing contract (Bijman, 2008)) and 40 non-contract farmers were chosen for data selection

Full contract farmers: they have been allocating land for up to 30 years on the condition that they produce tea leaf based on company dictates.

Semi contract farmers: they are members of Minh Tien Cooperative who have their own land but sell a portion or all of their output to Phu Ben company through Minh Tien Cooperative (in Minh Tien commune, Doan Hung strict).

Non-contract farmers: they do not sign contract with the processing company. They sell tea leaf directly to the open market, either to collectors or processors.

Household survey framework

Two main surveys were conducted in the 2014 and 2015 to collect information on characteristics of tea farmers, tea production in terms of area, yield, price, production cost, tea marketing, and etc.

In 2014

(i) Firstly, from 21st March to 27th March 2014, we found out contract farming and black tea value chain in Phu Tho province through conducting a semi-structured interview to some of the farmers from 3 groups: full contract farmers – semi contract farmers and non-contract farmers and some collectors in Phu Tho province.

(ii) Secondly, we surveyed the price of fresh tea in Phu Tho from 25th May to 30th June 2014.

(iii) Thirdly, from 7th to 11th August in 2014 in Phu Tho, we carried out the first structured interview questionnaires. A survey including questionnaires was undertaken with 98 farmers, including 58 contract farmers (full contract farmers and semi contract farmers) and 40 non-contract farmers.

In 2015

(i) Firstly, we resurveyed the price of fresh tea in Phu Tho during June 2015.

(ii) Secondly, from 15th July to 20th July, 2015 in Phu Tho, we repeatedly carried out the structured interview questionnaires.

In 2016

(i) Firstly, group discussions with farmer groups were carried out in May to find out the advantages and disadvantages of them in tea production and marketing. Besides, we conducted a discussion with a group of collectors to find out advantages and difficulties in their tea business. Moreover, I carried out an interview with directors of some tea companies about how to promote tea production and marketing through contract farming.

(ii) Secondly, we resurveyed the price of fresh tea in Phu Tho to compare tea price between 3 farmer groups during June in 3 years from 2014 – 2016.

For the information on selling price: we resurveyed the price of fresh tea in Phu Tho to compare tea prices between the three farmer groups during June in three years from 2014 to 2016. Because not all of the households harvested tea in June and due to the sensity questions about selling price that farmers were likely infavor to give information, the study was therefore chosen 30 Full farmers, 15 Semi CFs and 30 Non CFs to survey tea price in June instead of all sample of each farmer group.

Group discussion method was adopted in Thanh Son and Doan Hung districts, Phu Tho province. The group discussion was employed to identify general characteristics

of tea farmer groups, advantages and disadvantages to tea production and marketing of tea farmer groups (Table 4.2).

Before the household survey, 18-20 farmers of each group (Full CFs, Semi CFs, and Non-CFs living Dich Qua and Minh Tien communes) were invited to discuss and identify main characteristics, advantages and disadvantages to tea production and marketing. The internal and external reasons leading to main constraints were also explained. This was useful to design the household survey questionnaire and to highlight the influences of contract farming on tea production and marketing.

Table 4.2. Sampling in group discussion in Phu Tho province

	Full CFs (heads)	**Semi CFs (heads)**	**Non CFs (heads)**
Dich Qua commune	10		10
Minh Tien commune	10	18	10
Total	**20**	**18**	**20**

In-depth interviews were conducted on the relevant topics in all phases of the study. This method was employed to understand more deeply: (i) tea production and marketing in Phu Tho; (ii) advantages and disadvantages of contract farming; (iii) factors affecting contract farming in Phu Tho. The in-depth interviews with key informants included the district officials, village and commune leaders, leader of the cooperative, and leaders of enterprises located in the research districts. Interviewees were selected through a representative sampling of relevant topics. Some of the informants were interviewed several times to round out the information. A content checklist was prepared for each interview. All interviews were conducted by myself.

Data collection for companies with Full CF

Among the five companies entering into contract with Full CFs in Phu Tho province, Phu Da and Phu Ben have the largest tea areas of 1483 and 2200 ha, respectively; whereas the other companies have a small tea area of approximately 570 ha in total, including Yen Son tea company (in Thanh Son district) with 232 ha, Ngoc Dong tea company (in Yen Lap district) with 170 ha and Cam Khe tea company (in Cam Khe district) with 168 ha. In addition, the business operation of these companies is not effective and stable in comparison to Phu Da and Phu Ben companies. For these reasons, Phu Da and Phu Ben companies were chosen for the study of Full CF model. In total, the Full CF model in Phu Tho has a total tea area of 4229 ha, accounting for 27.4% of the total tea area in Phu Tho. Thanks to Full CF model, 13775 tonnes of dried tea was produced, making up 25% of the total dried tea volume in Phu Tho. This shows that the Full CF model has played an important role in the tea industry of Phu Tho province.

Semi-structured questionnaires were carried out in 2014 in some big companies to collect the information about the resources of companies such as labors, capital, assets, production equipment, the result of processing and business of the Phu Da Company and Phu Ben Company in Thanh Son and Doan Hung district, Phu Tho province. Contracts were signed between these companies and farmers in terms of tea production and tea processing. Besides, the questionnaires clarified the linkages in production, processing of tea leaf by interviewing the company managers.

Data collection for company with semi CF

There was only a group signing contract in a fairly stable manner with Phu Ben Tea Company, which was Minh Tien Cooperative in Minh Tien commune, Doan Hung district.

Data collection for non contract companies

Four companies that do not sign contracts with farmers were chosen to analyze black tea value chain, value added of processor actor in the third channel (Non CFs – collectors – processors). Moreover, in-depth interview method was used to interview managers of these companies to classify and evaluate different factors affecting tea contract farming in Phu Tho.

Data collection for collectors

Six collectors were chosen in Minh Tien and Dich Qua communes in order to classify collector actor in the black tea value chain and to calculate value added for collectors.

4.3.2 Secondary data

The secondary data were collected from various sources, including: Phu Tho Statistics Office (PTSO); annual provincial reports of agricultural production; related studies, other scientific materials and the websites of related prestigious organizations.

4.4 Data analysis

4.4.1. Classification of surveyed households

98 tea-growing households were divided into three groups based on stratified sampling method, as follows:

(i) Full contract farmers (40 farmers) are tea farmers who received tea land from companies for up to 30 years and they produce fresh tea under strict requirement of companies. This is a nucleus estate model (Production- Management contract).

(ii) Semi contract farmers (18 farmers) are members of Minh Tien Cooperative who have their own land and sell fresh tea to Phu Ben Company through Minh Tien Cooperative. Contract is signed between Minh Tien Cooperative and Phu Ben Company. This is an intermediary model (Marketing contract) and in the study sites, there is only this group signing contract in a fairly stable manner with Phu Ben Company.

(iii) Non-contract farmers (40 farmers) have no cooperation with tea processing company and sell fresh tea on the open market through collectors.

4.4.2. Data analysis methods

4.4.2.1 Quatitatitive method

The descriptive statistics was used to analyze the data of the surveyed households. SPSS was used for quantitative analysis with basic descriptive techniques in order to have precise description with the empirical data.

In this study, descriptive statistics was employed, in which the Post Hoc test, analysis of variance (ANOVA), Fisher (F) test were used. The means, percentages and standard deviations of GO, IC, VA, Yield, selling fresh tea price, and yield in 2013 and 2014 for the three groups were calculated as indicators reflecting cost and return analysis of tea production, which are mentioned in section 4.4.1.

The Post Hoc test evaluates whether the means of two groups are statistically different from each other. In addition, analysis of variance (ANOVA) is a collection of statistical models used to evaluate the statistical significance of the differences between group means and their associated procedures (such as "variation" among and between groups). The Post Hoc test, used in ANOVA, provides a statistical test of whether or not the means of several groups are equal, and therefore it generalizes the post hoc test to more than two groups. After attaining a significant F test from ANOVA, it should be concluded which means contributed to the effect and which groups are particularly different.

- Cost and return analysis

In this study, cost and return analysis is applied to estimate the cost and income from tea production. A number of indicators are used for the cost and return analysis (Figure 4.5) as follow.

In general, value added (VA) is the worth of a good or service or the difference between the sale price and the production cotst of such a good or service at each stage of its production or distribution. It measures the value created in the economy (GTZ, 2007). In economics, it is calculated as the difference between cost of materials and labor to produce a product, and the sale price of a product. In other words, value added refers to the increasing value of product in progressing stages of production (Swedberg, Richard 1990).

Gross output (GO) is the total value of production outputs.

Intermediate cost (IC) includes purchasing variable inputs (materials and services).

Return to family labor is the differences between value added and cost of hired labor, interest payment, taxes, depreciation.

The value added, gross output and return to family labor are calculated by the following equations:

Value addition (VA) = gross output (GO) - intermediate cost (IC)

GO = P * Q

P is the market price;

Q is the product quantity;

Return to family labor = value addition - (hired labor cost + interest payment + depreciation)

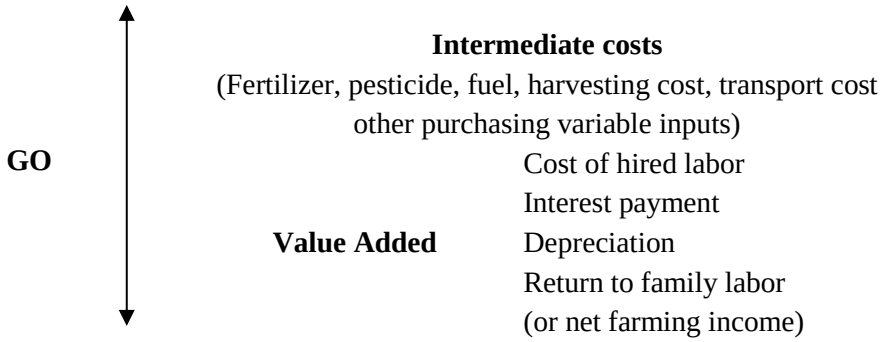

Figure 4.5. Cost and return analysis
Source: Derived from Lebailly et al. (2000); Vu and Nguyen. (2008)

- Cost – benefit analysis

Cost – benefit analysis in the value chain was used in order to calculate some indicators, including: GO, VA and IC. The detailed functions are illustrated in Figure 4.5.

It means that value added is the new wealth created by different actors as a whole in the value chain. It also represents the distribution of income among the three main actors in the black tea value chain: farmers, collectors, and processing companies.

Cost – benefit analysis in the value chain was employed to analyze the cost and benefits of actors involved in the black tea value chain in Phu Tho, as follows:

Table 4.3. Analysis of cost and benefit of the farmers in the black tea value chain

		Farmers
1	*GO*	
2	*IC = 2.1 + 2.2 + 2.3 + 2.4 + 2.5*	
2.1		*Fertilizer*
2.2		*Pesticide*
2.3		*Fuel and other*
2.4		*Transportation*
2.5		*Harvesting*
3	*VA = (1) – (2)*	

The detailed functions to calculate cost and benefit of farmer actor in the black tea value chain are illustrated in Table 4.3.

Table 4.4. Analysis of cost and benefit of collectors in the black tea value chain

		Collectors
1	*GO*	
2	*IC = 2.1 + 2.2 + 2.3*	
2.1		*Fresh tea*
2.2		*Fuel and other*
2.3		*Transportation*
3	*VA = (1) – (2)*	

The detail functions to calculate cots and benefit of collector actor are shown in

Table 4.5. Analysis of cost and benefit of processors in the black tea value chain

		Processing companies
1	*GO*	
2	*IC = 2.1 + 2.2 + 2.3 + 2.4 + 2.5*	
2.1		*Fresh tea*
2.2		*Electricity*
2.3		*Coal*
2.4		*Packaging*
2.5		*Transportation*
3	*VA= (1) – (2)*	

The detail functions to calculate cotst and benefit of processors actor are shown in Table 4.5.

According to the estimates of the tea companies, approximately 4.3 to 4.4 kg of fresh tea was needed to obtain 1 kg of black tea. For farmers, in order to calculate the ratio of VA per ton of black tea, VA/kg of fresh tea was converted to VA/ton black tea, provided that 4.3 – 4.4 kg of fresh tea is equal to 1 kg of black tea. For collectors, VA/ton of fresh tea was converted to VA/ton of black tea, provided that 4.3 – 4.4 kg of fresh tea is equal to 1 kg black tea. For companies, they calculate these figures directly for one ton of black tea.

- Economic efficiency comparison

Full CF is nucleus estate model (Charles Eaton, 2001) or production – management contract (Bijman, 2008). Semi CF is intermediary model (Charles Eaton, 2001) or marketing contract (Bijman, 2008).

Cost return and cost benefit analysis methods were used to analyse the economic efficiency of each group and comparing the different results among them following the ANOVA test.

Indicators to compare between tea production and economic efficiency between farmer groups are shown in Table 4.6 below.

Table 4.6. Indicators for the comparison between tea production outcome and economic efficiency

	Indicators
1	Fresh tea selling price
2	Yield of fresh tea
3	GO
4	IC
5	VA = GO – IC
6	TC = IC + Hired labor cost + Interest payment + Depreciation
7	Return to family labor = GO – TC

There have been various studies which make an attempt to compare economic efficiency between farmer groups.

Tran et al. (2011) suggested that some indicators should be used when comparing economic efficiency among farmer groups, including GO, VA, IC, and NPr (Table 4.7).

Table 4.7. Indicators for outcome and economic efficiency of farmers

Y: the value of output	*Intermediate costs (Fertilizers, pesticides, fuel, harvesting cost, transport cost and other purchasing variable inputs)*	
	Value Added	*Wages and salaries*
		Interest charges
		Taxes
		Depreciation
		Net profit

Source: Tran et al. (2011)

GO, IC, VA, and NPr were used for the comparison between farmer groups producing tender and mature coconuts (Tran, 2011). Similarly, Le (2014) used GO, IC, VA, Return to family labor under cost and return analysis to compared the income between animal-based group and Non animal-based group.

Le (2011) used GO, IC, VA, GP, and MI to compare income between various farmers groups in tea contract farming in Son La province, of which MI = GO – IC – Depreciation, equaling to Return to family labor. In addition, Le (2014) also used GO, IC, VA, and MI (Mixed income) for the comparison of incomes between Cana and banana producers. There are some other master dissertations in tea contract farming in Vietnam (Nguyen, 2009; Hoang, 2010) which also used MI to compare economic efficiency between farmer groups.

Based on the above mentioned literature, it can be concluded that MI or Return to family labor is an important and efficient indicator in comparing economic efficiency. These indicators appear to be not only suitable for tea production situation in Vietnam but aso appropriate with the information collected during this study.

4.4.2.1 Qualitatitive method

- Ranking

Ranking is one of the commonly-used methods for group discussion. Ranking involves getting people to say what they think is the most useful and most important benefit in contract farming for each tea farmer groups. Besides, the study employed this method to rank the disadvantages that Full CFs and Semi CFs face when joining in contract farming. When conducting group discussion, farmers were also required to rank advantages and disadvantages in tea production and marketing.

The five – point Likert

The five-point LIKERT scale was also used to assess the satisfaction of the farmers with each criteria, ranging from (1) Very dissatisfied, (2) Dissatisfied, (3) Neutral, (4) Satisfied and (5) Very satisfied.

- Analyzing factors affecting tea contract farming method

Based on the factors affecting the CF as mentioned in the literature review as well as the current CF practice in Phu Tho's tea industry, we build an analytical framework, including both internal and external factors affecting tea CF. Based on this framework, we conducted group discussions or in-depth interviews with managers, team leaders and farmers to clarify how these factors affect Tea CF in Phu Tho.

5

Tea contract farming in Phu Tho

5.1 Contract farming scheme in Phu Tho

5.1.1 History of tea contract farming in Phu Tho province

5.1.1.1 Full contract (Nucleus estate model or production – management)

Full contract farming (CF) is a nucleus estate model (Charles Eaton, 2001) or production – management contract (Bijman, 2008), while Semi contract farming (Semi CF) is an intermediary model (Charles Eaton, 2001) or marketing contract (Bijman, 2008).

The Full CF was dated back to 1995. Before 1995, Full CFs had been employees of the state-owned enterprises (SOEs). At that time, they received a monthly salary and social benefits such as health insurance, retirement and holidays. They might be locals in areas where state-owned enterprises were based or emigrated from other locations. All the tea land belonged to the state, so the company acted as a state representative for tea cultivation. After the government released Decree No. 01 in 1995, the SOE allotted land to their workers who became full contract farmers. Under this framework, Full CFs had to sign a contract with the company in which they were given the right to use the company's land for a 50-year period, and in return, they were obliged to sell their tea leaves to the company. In 2005, Decree No.01 was superseded by the Government's Decree No. 135 stipulating that Full CFs were granted a land use right for a period of 30 years (instead of 50-years).

The purpose of Decree No.135, or Decree No.01 is to encourage farmers to produce tea more effectively. Once each household is autonomous in taking care of their tea plantations, they will be motivated to increase productivity and quality of tea trees in a way that is more beneficial to them. In addition, the enterprises will use the land more effectively, take advantage of resources of households, stable material areas and quality, and ensure the processing of quality tea products and export improvement. For the government, this decree helps to ensure social security in such area, and to retain the country's land. Beneficiaries of this policy are the farmers, enterprises and the state.

Conditions to become Full CFs

Such farmers must have land allotted by the company. Normally, only those who previously had been allocated tea land of the company. Later, when they get old or sick, they cede the land to their children. It is very rare for the allocated land holders to give up it to the others who are not their siblings

Allotment time is subjected to the agreement between Full CFs and the company, however with the maximum of 30 years. When the allotment is due without violating the contract and the Full CFs still have demand for using land, then the company can continue signing contractual assignment with these farmers (the Government, 2005).

If the distribution expires without a breach of contract, and the farmer still requests the land use, a new contract may be signed by the company. According to Decree No.135/2005/ND-CP regarding contractual assignment of agricultural land, production forest land and land with water surface for aquaculture in state-

run agricultural farms and forestry farms, Full CFs have to sign the contract with the company, by which they would have the right to use the company's land for 30 years and, in return, they would have the responsibility to sell their products to the company.

The land is allotted to Full CFs on the condition that they produce tea and sell all the products to the company. In addition to that, many households also grow rice or raise livestock; however most of them still mainly focus on tea production.

There are some regulations included in the contract as follows:

- Land allotment must be conducted based on the contract. If there are any conflicts, they should be solved based on civil laws.

- The company requests that, on allocated land, Full CFs must only produce tea and are not allowed to produce any other crops; therefore, Full CFs do not have the right to choose which crops to produce like other farmers.

- Based on the economic and technical norms and status-quo of tea gardens, the contract shall be implemented.

Since 1998, both Phu Da Tea Company and Phu Ben Tea Company have changed their management style. If farmers need land to cultivate tea trees, they only have to complete the companies' application forms for land allotment.

After the submission of farmers's application procedure, the company began to carry out a survey on the situation of the household applicant, typically for the investment and tea garden caring conditions. If the applicants satisfy the requirements of the company, they can sign the contract and receive the land for tea plantation.

The distribution of land allotted by the companies to farmers is based on the findings of the household economy, the situation of farmers and their correspondence.

After receiving the land use rights, farmers can still return the land to the company without any complication if their production is not effective.

Although the terms in the contract specify that if there are any problems arising between the two parties, they can negotiate and discuss to reach an agreement. In fact, there is hardly any discussion between the two parties throughout the duration of the contract. It is common the case that the companies are the ones who impose the terms and do not give Full CFs a powerful voice. In other words, farmers do not have the opportunity to express their ideas and opinions about the contract implementation.

Through the implementation of Decree No. 135/2005/ND-CP of the Central Government, the companies have been able to allot tea plantation lands to households who wanted to grow tea trees. In addition to that, the companies provide many incentives to farmers, especially once they have acquired the land use rights; farmers become employees of the company (they can be paid for social and health insurance). These support policies have encouraged farmers to create a stable and sustainable production environment that can stabilize the material area and generate a steady flow of tea into the company's tea production activities.

The companies organize production teams in order to continuously and effectively manage and supervise contract households. They provide farmers with fertilizers, plant protection products and technical training courses. The companies must collect all the fresh tea buds produced. This requirement is particularly specified in the contract between the company and the households.

If the volume collected by the household is lower than the volume stipulated in the agreement, the farmer must pay 300 VND per kg to the companies. Conversely, if the volume collected by the household exceeds the agreed volume, the household will be rewarded with 300 VND per kg for the volume exceeded.

For Phu Da Tea Company, although not specified in the contract, it is understood by the company that, when the delivery volume of the household has reached the agreed target, other parties (such as other companies, collectors, and manufacturers) and the household can freely sell the excess crop. This policy gives farmers the opportunity to earn more through the sale of quantities in excess at market prices (about 500 per kg, higher than the purchase price of the company).

In the case of the Phu Ben Tea Company, the rule applied is, however, less convenient. If the company finds out that the household sells the excess of production in the market, the household suffers a penalty even if they have reached the volume stipulated in the agreement.

The benefits that Full CFs obtain from Phu Da and Phu Ben companies (as specified in the contract) are as follows:

- The company provides quality fertilizers and pesticides with deferred payment;
- The company provides free training for Full CFs with useful knowledge and husbandry technique;
- Good soil fertility level;
- Stable output;
- Stable tea price;
- Social insurance (the company will pay part of insurance fees for only the Full CFs who want to have insurance).

5.1.1.2 Semi contract (Intermediary or marketing contract)

For the promotion of marketing-based agricultural products, the government has been institutionalizing contract farming to provide a legal framework for contracted, private actors. The Decision No.80/QD/TTg (hereafter "Decision 80"), issued in 2002 states that: "Contract farming is an agreement between a company and producers (cooperatives, households, estates/plantations and farmers' representative) for agricultural products (agricultural products, forestry products and aquacultural products) and salt products, before the production begins (at the beginning of a crop, a year or production process begins), in vertical integration from agricultural production to procession and marketing for sustainable production."

Currently, in Phu Tho, there are only a few groups of farmers signing farming contracts with tea companies. The manager of the Phu Ben Tea Company during an interview explained that in the past there had been more groups of farmers entering into contracts. Each group consisted of 10 - 30 members. The group leader signed a contract with the Phu Ben Tea Company under the supervision of his village. According to the contract, the company would supply fertilizers to the farmers and, in exchange, the farmers would have to sell all their fresh tea to the company. However, it was difficult for the group leader to handle this model, because members would sell fresh tea to other collectors if the price of the tea on the market was higher than that of the contract price. Therefore, the group often ended up breaking the contract with the company.

In the study sites, there is only one group participating in contract farming with Phu Ben Company which maintains their participation in contract farming in a relatively stable manner. This group belongs to a cooperative called the Minh Tien Cooperative in Minh Tien commune, Doan Hung district. Minh Tien Cooperative was founded in 2011, including 18 members with nearly 8 ha of tea land (the average area per member is about 0.4 ha). The cooperative signed contract with Phu Ben Company from 2012 to 2014. In 2012 and 2013, Minh Tien Cooperative signed a contract with Phu Ben Company to provide 500 tonnes of tea leaf per year. In 2014, Minh Tien Cooperative provided 400 of tonnes tea leaf per year. The cooperative collected fresh tea produce from its members and farmers in Minh Tien village to sell to Phu Ben Company.

Conditions to join in the contract farming with the cooperative are as follows:

- Want to become a cooperative member

- Each member is obligated to pay one million VND for the chartered capital upon becoming a cooperative member

- The cooperative encourages large-scale households but small-size households are also accepted. The average size of this group is not different from the Non CF group (the average farmer owns 0.4 ha of tea land).

However, the cooperative does not expand its membership anymore. When the cooperative reached the number of 18 members, they decided not to receive any more new members because at this scale cooperatives are the most effective. If the scale increases, the profits of the cooperative will not be sufficient to redeem a relatively reasonable profit for each member.

The benefits that Semi CFs obtains from the cooperative (as specified in the contract):

- The company provides quality fertilizers with deferred payment;
- The company provides free training for Semi CFs;
- Stable output ;
- Stable tea price.

5.1.2 Types of contract farming and outgrower scheme in the province of Phu Tho

Table 5.1. Types of contract farming in Phu Tho province

- STRUCTURE – *MODEL*	*Contractors*	*GENERAL CHARACTERISTICS*
Full CFs (Nucleus estate or production – management contract) (Size: 40 households)	*Phu Da Tea joint-venture company* *Phu Ben Tea 100% foreign invested company*	*- The company directly signs contracts with farmers and provides extensive technical supports, inputs and strict control of the production process to contracted farmers.* *- The company owns farm assets and facilities, while the contracted farmers only contribute labors and some inputs to the production process.* *- The company collects the produce and pays farmers for their labor contribution.* *- The farmers in this model are full contract farmers in Phu Tho province.*
Semi CFs (Intermediary or market contract) (Size: 18 households)	*Phu Ben Tea 100% foreign invested company*	*- The leader of the cooperative signs a written contract with Phu Ben Company.* *- Members in Minh Tien Cooperative sell tea leaves to the cooperative through the oral agreement (oral contract).* *- When the tea leaf price offered by the cooperative is lower than that of the spot market, members have the right to sell their tea leaves to other collectors to obtain a higher price.*

Full contract farming (Full CF) (the nucleus estate model) is similar to the centralized model in a way that a company directly signs contract with farmers and provides extensive technical supports, inputs and close control of the production processes to contracted farmers. However, in the nucleus estate model, company owns farm assets and facilities, while contracted farmers only contribute labors and some inputs to the production process. Company collects the products and pay farmers for their labor contribution. The farmers in this model are full contract farmers in Phu Tho province (Table 5.1 and Figure 5.1).

The contracts between companies and Full CFs do not contain any terms relating to the price that will be paid to the Full CFs by the company. The commitments are fixed and for the long term, whereas the tea leaf price changes regularly. However, the company has paid some attention to fitting the market price even though the price gap still exists. The exchange process between Full CFs and the company is not only based on market factors but also involves the land agreement and social insurance payments.

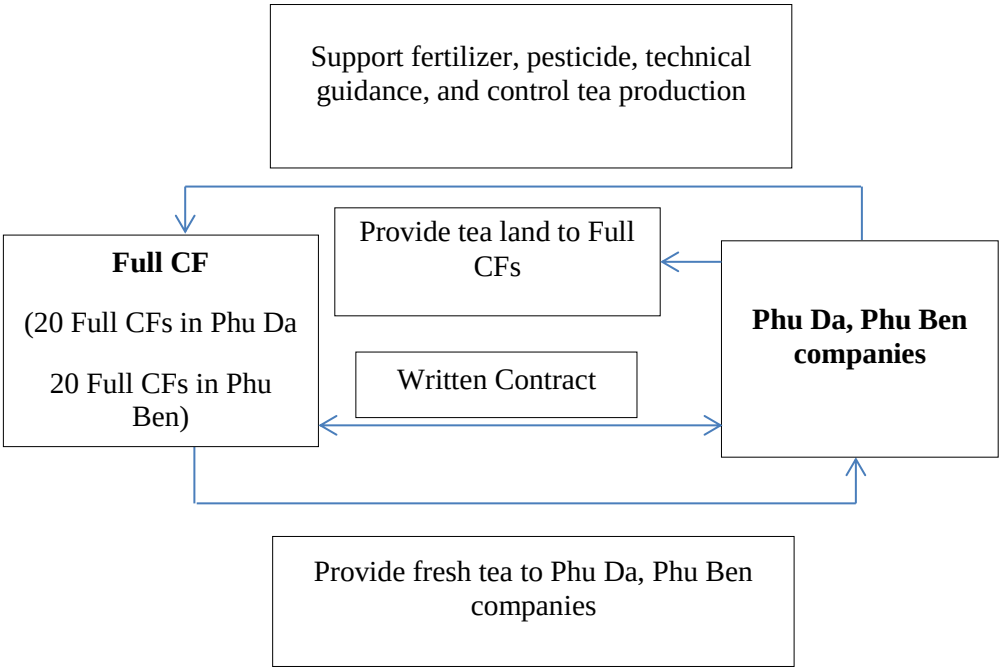

Figure 5.1. Full contract farming model

Semi contract farming (Semi CF) (Intermediary (tripartite)) model

The leader of the cooperative always guarantees to buy fresh tea at a reasonable price in order to compete with other collectors. Members of cooperative can sell fresh tea to other collectors when the fresh tea price of the cooperative is lower than that of the spot market. Similarly, the cooperative can sell fresh tea to other companies when Phu Ben Company offers a low fresh tea price. However, Phu Ben company still maintain a linkage with the cooperative for a long time to have a stable material zone, and to partly control the quality of tea input for their processing process. This is the foundation to develop potentially higher quality raw material areas for the company to promote its exports into strict overseas markets (Oanh et al., 2016) (Table 5.1 and Figure 5.2).

A Cooperative is specified as an economic and collective unit formed by individuals, households or, juridical persons (so-called cooperative members) with similar demand and expected benefit(s) from the arrangement. In a cooperative, members join their financial resources and efforts under the regulations of Cooperative Law that promote the union of cooperative members to: (i) effectively operate business and production activities; and (ii) improve living standards of farmers as a means of contributing to the socio-economic development of the country.

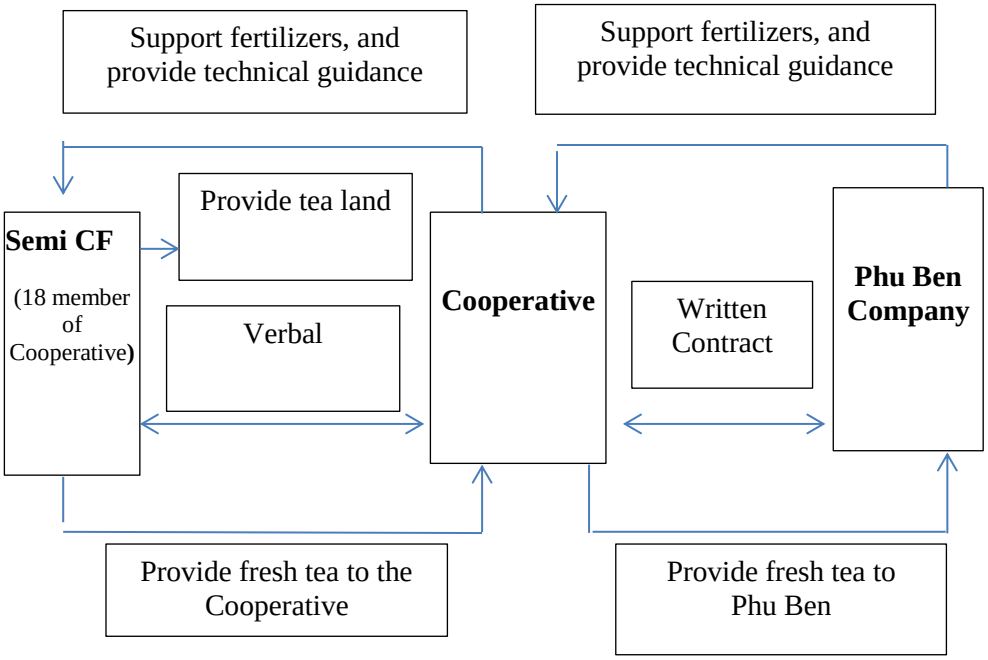

Figure 5.2. Semi contract farming model

Cooperatives shall organize and operate on the following principles:

1. Voluntariness: All individuals, households and legal persons who fully meet the conditions prescribed by this Law, agree with the Charter of the cooperative shall have the right to join the cooperative; Cooperative members have the right to leave cooperatives in accordance with the Charter of the cooperative;

2. Democracy, equality and publicity: Cooperative members have the right to participate in the management, inspection and supervision of cooperatives and have equal voting rights; Publicize the direction of production, business, finance, distribution and other matters as provided for in the Charter of the cooperative;

3. Self-control, self-responsibility and mutual benefit: Co-operative autonomy and self-responsibility for the results of production and business activities; Self-determination on income distribution.

After fulfilling the obligations to pay taxes and cover the losses of the cooperative, the profits shall be partially deducted for the funds of the cooperative, partially propertied to the contributions of cooperative members, and the residual shall be distributed to cooperative members according to the level of using the cooperative's services;

4. Cooperation and community development: Cooperative members must be aware of the spirit of collective building and cooperation with each other in the cooperative and in the social community; cooperation between domestic and foreign cooperatives in accordance with the law.

Source: National Assembly, Cooperative Law No.18/2003 dated November 26, 2003

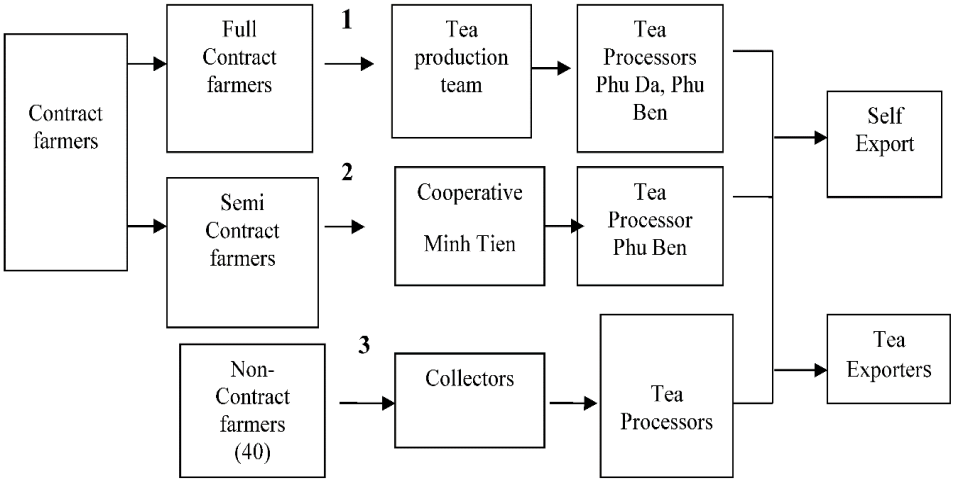

Figure 5.3. Tea channels in Phu Tho province

In channel 1 (Figure 5.3), Full CFs transport fresh tea to the collection site of the company at the tea production teams. Each team usually consists of one leader and one leader assistant. Each team is responsible for about 50-100 Full CFs. Each company has about 40 teams. The teams are in charge of providing fertilizers and pesticides for Full CF households and also act as the fresh tea collection site for households. During the harvest season, households transport fresh tea to the Teams where tea is weighed and classified into grade A, B, C, or D before being transported to the company processing plants.

In channel 2 (Figure 5.3), Semi CFs transport fresh tea to the cooperative except for households with large output (in this case, the cooperative will be in charge of the transportation of fresh tea from these households). The cooperative trucks will then transport fresh tea to the tea processing plant of Phu Ben Company at noon and in the evening.

In the channel 3 (Figure 5.3), Non CFs transport fresh tea to the collector's house. However, the collector will transport tea for the households with a large amount of tea leaves at their tea gardens without any transportation fee.

Detail specifications of Full CFs and Semi CFs are shown in Table 5.2 below.

Table 5.2. The specifications of Full CFs and Semi CFs

	Full CFs	***Semi CFs***
LEGAL FRAMEWORK		
	According to Decree No. 135/2005/ND-CP regarding contractual assignment of agricultural land, production forest land and land with water surface for aquaculture in state-run agricultural farms and forestry farms, Full CFs have to sign the contract with the company by which they would have a right to use company's land within 30 years and a responsibility to sell products to the company in return.	*For the promotion of marketing –based agricultural products, the governments have been institutionalizing contract farming to provide legal framework for private actors engaged in the contract. The Decision No.80/QD/TTg (hereafter "Decision 80")*
FORMULA	*Management and income specifications*	*Market specifications;*
FORMAT	*Formal agreements*	*Simple registrations*
SPECIFICATIONS		
Land ownership	*Company*	*Farmers*
Contract format	*Written*	*Written/Verbal agreements*
Contract duration;	*Less than 30 years*	*Long-term contracts that can be amended periodically*
Input supply		
Fertilizer and pesticides	*technical process obligation*	*As farmer requires*
Extension advice	*As company requires (free)*	*2-3 times a year for free*
Input payment	*The companies deduct input payment for Full CFs from their fresh tea payment throughout the production period, usually in May, August, November, and January.*	*Subtracted by company from fresh tea selling during throughout the production period usually in May, August, November and January*
Tea leaves price		
- Price arrangement	*Fixed price, once a year and can be adjusted on a seasonal basis.*	*Prices calculated based on the market prices, every harvest season*
- Average price	*3,900 VND/kg*	*4,000 VND/kg*
Sanction/ punishment of contract default	*Yes*	*No*
Contract enforcement	*Strong*	*Weak*
Participation in contract	*Having tea areas of company*	*Free*
Output	*100% sold to the company*	*Mostly sold to the cooperative*
Quality standards	*The company give the grade of fresh tea: A, B, C, or D and the criteria are strict*	*The company give the grades of fresh tea: A, B, C, or D but the criteria are not as strict as Full CFs*
Production quotas	*The company imposes fresh tea quality strictly*	*The company imposes fresh tea quantity for the cooperative but negotiation is possible*
Cultivation practices	*Strict*	*Not strict*

	Full CFs	***Semi CFs***
Crop delivery arrangements	*Farmers have to deliver by themself*	*The cooperative will deliver for large-scale farmers*
Payment procedures	*After harvesting by cash*	*Immediately by cash*
Social insurance arrangements	*Yes*	*No*

5.1.3 Characteristics and capital in tea production of contractees

5.1.3.1 Characteristics of tea farmer groups

Table 5.3. Characteristics of the surveyed tea farmer groups in Phu Tho province

Criteria	***Full CFs***	***Semi CFs***	***Non-contract farmers***
Income level of tea farmers	In general, the overall Full CFs' income is relatively good and similar (at least 50%).	*Income from tea cultivation of Semi CFs is less than that of Full CFs. Their tea income is a part of their total income, accounting for around 30%.*	*The income of Non CFs is lower than that of Full CFs. Their income from tea is also a part of their total income (about 30%).*
Areas of tea cultivation	*Average size of tea plantation is about 5,000-7,000 m^2 per household*	*The tea plantation size is not large and diverse, ranging from 1 sao (360 m^2) to 1 - 2 ha*	*The tea plantation size is not large and diverse, ranging from 1 sao (360 m^2) to 1 - 2 ha*
Ownership of tea – growing areas	*The tea-growing areas that farmers manage and exploit belong to the company. The contracting period follows Decree No. 135/2005/ND-CP. Full CFs's cost of land use is zero.*	*The tea areas belong to the farmers who grow and sell a portion or the whole production of fresh tea to the Minh Tien Cooperative.*	*The tea areas belong to the farmers who grow and sell tea on their own.*
Form of company supports	The company invests in fertilizers and pesticides, and trains farmers in modern farming techniques.	*The company invests in fertilizers and pesticides, and trains members of the cooperative in farming techniques.*	*Some farmers who were trained in farming techniques by the local agricultural promotion agency were provided with young tea trees.*
Social insurance policy	*They participate in the social insurance system (paying insurance fees), as do workers in the agricultural sector.*	*The do not have social insurance.*	*They do not have social insurance.*
Choosing	*They sell tea to the*	*They sell a portion*	*They freely sell tea*

Criteria	*Full CFs*	*Semi CFs*	*Non-contract farmers*
fresh tea's buyers	*company following certain regulations and levels given by the company.*	*or all of their tea production freely to the Minh Tien Cooperative.*	*to the spot market through the rules of free negotiations.*
Fresh tea quality standards	*The quality of the product is strictly managed, following general standards that are higher than that of other farmers.*	*The quality of fresh is not as good as that of Full CFs due to the undisciplined tea production process.*	*The quality of fresh tea products varies depending on the quality of the inputs and the tea production process.*
Price of fresh tea	*The price of fresh tea follows the regulations of the company and is usually lower than that of non-contract farmers (100–500 VND/kg).*	*The price of fresh tea is usually higher than that of Full CFs and lower than that of non-contract farmers.*	*The price of fresh tea is usually the highest among the three farmers' groups.*
Consumption market	*Stable consumption market.*	*Stable consumption market.*	*Unstable consumption market.*

Source: Group discussion, 2014

Characteristics of the surveyed tea farmer groups in Phu Tho province are illustrated in Table 5.3. Some Full CFs have their own tea gardens which do not belong to the company, however, these cases are quite rare. Tea production largely contributes to their income (at least 50%). In addition, they raise chicken, ducks and pigs on a very small scale for self-consumption. Most Full CFs must buy food to meet their daily needs. Furthermore, Full CFs also carry out non-agricultural activities (i.e., casual labor, trade, and construction).

The distribution of tea-planting land is fairly equal in our study site at Phu Ben Company. The availability of adult labor to engage in off-farm activities is a decisive factor in distinguishing higher-income households from the others.

In Phu Ben Company, we conducted our fieldwork in a location where company-owned land was equally distributed. Each Full CF household was allocated around 0.5-1 ha of tea-growing land. We were told that in some cases, Full CFs of Phu Ben Company were allocated 3-4 ha of tea-growing land.

There are some differences between Full CFs and other farmers that should be clarified in relation to land allotment. Firstly, Full CFs do not have a land use right certificate while independent tea farmers have it. The land use certificate for the entire land is only granted to the company by local authorities not for each land lot of the Full CFs. Thus, although Full CFs are entitled to land transfer but they can not used their allotted land to borrow money from the bank. Secondly, the company specifies that Full CFs are only allowed to grow tea on the land that the company is contracted to and no other crops can be grown, so Full CFs do not have the right to decide what crops to grow like other farmers. Therefore, they

might find the incentive to sell tea leaves in the spot market against the contract terms with the company in order to obtain higher income.

Table 5.4. Information on tea producing households by groups in Phu Tho province

Indicators	Unit	Contract farmer				Non-contract farmers (n = 40)		P values
		Full CFs (n = 40)		Semi CFs (n = 18)				
		Mean	S.D.	Mean	S.D.	Mean	S.D.	
Age of household heads (HHH)	years of age	**42.9**	9.7	**46.5**	10.4	**47.7**	10.3	**.096***
Schooling years of household heads	years of schooling	**10.0**	2.1	**9.2**	2.1	**8.2**	2.4	**.002****
Tea production years of household	number of years	**22.8**	8.8	**16.4**	7.0	**16.4**	7.7	**.001****
Household size	heads	**4.4**	1.0	**4.1**	0.9	**4.3**	1.1	0.57
Tea yield	tonnes/ha	**21.4**	3.9	**16.2**	3.7	**16.7**	3.1	**0.000****
Number of tea labor	heads	**2.3**	0.7	**2.1**	0.8	**2.2**	0.7	0.58

Note: ***, **, and * denote significance at 1%, 5% and 10%, respectively.

For describing main household characteristics, we used some indicators, including HHH age and tea production years, etc. In order to examine the difference, we used one-way Anova analysis. The results in Table 5.4 show that there were four statistical significant indicators of which tea production years and tea yield indicators had a high statistical significance level at 1%.

The average age of household head was the lowest, at 42.9 years for the Full CF group. The ages of Semi CFs and None CFs were similar, 46.9 years for Semi CFs and 47.7 years for Non CFs on average (the highest age between household groups). There was a quite similar and an insignificant difference in the average age of householders among the there groups, at 47 in working age. According to research results, the average age of the householders was 47, of which 25 was the youngest and 69 was the oldest. Most of householders-at-this-age have been stable in terms of facilities, living and production experience. The investigated householders have many years of experience in tea growing. Therefore, this is a significant advantage, contributing to promoting tea production and trading in each household.

It can be seen that the age of labors in tea production is within a specific range, from 25-69. That is because the activities involved in the plantation process (such as cutting or chopping) are heavy while pesticides application is harmful, workers, therefore, must possess good health as well as good physical strength. The survey results reveal that family labors account for about 80% of the total number of

people working in the tea industry, the remaining are hired. Children and elderly people, on the other hand, are not suitable for tea plantation activities.

The number of years of experience in tea cultivation of the Full contract farmers was the highest at about 22.8 years due to the fact that the big companies such as Phu Da and Phu Ben are the former state-owned farms. The Full CFs had been growing tea in these farms since 1990s. Because of their intensive experience, Full CF households are better at taking good care of tea and they are gaining experience over a long period of tea care. The Semi CF and Non-CF households began to develop recently since the Tea Development Program was identified as one of the six major agricultural programs that needed to be developed in 2001. Therefore, they had only 16 years of experience in tea growing.

The level of education of the households was generally low, most of them have just graduated from secondary school. It can be seen that the majority of tea growers do not have professional qualifications. Only two Non-CF householders have college and intermediate degrees, but they are communal officers. Most householders obtain planting techniques from their relatives, neighbors or by searching information on radio, or books, etc. Most of them are farmers, and a very small proportion of them are involved in non-agricultural activities.

For the households belong to Full CF group, the average number of school years was 10, which was significantly higher than household from semi and non CF (averagely 9 years). This is the group's advantage because of their higher education level, the households are able to study the model tea cultivation techniques as quickly as requested. This helps to maximize the yield and quality of the tea material.

The numbers of people per household was quite similar among these groups, around 4.1- 4.4 people. The population number of Full CFs group's households was 4.4 people per house on average and was just a little different from the number from semi CF group (with 4.1 people per household on average).

It can also be seen from Table 5.4 that the average number of tea labor per household was 2.2 people. This number helped facilitating tea cultivation and harvesting activities. In the harvest season, shifting from manual harvest to harvesting with machines required more farmers. Therefore, many households needed to be gathered and exchange jobs to gain the economics of scale. However, in the sprouting stage of tea trees, there was always a shortage of labor making it difficult for households to harvest fresh tea buds.

The gender differences in tea farmers were not significant. However, the number of male farmers was slightly higher than that of women. Male farmers accounted for 52% of total labor in each household. Typically, each household had two main labors. For households with only one labor, it is generally male since they must spray insecticides and cut tea with machines, which requires male power.

Table 5.5. Household agricultural land area in 2014

Indicators	Unit	Contract farmers		Non-contract farmers (n = 40)
		Full CFs (n = 40)	Semi CFs (n = 18)	
Tea land area/household	ha	0.64	0.43	0.45
Total agricultural land area	ha	0.85	0.78	0.76
Ratio of tea land area/Total agricultural land area		0.75	0.55	0.59

Most of land areas from household for tea plant, other than that the remained land areas are gardens for rice, vegetables, chickens, pig breeding or fish pond and cultivation trees such as acacia and wax tree, etc (Table 5.5). In Phu Tho, tea growers are typically experienced in tea cultivation and processing. Recently, and especially since the 2000 reforms, many households have diversified into new crops and other economic activities, but tea production has remained important.

5.1.3.2 Land area of tea farmer groups

Table 5.6. Distribution of tea land area by farmer groups in Phu Tho in 2014

Indicators	Contract farmers				Non-contract farmers (n = 40)		F test	P values
	Full CFs (n = 40)		Semi CFs (n = 18)					
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Tea land area	**0.64**[a]	0.3	**0.43** [ab]	0.3	**0.45** [b]	0.3	**4.722**	**.005*** **
Distribution of frequency (% of households-HH)								
	No.of HH	%	No.of HH	%	No.of HH	%		
>0.6 ha	23	58	5	28	12	30		
0.3 - 0.6 ha	17	42	6	33	13	33		
<0.3 ha	0		7	39	15	37		
Total	40	100	18	100	40	100		

Note: ***, **, and * denote significance at 1%, 5% and 10%, respectively, [ab] Means in the same row without common letter are different at P < 5% by Anova test.

It can be seen from the Post Hoc test that there was a significant difference of the tea land area between Full CFs and Non CFs but there was no significant difference of the tea land area between Semi CFs and Non CFs.

The distribution of the tea-growing area among farmers is shown in Table 5.6. For Full CF households, 58% of the surveyed households had a tea area which was greater than 0.6 ha and the remaining households had a tea area of between 0.3 and 0.6 ha. None of the Full CF households had an area which was smaller than 0.3 ha. For the Semi CF and Non-CF households, 28-30 % of households had a tea area greater than 0.6 ha and 33% of households had a tea area ranging from 0.3 to 0.6 ha, whereas 37-39 % of households had a tea area of 0.3 ha. The distribution of the tea-growing area in the three groups reflects the differences in scale among households, which partly affects the effectiveness of tea production. Full CF households having a large tea area had higher tea yield than the Semi CF and Non-CF households.

Full CF households had the largest average tea land area at 0.64 ha per household thanks to the land allotment by the companies. The average tea cultivation areas of the Semi CF and Non-CF groups were 0.43 ha and 0.45 ha for each household, respectively. The size of the land distributed by the companies to Full CFs varied from 0.3 ha (minimum area) to 2 ha (maximum area). Full CFs said that with this land area they could live on their higher income from tea production. Full CFs often come from households specialized in tea farming. In the contracts signed with Phu Da and Phu Ben companies, the participating families were required to have at least 3000-5000 m^2 of tea plantation land formerly owned by state farms.

At present, according to the new policy, each household must acquire a minimum area of land of 7000 m^2 in order to become a Full CFs of the company. The reason is that with a larger area of land the household is qualified to pay for the Social insurance for the company. In addition, higher incomes are often resulted from large-scale production for Full CFs, which give Full CFs for the incentive to take good care of their tea plantation.

5.1.3.3 Credit of tea farmer groups

Table 5.7. Loan for tea production by farmer groups in 2014

Indicators	Number of Households	Full contract farmers (n = 40) (%)	Semi contract farmers (n = 18) (%)	Non-contract farmers (n = 40) (%)
Household without loan	86	90	77.8	90
Household with loan	12	10	22.2	10

Capital is an important criterion in agricultural production in general and in tea cultivation in particular. Most of the households in the area are farmers. Household loans are used to cover fertilizers, pesticides, production tools and other assets purchased for agricultural production. Equity loans come from various sources, such as banks, friends and relatives.

The amount of household loans in the Full CF group was lower than that of other groups because of their low borrowing requirements (Table 5.7). They can use company's deposits to buy fertilizers and pesticides to avoid dealing with the preparatory costs. Because most Full CFs have only tea area and a few of other agricultural land for cultivation and livestock, they usually spend most of their time to take care of tea, not much work for trees and other animals. Therefore, they easily arrange their time to exchange for each other to harvest tea and do not have to hire much outside Full CFs to harvest the tea.

In general, the number of people who need loans was not large because for the harvested tea, household did not need much money to buy fertilizers and pesticides. Only new tea growers really needed bank loans because they needed cash to buy materials and hire labor.

The three groups (Full CFs, Semi CFs, and Non-CFs) have applied for bank loans to the Vietnam Bank for Agriculture and Rural Development (Agribank) despite the fact that their interest rate was 11% per year, higher than that of other funding sources. The reasons for this decision lie in the fact that the condition of borrowing is easier than the others thanks to policy support from the Government. The number of households applying for loans was, however, not high. For the Full CF group, only 10% of the total households acquired a loan for production activities. In the case of the Semi CF group, this percentage reached 22.2% and for the Non-CFs, it was 10%. In addition, these households also borrowed money from other sources such as cooperative loans which had a lower interest rate, ranging from 6.5% to 7% per year. The amount of the loan per household was fairly high, approximately 30 million VND on average. The expected interest amount was, therefore, 2.7 million per year.

Table 5.8. Farmers' access to credit in tea production by farmer groups in 2014

Formal sector	**Amount (Mil. VND)**	**Total (HHs)**	**Full CFs**		**Semi CFs**		**Non- contract farmers**	
			HHs	**%**	**HHs**	**%**	**HHs**	**%**
Number of households		98	40	100	18	100	40	100
Borrowed money households		12	4	10	4	22.2	4	10
Vietnam Bank for Social Policies (VBSP)			1	25			1	25
Vietnam Bank for Agriculture and Rural Development (VBARD)			3	75	2	50	2	50
Cooperative					1	25		
Informal sector					1	25	1	25

There were only 12 households who borrowed money among a total of 98 surveyed households. The result of the Chi-square statistic showed that the influence of groups on the borrowing from various banks was not significant at 0.638, higher much than 0.05 (Table 5.8).

Semi CF households have a high percentage of loans because some are members of the cooperative and can receive loans through easier procedures and at a lower interest rate than other sources of funding, as well as a higher amount of money. The loan amounts cover the purchase of tea production equipment.

Some of them need to build a new tea plant garden since their current one is deteriorated due to low yield tea trees. Sometimes these families are forced to continue cultivating these deteriorated gardens as they face financial difficulties.

According to the household survey on loan applications, there are many difficulties that prevent households from acquiring a loan for investing in production (Table 5.9). Such difficulties are short term loan period, small amounts of money and complicated application processes. The tea cultivation process requires a countable equity amount, especially in the initial stage where a large amount of investment is required, not only in terms of funding but also in terms of the length of the payback period. In this context, financial organizations need to develop more policies and create more favorable conditions to simplify and shorten the loan application processes for the households, as well as increase the amount of loans with a longer payback period, which matches the characteristics of the industry.

Table 5.9. Evaluation of tea farmers on difficulties in accessing credit in 2014

Indicators	**Contract farmers**		*Non-CFs* **(n = 40)**
	Full CFs *(n = 40)*	Semi CFs *(n = 18)*	
1. Reason for not borrowing money	**%**	**%**	**%**
Do not need	**72**	***68***	***70***
Have difficulties in applying for loan	**28**	***32***	***30***
2. Reason for difficulties in borrowing			
High interest rate	40	*39*	*40*
Limited payment date	25	*26*	*25*
Limited amount f loan	20	*19*	*20*
Complex procedure	7	*9*	*8*
Lack of physical collateral	8	*7*	*7*

5.1.3.4 Family labor of tea farmer groups

Table 5.10. Labor use in tea production by farmer groups in 2014 (Unit: days)

Activities	*Contract farmers*		*Non-contract farmers (n = 40)*
	Full CFs *(n = 40)*	Semi CFs *(n = 18)*	
Total household labor/ha	*180*	*155*	*155*
Tree cutting	*3*	*3*	*3*
Grass cutting	*50*	*45*	*45*
Use of fertilizers	*10*	*6*	*6*
Use of pesticides	*25*	*24*	*24*
Harvest	*70*	*57*	*57*
Transport	*22*	*20*	*20*

Tea is a perennial industrial plant whose production process requires more work than other crops. The most laborious stage is the harvest of fresh tea buds which requires a lot of work and also requires a high level of labor concentration in a

short period of time. Therefore, the households' demand for cooperation in the harvest stage of fresh tea buds is very high.

One of the main characteristics of tea production is that the better fertilization and irrigation will ensure the higher yield. The cost of tea care depends largely on the maintenance process applied by the farmers as well as their investment. Therefore, the costs of tea production are significantly different among groups of households. The first cost to be mentioned within the costs of tea production is the labor cost. To carry out the tasks of maintenance, fertilization, disease prevention and harvesting, one hectare of tea requires about 150 to 200 man-days per year on average, of which the harvesting process accounts for the largest proportion, around 40% of the total man-days (Table 5.10). The number of man-days for the harvest stage depends mainly on the yield of the tea and the harvest volume. There is often a shortage of labor during this stage, which puts great pressure on tea farmers. The cost of labor represents a high proportion of the cost of care and harvesting (up to 50.21%), depending on the conditions of each tea garden. However, almost all the households in the surveyed area exchange their work, helping each other to save their labor cost. If the households need to hire employees, the outsourcing costs account for approximately 40%.

There is a need for four people to carry a big and twin cutter and two pack tea into sacks. Furthermore, for Full CFs, there also needs to be one or two people to take tea to the company's collection sites (while, as for other groups, tea is collected by the collectors to the hills, so there are no transport costs). In order to save the cost of harvesting tea, households often exchange labor with each other. They gathered a group of five to seven people to use a twin cutter alternately between households.

With an average tea area of 0.4 hectares, a small tea producing group produces more than one ton. Households need about 1 working day to harvest the amount of tea if they use a twin cutter and about two to three days if a single machine is used. Usually, due to tea separation with machines from the first batch, sequential batches are quite regular. Households should concentrate on completing one to three days as this is the time of harvest. If the cut is made too early, the weight of the obtained tea buds will be decreased because tea is still too young; conversely, if it is made too late, the tea will be old, poorly qualified and therefore, cheap. The collectors take their bags which are bought in the tea plantations. If the amount of tea is low, the farmer transports the bags to the collector's house.

At the peak time for harvesting, all households should focus more on their own harvested tea, especially large tea households. Therefore, in practice, it is often difficult for households to hire more labor and exchange work at this time. This entails the need for closer cooperation between farmers through a detailed plan for harvesting dates that best mobilizes the outside workforce through exchanging work and hiring labor.

The labor per hectare of the Full CFs is higher than that of the Non-CFs because they specialize in tea production. Due to their large tea area, tea income has secured almost the entire income. For the Non-CFs, tea income represents only a part of the total income as their tea area is small. Therefore, they are forced to

produce other crops and livestock to ensure their livelihood. As a result, they do not invest as much work in tea as the Full CFs do.

During tea harvest, in the spraying and weeding stage, almost all households have to hire more workers. Hiring prices tend to increase but the labor quality remains unchanged. Therefore, households need to have several considerations when deciding to hire labor. Shortcomings in the workforce are also a problem for tea production nowadays as the main rural labor force has shifted to other sectors of the industry (such as construction or education) to engage in non-agricultural jobs.

Compared to the standard of work per business per hectare of tea (Department of Agriculture and Rural Development), the actual labor force of the households is lower. The inappropriate implementation of the technical process requirements has an impact on the vitality, yield and quality of tea trees in the future. This is one of the causes of land resource degradation, which then affects the yield and quality of tea products in the region.

5.1.3.5 Machines and equipment used in tea production

Table 5.11. Tea production machines by farmers' groups in 2014 (Unit: pieces/household)

Tea production machines	***Contract farmers***		***Non-contract farmers (n = 40)***
	Full CFs *(n = 40)*	**Semi CFs *(n = 18)***	
Cutting machine	*0.9*	*0.70*	*0.65*
Advanced sprayers (for pest prevention)	*0.9*	*0.86*	*0.78*
Tea cutter	*0.5*	*0.13*	*0.425*
Water pump	*0.3*	*0.33*	*0.275*

The means of production are an important factor affecting tea yield, yield and quality, and therefore, affecting the income of agricultural households. At present, the stages of tea maintenance and harvest are performed mechanically. Table 5.11 shows households' investment in their production, in particular, in the care and pest control with modern pesticides, pruning and pest control. Damaged branches are cut with mechanical cutter instead of manual cutting. Currently, because of the requirement of freshness for processing, households have invested in tea cutters. Traditionally, tea is harvested by picking by hand; although the tea tops are higher, it takes a long time, so the tea buds often wilt. Nowadays, farmers harvest their first crop manually in spring (in March of the calendar year) and the additional harvests are done mechanically to maintain tea freshness and to save time and costs.

Table 5.12. Tea production machines by farmers' scale in 2014 (Unit: pieces/household)

Tea production machine	**Large (>0.6ha) *(n = 40)***	**Medium (0.3 ha – 0.6 ha) *(n = 36)***	**Small (<0.3ha) *(n = 22)***
Cutting machine	*0.81*	*0.7*	*0.26*
Advanced sprayers (for pest prevention)	*0.86*	*0.9*	*0.59*
Tea cutter	*0.488*	*0.425*	*0.11*
Water pump	*0.348*	*0.275*	*0*

Households that have large areas of tea generally invest considerably more in machines than smaller households (Table 5.12). They have a more active attitude than small households since their tea income makes up a large proportion of their total income.

5.1.3.6 Investment in tea garden

Table 5.13. Investment costs per one ha in 2014

Costs	**Full contract farmers**		**Semi contract farmers**		**Non-contract farmers**	
	Amount (million VND)	**%**	**Amount (million VND)**	**%**	**Amount (million VND)**	**%**
Total investment costs	93	100	65.5	100	66	100
I. Costs of new cultivation	70	75.3	48	73.3	48.2	76
1.Labor	40	57.1	27	56.2	27	56
2.Seeds	13	18.6	9	18.8	9.1	18.9
3. Fertilizers	10	14.3	7	14.6	7.1	14.7
4. Others	7	10	5	10.4	5	10.4
II. Costs of the first three years	23	24.7	17.5	26.7	17.8	24
Year 1	7	30.4	5.4	30.9	5.5	30.9
Year 2	8.5	37	6.5	36.5	6.5	36.5
Year 3	7.5	32.6	5.6	32.6	5.8	32.6

There was not much difference in the investment cost among various types of tea trees. The differences in cost and profitability among the tea varieties were evident in the harvest stage.

As can be seen from the survey results, many tea plants are now over 30 years old but still generate high productivity. This is particularly true for old tea trees (also known as Shan tea), which are originated from the Indian Assam tea and grown at an altitude of more than 1000 meters above sea level in the provinces of Tuyen Quang, Yen Bai and Son La adjacent to the Hoang Lien Son Mountain Range. From a business perspective, the cultivation of the perennial industrial plant of tea enables a harvest period that lasts for 30-40 years, and even longer depending on the type of tea, the intensity level of the crop and the cutting

techniques. So far, there is no common standard duration available for business based on tea trees. Therefore, in this study, the average deduction period of the crop is between 25 and 30 years.

Household investment costs over the first three years were estimated on the basis of 2013 value as shown in Table 5.13 above.

There was a clear difference between the basic investment costs of farming households, ranging from 65 million VND to 93 million VND per hectare. This difference was attributed to the investment of each group in soil amendments and nutrient supplies for trees. Capital expenditures mainly in the basic landscape period and in the production stage were fertilizers and labor wages.

Labor wages depend on the conditions of the land, the infrastructure and the geographical location of tea plantation. Although the cost of tea variety is also important, this represents a fraction of the total costs for basic landscape. As the life cycle of tea trees is about 25 to 30 years, the average depreciation of tea plantations exceeds 3 million VND per hectare, which is a significant cost.

Farmers must spend a lot of money to clean and improve the land to grow a new tea garden. As illustrated in Table 5.13, the cost arising this period accounted for approximately 73 – 76 % of the total investment costs for a new tea garden.

The results of the survey on the investment costs for one tea hectare at each item are as follows:

For the Full CF group, tea variety, fertilizers and pesticides were ensured thanks to the company's advance supply. Tea varieties were either incubated in the company's incubator or carefully selected through prestigious sources of varieties such as the Vietnam Tea Science Institute. In addition, the processes of restoration of degraded lands and the maintenance of tea trees during this period followed the appropriate techniques, contributing to the improvement of the soil and the provision of nutrients so that the trees could grow in a stable and sustainable way. This has provided the basis for the transition to business and harvesting phases when Full CFs obtain stable yields, high-quality tea leaves and reasonably good soil fertility level, havesting six to seven harvests per year. This will allow them to harvest tea leaves continuously for the next 30-40 years.

As for the Semi CF and Non-CF groups, farmers were responsible for making their own decisions regarding the investment and the maintenance of tea trees without receiving much material and technical support from tea processors or local government. As a result, their investments appeared to be insufficient and their tea plantations were not properly maintained. There are five or six times of harvest per year if tea cutters are applied, and the tea gardens will soon be degraded unless it is appropriately taken cared of right from the basic phases. If the plantations were not properly maintained since the first three years of cultivation and during the harvesting process, the tea trees will soon be degraded.

The common belief of households is that a considerable investment in fertilizers would enhance the amount of nutrients provided to tea trees, thereby increasing the final yield. In contract, if the trees lack fertilizers, they would suffer from burned leaves. However, the excessive and unbalanced use of fertilizers also

prevents tea trees from being deeply rooted into the soil (to look for nutrients) and makes it difficult for trees to thrive in the occurrence of storms and droughts. Furthermore, the application of inorganic fertilizers imperceptibly creates a hot bed for pests and diseases under the soil. For these reasons, farming households should pay more attention to the application of fertilizers on tea trees.

As for Semi CFs and Non CFs, according to our survey, their investment in chemical and organic fertilizers in the new plantation process is actually lower than required. Due to the non-compliance with the technical procedures, their tea yield and quality was significantly affected thereafter. During the harvesting stage, most of the farmers apply unbalanced chemical fertilization; more specifically, they might either apply a higher amount of some fertilizers than needed or apply a lower amount of fertilizers than needed. This is one of the reasons leading to the degradation of land resources, which then affects both tea yield and quality in the area.

For the cultivation of new tea crops, the predominant expenses included plant seeds, fertilizers and labor costs, together accounting up to 90% of the total expenses. Among them, labor recruitment expenses were the largest expense in the total cost at 56 - 57%, which was followed by seed costs at about 19%. Another considerable expense was fertilizer costs, which made up roughly 14.3% of the total which was not insignificant as compared to other expenses. Most farming households were only able to cover a part of their labor cost by using family labor, while still having to pay for other costs, which means that the resources for the cultivation of new tea trees were limited. This, therefore, greatly affects the investment decision of the household during their tea production.

For costs of the first years, the initial year had the smallest expenses, accounting for 31% of the first three-year amount. In the second year, costs accounted for 37% and in the third year, costs accounted for 32%. On average, the total expenses were approximately 93 million VND per hectare per year for the Full CF group.

The cost of the variety reached a peak in the first year of the three groups (about 9 – 13 million VND) and then diminished in the second year as farmers replaced the dead trees (0.9 – 1.3 million VND). The cost did not increase in the third year.

Expenses on fertilizers made up a significant proportion of the total expenses. Expenses for basic landscape of tea plantations were at the lowest level in the first year because fertilizers were not heavily used in newly cultivated tea trees to prevent roots being over-fed and avoid killing trees. Then they increased very rapidly in the following year as the growing tea trees started to require nutrient supplements. In detail, expenses on fertilizers was about 0.8 – 1.5 million VND in the first year, about 1 – 1.7 million VND in the second year and about 1.1 – 2 million VND in the third year.

Expenses on employment also accounted for a large percentage, at approximately 65 - 67% of the total expenses on tea plantations. Every year during first three years, labor costs was about 4 – 5 million VND per year. All the expenses analyzed reveal that households might have difficulties in their production activities, as some expenses were too high for them to cover. They

could hardly supply themselves with plant variety and they had to look for external sources of labor. This appears to be a real challenge for tea growing households. When it comes to production, the main way to reduce total expenses is using family labor. For these reasons, it is necessary for tea-growing households to use the resources available in the production activities in a more efficient way. They must also play a more active role in producing and enhancing labor force.

Expenses on newly cultivated tea plantations are high and they lead many obstacles in planting activities, especially with the rising prices of inputs such as tea variety, fertilizers and labor costs. This, in turn, affects the mood of tea growers. As a result, despite the low quality and deterioration of old tea variety, growers cannot invest in new crops and can only grow in smaller areas or reduce costs below the required amount. These options lead to lower profitability of tea plantations in the short term and lower quality in the long term.

5.1.4 Characteristic of contractors

Phu Da Tea Company is a joint venture company between the Vietnam National Tea Corporation (VINATEA) and the Foodstuff Trading Baghdad Corporation, in Iraq.

The authorized capital of the company is USD 15,100,000, of which the Vietnamese part owns 45% and foreign investors own 55%. The company started in 1999 according to the license number 2106/GP of the Ministry of Planning and Investment, with a validity of 50 years.

Chairman of the managing board: Mr. ZUHAIR M. SALMAN (Iraq)

General Director: Mr. Le Hai Chau (Vietnam)

Head Office: Thanh Son Town, Thanh Son district, Phu Tho, Vietnam

Website: http://www.phudatea.com.vn

The forerunner of Phu Da Tea Company is the State Economic Zone to be built in Thanh Son district formerly, Phu Tho province. Phu Son Tea Company was founded in May 1958. Thanh Nien economic zone was founded in February 1971. The Tan Phu industrial, agricultural and tea enterprise (Thanh Nien II farm) was founded in July 1988.

In January 1999, the tea enterprise was officially established and integrated the three economic zones mentioned above to develop tea industry within the new territory of the province. After the establishment, the economic zones became the subsidiary factory of the company. In January 2000, another factory was built to expand production scale, named as Phu Long factory.

Nine out of twelve districts in Phu Tho province specialize in tea cultivation. Tea processing trees have their own tea garden (on the hills) within the rural districts of Thanh Son, Tan Son, Yen Lap and Tam Nong. Thanks to the advantageous of natural environment and good climate for tea plantation, the company's products are of high quality and national famous brand for tea.

The company now has more than 1476 hectares of business tea, four production enterprises, 43 teams specializing in tea production, three black tea processing trees exported by traditional OTD - Orthodox technology and a product mixing

center with the processing capacity up to 180 tonnes of fresh buds per a day. In addition, the warehouse systems are capable of containing 4,500 tonnes of finished tea, which satisfy conditions for packaging and export in one place.

Phu Da Tea Company is a joint venture company between Vinatea Vietnamese Tea Company and Foodtuff Trading Baghdad Corporation of Iraq. Iraq requires high grade tea, therefore Iraq's tea import price is quite high. However, due to the unstable politics and the war, Iraq is quite a harsh market. Because of good raw materials, modern facilities, and good technical skills of worker farmers, Phu Da's tea quality is quite good and thus its products can be exported to another high requirement market at high prices. Accordingly, Full CFs sell fresh tea to Phu Da considerable steadily.

Phu Ben Tea Company Ltd is a 100% foreign-owned company, which was acquired by Borelli Tea Holdings (BTH), an English-based company. BTH is a subsidiary of McLeod Russel India Ltd which belongs to Williamson Magor Corporation, the world's largest producer of tea, with 52 factories in India, four factories in Vietnam, five factories in Uganda and one factory in Rwanda. The head office of Phu Ben Company is in the city of Thanh Ba, in the Thanh Ba district, Phu Tho Province.

Phu Ben Company was established in 1995 in a form of a joint venture. In 2009, SA SIPEF transferred 100% of its shares to Mcleod Russel India through its subsidiary, Borelli Tea Holdings. McLeod Russel has an appropriate strategic plan and long-term vision specifically for the development of Phu Ben Company and the Vietnamese tea industry. They have invested to receive Tram Than factory of Binh Minh company to produce tea from outside sources. Tram Than factory was then renamed Van Linh Tea Factory. All finished products are exported to overseas markets such as USA, European countries, Japan, Middle East, Russia and CIS, and Australia.

The production and trading performance of the company have resulted in a significant amount of foreign currency for the country. The processes of establishment and development of the company can be summarized as follows:

In March 1996, the State Committee for Corporation and Investment granted the investment license No. 116/GP establishing the Phu Ben Tea Association, which involves:

The Phu Tho tea factory is represented by the Vietnamese Tea Company (Vinatea) for the Vietnamese side.

Total initial capital of the company: the legal capital is 5,750,000 USD. The Vietnamese side owns 40% of the capital, reaching 2,300,000 USD and the remaining 60% which is foreign-owned is equivalent to 3,450,000 USD. The operating time of the company is 40 years from the day the investment license is granted.

In 1996, Phu Ben Joint Venture Company only owned the Phu Tho tea factory which started its tea production line using the CTC technology. However, this technology was later replaced by the OTD technology.

In November 2003, Phu Ben Joint Venture Company became 100% foreign owned after the S.A. SIPEF purchased 40% share of Vinatea.

In December 2008, the SIPEF group completed the transfer of the capital to Borelli Tea Holdings, a subsidiary company of McLeod Russel India Ltd.

In March, 2009, the official hand-over ceremony of the certificate of Phu Ben Tea Limited Company granted by Aditya Khai tan - CEO of Mcleod Russel India Ltd, certified that McLeod Russei India Ltd is the parent company of Phu Ben Company. The parent company is the largest tea company in the world, with 52 factories which produce up to 740 million tonnes of tea per year.

The parent company, McLeod Russel, was in charge of appointing a general director and three deputy general directors to represent the company and manage production and trade activities in accordance with the parent company's plan.

The two mentioned companies follow the model of nuclear real estate. Both Phu Da Tea Company and Phu Ben Tea Company have full contract farmers. Phu Da Tea Company is a joint venture company in Phu Tho province with a total area of 1,483 hectares under contracts signed with Full CFs. The material areas of the company include Thanh Son, Tan Son and Yen Lap districts in Phu Tho province. Phu Ben Tea Company is a 100% foreign invested company with a total area of 2,200 hectares. The material areas of this company are located in Thanh Ba, Doan Hung and Ha Hoa districts.

Both companies are typical companies that signed land allotment contracts with farmers in accordance with Decree No. 01/1995 (now replaced by Decree No. 135/2005). They are large tea processing and exporting companies, which present highly effective business performances.

Phu Da Tea Company signs contracts with farmers under the Decree No. 135. On the other hand, Phu Ben Tea Company signs contracts with farmers under Decree No. 135, while signing contracts with cooperatives under Decision No. 80.

5.2 Contract farming as a determinant promoting tea production and marketing at farm household in Phu Tho province

5.2.1 Tea production by famer groups in Phu Tho province

5.2.1.1 Fertilizers and chemicals

Deferred payment for fertilizer purchase

Most independent farming households are eligible for purchasing input materials on credit for a certain period of time. Both Full CFs and Semi CFs can buy on credit; the companies supply them with inputs and both sides have reached an agreement on the repayment time. For instance, Phu Da Tea Company provides input materials for farming households and they can delay the payment until the end of the year. Independent tea-farming households buy mainly on credit in stores and even buy materials at higher prices (to be able to buy on credit) at an interest rate of 2 to 5% per year.

All advances to the Full CF households are free of interest and must be deducted, provided that they sell tea leaves to the company.

As for Non CFs, when input materials are borrowed, half of the monthly depreciation is applied in the first half of the year. If the loans are overdue, there will be interest charges. However, farmers can borrow inputs from collectors without procedural requirements and without interest in case of overdue debts.

Phu Ben Company and Phu Da Tea Company signed contracts to make the direct purchase of fertilizers with major fertilizer manufacturers in Vietnam. For example, they buy fertilizers such as Phosphates and Nitrogen (N), Phosphorous (P) and Potassium (K) from the Lam Thao Fertilizers and Chemicals Joint Stock Company and the Van Dien Fused Magnesium Phosphate Fertilizer Joint Stock Company. Nitrate fertilizers are purchased to the Ha Bac Nitrogen Fertilizers and Chemical Company. Imported Urea is repurchased by the company from Ukraine.

In an effort to ensure the timely supply of fertilizers and pesticides to farming households, the company signed contracts with suppliers to provide households with products if necessary. This measure aims to supply sufficient fertilizers and pesticides in terms of quantity and quality to meet the demand of farming households. Contract conclusion and direct purchase from fertilizer manufacturers and distributors also allow tea companies to benefit from incentive policies regarding prices, discount rate and customer service policies, etc.

5.2.1.2 Fresh tea characteristics (tea buds)

Tea varieties

Tea varieties were relatively diversified in the studied province, including PH1, Shan and PH8, and PH9, etc. which were created by NOMAFSI from 2005 - 2013. Nonetheless, PH1 variety has been considered as the most popular variety for black tea export. Besides, the production areas of LDP1 and LDP2 variety were relatively large. Those varieties were suitable for both green and black tea processing. The growing areas of the other varieties such as Shan tea and Phuc Van Tuyen, etc. were not significant. Almost all of the tea-growing areas of the three studied groups had been newly planted since 2001.

Table 5.14. Plantation area by tea varieties of different farmer groups in 2014 (Unit: %)

Variety of tea	***Contract farmers***		***Non- contract farmers***
	Full CFs	***Semi CFs***	
PH1	*75.6*	*43.7*	*43.4*
HAT (midland tea)	*12.1*	*25.7*	*14*
LDP	*3.1*	*10.2*	*33.1*
AD	*9.2*	*20.4*	*9.5*
Total	*100*	*100*	*100*

As for Full CF households, tea varieties are regulated by the company. The PH1 variety, which currently produced the highest yield with up to 22.3 tonnes/ha (Table 5.17), accounted for a vast 75.6% of the cultivated area. It was followed by the HAT variety, whose area represented only 12.1% (Table 5.14). This variety was planted in the early years and as its average life expectancy is about 30 years,

these plantations will remain for the next generation of Full CF households. The LDP variety did not produce a high yield as compared to PH1, reaching only 19.8 tonnes/ha and was not suitable for black tea processing. Therefore, only a few households cultivated this variety. The area of this tea variety did not experience any significant annual change during the survey period (Table 5.16).

For Non-CF and Semi CF households, their tea growing areas experienced an increase in 2014 due to the cultivation of new varieties of tea, however, this increase was not considerable. The PH1 tea continued to be widely cultivated because it not only produces the highest yield (18.3 tonnes/ha) but also was suitable with the processing of black tea (Table 5.15 and Table 5.16).

Table 5.15. New tea growing areas by varieties in 2014

	Tea land area (ha)	***Proportion (%)***
PH1	*11.22*	*67.5*
LDP	*4.98*	*30*
AD	*0.4*	*2.5*

Source: PTSO, 2014

In the two surveyed communes, there was about 5-7% of tea growing land used for new tea varieties in 2013-2014, of which there were 11.2 hectares of PH1 (67.5%), 4.98 hectares for LDP (30%) and 0.4 hectares of AD (2.5%). Although it was considered as a highly productive variety and suitable for black tea processing, many households found it difficult to shift to this type of tea. The main reason was the lack of investment capital. In addition, developing a new tea-growing area required more human resources and farmers might experience several risks due to abnormal weather conditions that might hinder the development of these new tea trees. Moreover, the producers had no income in the first three new tea-growing years, which means difficulties in cash flow for the households.

The province aimed at expanding the LDP area in order to produce both green and black tea. Additionally, it should be noted that the LDP variety was easily adaptable to dry weather and steep slopes. Therefore, this variety is selected to receive the support from the provincial authorities at 5 million VND per hectare leading to a fairly large area of LDP in Phu Tho.

The area of the HAT (midland tea) variety did not undergo any increase. Its yield only reached 13 tonnes/ha and almost no farmers selected this type of tea to expand their new plantations. Unlike Full CF households, the Non-CF and Semi CF households had the freedom to select the tea varieties for their own plantation.

The AD was a new variety of tea cultivated by Phu Ben Company. The AD area represented 9.5% of the total area of the Non-CF group and 20.6% of the Semi-CF group. This variety was well known for its high yield and for being drought-resistant. It was also suitable for black tea processing. For this reason, households living close to Phu Ben Company had partly changed their farmland in order to grow this new variety (Table 5.15).

Table 5.16. Tea yield by variety of farmer groups in 2014 (Unit: tonnes/ha)

Tea variety	*Contract farmers*		*Non-contract farmers (n = 40)*
	Full CFs (n = 40)	*Semi CFs (n = 18)*	
PH1	*22.3*	*18.2*	*18.3*
HAT	*16.4*	*11.8*	*13.6*
LDP	*19.8*	*17.2*	*17*
AD	*20.4*	*16.0*	*16.6*

The yield of Full CFs was always higher than that of the Non CFs for the same variety (Table 5.16). Full CF households had applied professional maintenance techniques, proper use of fertilizers and pesticides along with the renovation of the soil. On the other hand, the Non CF and Semi CF groups had used inadequate techniques; and because they tried to reduce their production cost, they had fertilized their crops at the inappropriate levels (lower than required). Furthermore, as Non CF and Semi CF households were not concerned about soil improvement, the tea trees quickly become degenerated, which was often associated with a severe decrease in yield.

Tea Age

Tea production depends on the age of the tea trees. When the plant reaches the age of eight years, its yield is high and more stable. Tea trees reach their highest yield at the age of 14-15 years old and gradually reduce after the age of 20. However, it is possible to maintain a high yield for a longer period of time by applying appropriate cultivation methods (such as maintenance, and cutting, etc.). When the tea trees are between 30 and 40 years old, they are cut down so that they can re-sprout. For the following two years, the yield will be low, but it will recover afterwards. Thus, the age of tea trees can be prolonged up to 60 years if they are properly maintained. In Phu Da and Phu Ben companies, there are some tea trees that were cultivated in 1960 and re-sprouted in 2016.

According to the 2014 – 2015 survey, the tea trees obtained its highest yield between the age of 10 to 15 years old, the area of which accounted for 60 - 70%. This resulted from rejuvenation efforts and policies for the tea trees, particularly in relation to tea seed support. The areas of tea tree have been greatly renewed, of which there was a small area due to the new cultivation of tea trees for more than 30 years. According to its characteristics, the establishment of tea trees often lasted for at least three years. As the income of farmers mostly comes from the cultivation of tea, renewing the plantation area was very difficult for them when there are no support policies.

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Table 5.17. Plantation area by tea age of different farmer groups in 2014 (Unit: %)

Age of tea	***Contract farmers***		***Non- contract farmers***
	Full CFs	***Semi CFs***	
>30	*9.3*		
20 – 30	*70.2*		
15 – 20	*20.5*	*29.3*	*20.2*
10 – 15		*61.5*	*71.7*
5 - 10		*9.2*	*8.1*
Total	*100*	*100*	*100*

For the households with Full CF, most tea trees are between 20 and 30 years old (Table 5.17). Thanks to a good maintenance schedule and new technique, many of these trees are 20 to 30 years old which give high yield until they are 40 to 50 years old. About PH1 tea variety, in spite of young tea trees, their yield is very high. Seedling structural of PH1 tea trees in Phu Da and Phu Ben Company is big. The age of PH1 type is much younger than current one – seedling tea or so called Trung Du (HAT variety). Most of them are grown for 20 – 30 years.

As support policies for tea trees have only been focused and implemented since 2000, farmers of the Semi CF and Non-CF groups only started to grow tea starting from this year. Hence, most tea trees are between 10 and 15 years old. At this age, tea yield has not reached its highest level yet, but has started the stable phase. However, due to inadequate growing techniques, the tea yield of these groups continues to be significantly different from that of the company's tea trees (as compared with Full CFs).

The quality of tea buds

Differences in tea harvest and tea bud lengths affect the freshness of shoots which is also determined by the ratio of old leaves on the same branch. Therefore, the grades of tea leaves include the freshness rules and the grades shown in table 5.18. The ratio of old leaves and shoots is determined by pressing, collecting and measuring the weights. The collectors evaluate fresh tea using their senses and classify tea into young tea, medium-quality tea and old tea.

Table 5.18. Classification criteria for fresh tea materials in Vietnam

No.	Fresh tea grade	Criterion
1	A	From 0% to 10% of old leaves
2	B	From 11% to 20% of old leaves
3	C	From 21% to 30% of old leaves
4	D	From 31% to 45% of old leaves
5	E	Over 45% of old leaves

Source: Vietnam's Criterion 1053-86 TCVN

The tea quality assessment is the manual classification of tea leaves into two types: young tea and old tea. Afterwards, electronic scales are used to weigh the old tea leaves, then tea is assessed and classified according to the ratio of old tea leaves (Table 5.18).

In Phu Da and Phu Ben companies, picking tea leaves according to grades has different influences on the growth and development of the tree. The processing of various grades of tea generates different tea products that are purchased at different prices by the company.

Different gradual harvested tea leaves give different effects on the growth and development of trees. Annual tea price of the company is relatively stable through it lightly changed during the harvest seasons. Then the price shall be announced by the company to the Full CFs through the Team. Each company has about 40 teams. Each team is responsible for 50 - 100 Full CFs. Teams provide fertilizer, pesticides for Full CF households and is a fresh tea collection site of households.

Collection costs generally depend on the level of tea buds. Choosing grade A is the most labor-intensive, followed by types B, C and D; finally, there exists a non-exclusive collection. In Phu Da and Phu Ben companies, the costs for picking tea leaves vary from grade to the grades.

The purpose of the crop is to pick tea buds as the main input for tea processing. Consequently, the growers are concerned about the amount and yield of shoots; and their quality, their level and standard related to dried tea products. Currently, tea ingredients are classified into four types, which are A, B, C and D.

Differences in tea quality

A-graded tea usually happens at the beginning of the season, makes up a small percentage because of its freshness and lighter weight than grades B and C, leading to the Full CFs can not reach the level of tea output set by the company. Moreover, the price of each type of tea is not much different. The price of A-graded tea is not high enough to offset the effort of cutting tea and the output decrease compared with cutting other types of tea, so it is not recommended to have Full CFs cut A-graded tea. The proportion of B-graded and C-graded are 51% and 45%, respectively.

A-grade tea must be picked by hands or machines which must be raised to cut fresh tea. Therefore, it takes most time and efforts of the Full CFs to harvest A-graded tea, then B and C, in turn. Because D-grade tea is often old, fiber and contains numerous branches, households must spend less time to cut them while

B-grade tea has relatively good quality, fairly uniform in size, medium length and beautiful form.

D-grade tea has the lowest rate due to its low quality in processing. In addition, Full CFs often avoid grade D because of cheap tea prices, at about 1500 to 2000 VND per kg. This policy issued by the company aims at preventing from old tea, oversized tea leaves and bad influence on the quality of the output. Grade B and grade C represent the majority of transitional products, ranging from 80% to 90% of the total.

5.2.1.3 Tea production techniques

In tea cultivation as well as in other crop sectors, the technical process is a key factor in generating consistent, high-quality products and limiting the risks caused by epidemics and natural disasters. Therefore, the technical training of households in tea cultivation plays a very important role. They need to meet the requirements of tea farming and maintenance processes to achieve the best performance.

For example, tea varieties should be at good growth and development and well suited to local soil conditions. The density of the tea plantation must take into account certain criteria. If trees have a small crown, density should be high, whereas if the trees have large crown, the density should be low. According to the slope of the terrain, the density should be high for the crops on steep slopes but it should be low on slightly sloped soils. If tea cultivation is done manually, the density may be high but if it is a mechanical cultivation, density should be adapted and appropriate to the characteristics of the machine. Finally, it should be appropriate in case of high investment in fertilization and watering, if the aim is to get quick return on investment, the density should be high.

In fact, the Full CFs' satisfactory standard tea cultivation density for the sloping land under 15 degrees is set as follows: the spacing between rows is 1.4 – 1.5 m, and the spacing between plants is 0.4 – 0.5 m. For non-CFs, generally at the slopes of over 15 degrees, the row spacing is 1.2 - 1.3 m, the tree spacing is 0.3 - 0.4 m. However, non CFs usually carry out their plantation either with ultra high density of 1 - 1.1 m spacing between the rows, and of 0.2 – 0.3 m spacing between the trees.

For weed prevention, tea roots should be covered by grass, straw, or green manure trees, etc. to limit weed growth. Farmers also hoe the ground after every heavy rain. Weed depletion is performed in spring crop in January and February and in autumn crop in August and September when tea farmer hoe the entire area once per crop, and also hoe around the tea roots two-three times annually.

Table 5.19 below illustrates farmers' participation in tea training courses in the province by farmer groups.

Table 5.19. Frequency of participation in the tea technical training course by farmer groups in 2014 (TC) (Unit: Percentage)

Participation frequency	***Contract farmers***		**Non- contract farmers** ***(n = 40)***
	Full CFs ***(n = 40)***	**Semi CFs** ***(n = 18)***	
Regular participation	*86.67*	*27*	*23*
Occasional participation	*13.33*	*33*	*34*
Non-participation	*0*	*40*	*43*
Total	*100*	*100*	*100*

Phu Da and Phu Ben companies do not force Full CFs to participate in technical training courses of the company. However, the fact that 86.67% of Full CFs participated in the technical training course reveals that they have fairly good awareness in production.

The current education level and qualification of the tea farming households appeared to be not really high. Their knowledge was mainly acquired from training courses on transfer of technical advances made by the tea enterprises, district-level agriculture extension centers, or via newspapers, books, radio, TV and mutual learning, etc. However, their participation levels in the training courses varied significantly from household to household.

For Full CF households, the training participation level was rather uniform with a regular participation of nearly 86.67% (Table 5.19). This is one of the factors that lead to high performance and consistent quality of the products produced by these households. Full CF households had a higher level of regular participation in training courses than the semi CFs and the Non-CFs.

Annual training courses were organized by the company to guide investment, maintenance and harvesting, plant protection and disease prevention. The farmers were fully entitled to attend these training courses on a regular basis and receive on-the-spot guidance. They were instructed and evaluated by the company's technical staff for better care and remedies in case of risks and diseases. The frequency of regular training participation of Full CF households was the highest in the three groups and the percentage of Full CFs that occasionally attended the training was only 13.33% (Table 5.19). The Non-CFs had the highest percentage in the 'non-participation' group, with 43.33% and their frequency of regular participation was the lowest in the three farmer groups, at only 23% (Table 5.19). The reason for the low frequency involvement of Non-CF groups was that they were unaware of the importance of technical training and therefore their yield was not as high as expected.

The use of fertilizers

In the current production, two types of fertilizers are widely used for tea cultivation, including organic fertilizers and chemical fertilizers. Because tea is located mainly in high hills, away from the households, it is difficult to apply organic fertilizers and compost to ensure compliance with technical standards. According to the research observation, the current applicationof organic fertilizers is considerably lower than required. The commonly-used chemical fertilizers are

mineral fertilizers (NPK), which are commonly used as NPK 4:1:2 after tea trees are cut and fertilized by digging, ditching, nourishing and burying the land. Following that, the urea is added after the tea leaves are picked up by sprinkling on the tea bed. The use of chemical fertilizers now only meets 60-70% of the nutritional needs of tea trees. Rooting is rarely done by the growers. This is one of the major limiting factors in maintaining and protecting soil fertility, which then results in low yield and poor quality tea.

Organic fertilizers for tea trees play a crucial role in improving soil humus, texture, moisture and nutrient retention by tea trees. Organic fertilizers come from two sources; the first is animal excrement obtained from cattle, pigs and chicken that the households raise or that they buy to apply to tea trees annually. The second source is different types of green manure from the bean family, etc. Nowadays, since the organic fertilizers from animal excrement are limited, their soils improvements are not enough to neither ensure the growth of tea trees nor enhance soil humus. As for Full CF group, they use microorganic instead of organic fertilizers. Taking into account capital expenditure for the maintenance of tea trees, we can see that among the households surveyed, the investment rate of the Full CF group is much higher than that of the Semi CF and Non-CF groups for the use of microorganic. Further analysis of farmer's fertilizer use will be mentioned in section 5.2.1.5.

It should be noted that farming households who do not sign contracts with the company do not use muck in tea production. Failure to meet the standard tea planting techniques will negatively affect the quality of tea bud shoots and crop yields. When farm households do not use microorganic for tea production, the fertility of the soil is reduced and the excessive use of chemical fertilizers increases the pH value of the soil, thereby deeply affecting the tea tree.

The use of pesticides

Nowadays, tea cultivators commonly use pesticides, including chemical agents and biological insecticides. The research results show that in tea-growing areas, pesticides are applied several times a year, in particular, 100% of tea-farming households applied pesticides after each harvest (35 to 45 days/batch). 20% of the Full CF households spray pesticides more than three times per harvest and 80% do it two-three times per harvest, using several types of pesticides. Many Semi CF and Non-CF households use pesticides in an unsafe and ineffective way, using the unsuitable types of pesticides, at the inappropriate time and with improper spraying methods (Group discussion with farmers, 2015).

The pesticides are also inappropriately applied. While intensive application is required during the period of fresh cultivation to provide protection for and enhance the vigorous growth of young trees, it is often neglected by farming households. When it comes to the harvest tea production, there is an overuse of plant protection products which is one and a half times higher than the required amount in a bid to raise yield. This results in an excessive amount of pesticides lingering in the tea products. For this very reason, the quality of the regional tea is not highly appreciated in the global market, pushing the prices of the product to a low level.

When tea plantation is attacked by pests, all farming households will buy plant protection chemicals to tackle the situation. Nonetheless, chemical dose is subject to each household's practice as well as the quality of the chemicals. Despite the repetitive use of plant protection products, the pest is not relieved but spreads to the planting areas of other households. In other cases, pesticides are not used according to the instruction of the commune-level agencies and are insufficiently applied; pests are not killed, which requires the growers to apply the chemicals many times for a single batch of tea trees.

The excessive use of agrochemicals along with the use of illegal or false agrochemicals has proved to be ineffective. Moreover, this excessive and prolonged application of agrochemicals and all of the bottles and empty packages of these products that are left uncollected are the causes of environmental pollution.

The tea production industry is mainly challenged by natural factors, particularly by tea pests and diseases. Although the regional weather is favorable for tea growing, unstable rainfall and more frequent droughts have generated affected the process of water absorption for the growth of tea trees. Increasingly severe weather helps tea pests and diseases to thrive, and, therefore, causing various damage to tea trees. A large number of pests and diseases affecting tea trees such as Chlorita flavescens and Physothrips setiventris are hard to kill and almost none of the agrochemicals can prevent these diseases.

The investment in the fertilizers and pesticides per hectare of tea trees of the Full CF households following production procedures is higher than that of the Non-CFs.

As material suppliers in the market often charge more to make more profits, their prices are generally higher than those of the large tea-making companies. In addition, in case of material shortages, these suppliers increase their prices even more, even pushing up the production costs for farming households. As the suppliers often seek more benefits and do not have technical consultants, their after-sales services are not decent.

The tea producers generally do not pay much attention to labor protection. Only 30% among those surveyed were equipped with masks, gloves, goggles, boots and protective clothing for pesticides application. Most farmers leave the pesticides packages uncollected after use. These packages remain scattered among tea swiddens, especially in the closest fields to their home and sprayers are often washed in canals, ponds and lakes, which causes environmental pollution for the local area.

Application of cutting and harvesting techniques

In general, tea cutting of the majority of tea farmers in the province ensures the technical requirements, cutting time and techniques in conformity with the growth situation and the age of the tea trees. The tea tree cutting is now basically done by machines, but knives are still used in some areas, causing the damages to the growth and development of tea in the following years. The cleanup and disposal of cut branches are not appropriately done to reduce the risks of diseases and epidemic over the coming years.

The current tea harvesting techniques of the farmers are not in compliance with the technical requirements. In particular, tea buds are often oversized. In addition, even though some famers have bought specialized machines for plucking tea, the practice of picking tea with sickles is still applied, leading to tea depletion as well as low yield obtained.

Table 5.20. Farmer's evaluation on the usefulness of technical training in 2014
(Unit: Percentage)

Ranking	Contract farmers		Non-contract farmers
	Full CFs	Semi CFs	
Very useful	50	30	20
Useful	30	25	27
Not useful	20	45	53

As illustrated by Table 5.20, most Full CFs highly appreciated the usefulness of technical training from the companies. Specifically, 50% of the surveyed Full CFs considered these training courses to be very useful, and 30% of them assessed them as being useful; however, 20% did not think they were useful. As for Semi CFs, they were generally satisfied with the training courses provided by the companies. 30% of the Semi CFs evaluated as being very useful level, while 25% evaluated as useful and the remaining 45% evaluated as being not useful for some reasons. As for Non CFs, they were not satisfied with the training courses from local authorities. 20% assessed that the training courses were very useful, 27% rated them as being useful and 53% thought that they were not useful.

5.2.1.4 Tea yield

Table 5.21. Tea yield by farmer groups in 2014

Indicators	Contract farmers				Non-contract farmers (n = 40)		F-test	P value
	Full CFs (n = 40)		Semi CFs (n = 18)					
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Tea yield (tonnes/ha)	21.4[a]	3.9	16.2[b]	4.0	16.7[b]	3.1	21.783	0.000 ***
Frequency distribution (% of households-HH)								
	Number. (HH)	%	Number. (HH)	%	Number. (HH)	%		
20 – 30 (tonnes/ha)	28	70	2	11	8	20		
>15 - < 20 (tonnes/ha)	10	25	12	67	20	50		
9.5-15 (tonnes/ha)	2	5	4	22	12	30		
	40	100	30	100	40	100		

Note: ***, **, and * denote significance at 1%, 5% and 10%, respectively, [ac] Means in the same row without common letter are different at P < 5% by Anova test.

The Post Hoc Test confirmed that there was a significant difference of the yield between Full CFs and Non CFs, Full CFs and Semi CFs but there was no significant difference of yield between Semi CFs and Non CFs.

Regarding the distribution of tea yield in Table 5.21, the majority (70%) of the Full CF households achieved a tea yield of over 20 tonnes/ha, while 25% of the households had a tea yield that ranged between 15 and 20 tonnes/ha. Only 5% of households in this group had a yield which was lower than 15 tonnes/ha. For the Semi CF and Non-CF groups, only 11-20% of households reached a tea yield of more than 20 tonnes/ha, whereas 50-67% of households had a yield ranging from 15 to 20 tonnes/ha. The remaining 22-30% of households had a tea yield which was lower than 15 tonnes/ha. The Full CF group, which obtained the highest average tea yield among all groups, had a vast majority with a high tea yield (20-30 tonnes/ha), while the Semi CF and Non-CF groups only had few households (11-20%) achieving this yield level. In addition, the majority of the households in these groups (80-90%) obtained a tea yield of less than 20 tonnes/ha, while only 30% of the Full CF group produced less than 20 tonnes/ha. There were great differences in tea yield among the groups of households.

According to the research results, Semi CFs shows the lowest yield of fresh tea buds (about 16.2 tonnes/ha). The second place belonged to the Non CFs, with about 16.7 tonnes/ha. However, the difference in yields of two groups (Semi and Non CFs) was statistically insignificant. Full CF households obtained the highest yield, at around 21 tonnes/ha. These households used the PH1 tea variety, a high yielding variety; while Semi CFs and Non-CFs mainly grew LDP variety and tea seed variety (old tea variety) that had lower yield. As mentioned above, the PH1 tea variety was suitable for the soil and ecological conditions of the region.

In Phu Da and Phu Ben companies, the production teams had different productivities, which resulted in different volumes of tea supply for the companies. The teams that invested heavily and applied high technology had higher yield. For other teams, tea trees were already old and farmers did not pay enough attention to the investment and maintaince their tea gardens, thus their tea productivity was not high.

After signing the contracts with farmers, the company provided them with fertilizers and pesticides in advance. If necessary, the company could send technical assistants to teach them about tea maintenance and collection. This has led to an increase in the volume of fresh tea buds, which ensures a stable source of raw material for the company.

As the Non-CFs investment did not fulfill the technical standards for tea plantation, nor do they have the support of the company's technical staff on the techniques of tea cultivation, and use of fertilizers, etc., the yield of tea trees was therefore affected.

Table 5.22. Ranking of factors affecting tea yield in order of importance in 2015

	Full contract farmers	***Semi contract farmers***	***Non-contract farmers***
Weather	*1*	*1*	*1*
Type of soil (quality and slope)	*2*	*2*	*2*
Tea seed	*3*	*3*	*3*
Attitude towards tea production	*4*	*4*	*5*
Technology	*6*	*5*	*4*
Group of farmers (CF or Non CF)	*5*	*6*	*6*
Age of tea	*7*	*8*	*7*
Investment level	*8*	*7*	*8*

Source: Group discussion, 2015

Table 5.22 reveals that households generally agreed that the yield was significantly affected by the environmental factors. The most important factor was the weather, followed by the soil type and tea seeds, respectively.

In addition to this, the attitude of tea producers was also very important. If they paid special attention to tea (usually those who considered tea to be their main source of income), their poorer investment in fertilizers and pesticides, etc., and sufficient care of tea had to be implemented.

Technique was a sequential factor. If a household acquired the exact tea technical process, they would take care of the tea much better than those who lacked tea cultivation knowledge.

Next it was the household group factor. The Full CFs often achieved the high yields due to strict adherence to the company's tea technology. Moreover, the quality of materials of the company was more secure than materials in the free market. The households in the Semi-CF, non-CF group, beyond strict supervision of the company, often took care of their own tea, not in compliance with the technical procedures and fertilizer application. Pesticides spraying was not up to the norm. For example, tea might be not harvested at the right time when they were busy or the weather was rainy or sunny. Lowered investment level in tea had to be resulted from the increase in material prices or decrease in tea price.

The tea age factor also affected tea yield. As a rule, from the age of eight, the tea yields kept relatively highly stabile. By the age of 14 to 15, the tea reached its yield peak and gradually reduces by the age of 20. Therefore, if the tea was too young or too old, it would produce lower yield. However, scientific cultivation practices (in terms of care or cutting tea, etc.) could still help to prolong the high yield period of tea. Therefore, this factor was ranked as the seventh most important factor.

The level of investment in tea was also very important. Generally, the proper implementation of fertilizers and application of pesticides had to ensure a good yield of crops. Notwithstanding, this factor was only ranked as the last critical level because of their awareness of tea care in spite of their financial difficulties, they could still afford the supplies at the dealerships for appropriate investment.

5.2.1.5 Influence of contract farming on tea production costs

Table 5.23. Tea production costs in 2014 per ha

Tea production costs	Contract farmers				Non-contract farmers	
	Full CFs		Semi CFs			
	Mean (Mil.VND)	%	Mean (Mil.VND)	%	Mean (Mil.VND)	%
Intermediate costs (IC)	31.220	86	26.659	82	27.226	85
Fertilizers	19.400	62	13.945	52	14.298	53
Pesticides	5.507	18	6.746	25	6.788	25
Harvesting	4.063	14	4.154	16	5.082	19
Transportation	0.691	2	0.138	0	0.150	0
Fuel and other	1.557	4	0.888	3	0.906	3
Interest payment	0.381	2	1.163	4	0.427	2
Depreciation equipment	1.854	5	1.561	6	1.504	6
Depreciation investment cost	1.550	4	2.180	8	2.182	8
Hired labor	1.040	3	0.822	3	0.531	1
Total cost	**36.097**	**100**	**32.407**	**100**	**31.846**	**100**

Table 5.23 revealed that the IC (Intermediate cost) represented about 85% of the total costs among the three farmers' groups. Fertilizers ranked first among the cost components of the IC, accounting for about 50 to 60% of the total IC. That was followed by pesticides, which were responsible for approximately 18 to 26%. The intermediate cost of the Full CFs was the highest among the three groups, reaching about 31 million VND per hectare. The ICs of the Semi CFs and Non-CFs were 26.6 million VND and 27 million VND, respectively.

More specifically, the cost of fertilizers of the Full CF group was the highest, reaching 19.4 million VND per ha compared to 14.5 and 14.3 million VND per hectare of the Non-CF and Semi CF groups, respectively. The results of a thorough interview reveal that, according to farmers, fertilizers had a positive impact on the yield of fresh tea. The more fertilizers were used, the higher yield of fresh tea was obtained.

For Non-CF and Semi CF groups, the investment in fertilizers for tea was lower than the requirement standard for tea cultivation technology. It was also unbalanced and unsatisfactory with the requirement of intensive farming. Microorganic fertilizers were applied to only a very small proportion of the newly cultivated areas of the surveyed households. The use of unbalanced inorganic fertilizers would reduce yield and lead to poorer tea quality and rapid degradation of tea plantation as well as soil erosion.

Table 5.24. Fertilizer costs in 2014

Cost of fertilizers	Contract farmers				Non-contract farmers (n = 40)	
	Full CFs (n = 40)		Semi CFs (n = 18)			
Total cost of fertilizers	19.4 (million VND)	100 (%)	13.9 (million VND)	100 (%)	14.3 (million VND)	100 (%)
Microorganic fertilizers	2.522	13				0
NPK	8.536	44	10.960	80	10.010	70
N	6.596	34	2.940	20	4.290	30
K	1.746	9				

Unlike other perennial trees such as orange, mandarin and coffee trees (which offer fruits and seeds), tea trees are cultivated only for the purpose of leaf buds and fresh leaves. Tea bud is the freshest part of the tree, rich in water and nutrients. Hence, to produce tea with high yield of high-quality leaf bud, tea trees should be fully and timely supplied with nutrients, which depend not only on existing soil nutrients but also the constant annual soil amendments during the production. Surveyed result shows that NPK fertilizers accounted for the largest proportion (of approximately 44–80%) in the total amount of fertilizers purchased by the company; they were followed by nitrate fertilizers (approximately 20-34 %) and Kalium Fertilizer (accounting for around 9%). The composition of the company's purchased fertilizers is demonstrated in Table 5.24 above.

Thanks to a strict control by the companies, the cost of pesticides for Full CFs was the lowest of the three groups, with approximately 5.5 million VND per ha, whereas for the Non-CF and Semi CF groups the cost was about 6.8 million VND per ha. Full CFs used pesticides more reasonably because they understand the tea production process more deeply than the other groups. Moreover, the company sets strict rules on the use of pesticides. If the pesticide residue is high, the company will not be able to export black tea to the market, especially to the international market.

The third cost is the cutting cost, which made up between 14 and 19% of the total IC in 2014. Almost all households in the surveyed area exchanged their work, which helped them to save on their labor costs. If the households needed to hire workers, their outsourcing cost accounted for up to 40%. It was easier for Full CF households to exchange work than for Semi CF and Non-CF households because they were in the same tea region and they all focused on tea production. Semi CF and Non-CF households also produced other agricultural products at the same time, such as rice, pigs, and fish, making labor exchange more difficult. Moreover, the Full CFs owning a large area of tea would be more willing to invest in tea cutters. When they had tea cutters, they often tried to work for each other, so the demand for outside labor was lower than Non-CFs.

Fuel/ha and other costs accounted for only round 3–5% of the IC. Full CF households had the highest cost compared to the other groups because they had

much larger tea growing areas than the Semi CF and Non-CF households, and therefore, they needed to use more fuel to cut the tea.

Transport represented the lowest cost, at about 2% of the total IC costs. Farmers usually transported tea on their own because there was often not a long distance between their tea hills and the collectors. If households had a large quantity of tea, collectors would transport it from the farmers' tea hills. Other costs are responsible for about 15% of the IC, of which the depreciation of investment costs were the highest, with about 4 to 7%, followed by the equipment depreciation that represented about 5%. Finally, hired labor was the lowest among these costs, being only about 1%.

As for the depreciation of investment costs, Full CF households had the lowest cost because they was supported by the company's when growing new tea. In Phu Da Company, Full CF households did not pay for this cost while in the Phu Ben company, Full CF households paid the investment depreciation costs that were deducted annually. Although the depreciation investment level of Full CF households was higher than that of other groups, their cost was, however, the lowest because it was the average cost of the two groups of Full CF households in Phu Da, Phu Ben companies (about 1.5 million VND in comparison to 2.2 million VND).

As for the equipment depreciation, Full CF households had the highest cost since they own more machines. Because Full CF households have larger tea area, farmers had to buy more machines, such as cutters, advanced sprayers and water pumps for their production. The Semi CF and Non-CF groups had more households with smaller tea areas (less than 0.3 ha), therefore, they needed to buy less equipment than the Full CF group.

Regarding interest payment, Semi CF households had the highest cost because some of them were members of the cooperative, they were able to easily borrow capital to produce tea. In general, households could also buy inputs with deferred payment, therefore they did not need loans as much.

The total costs of tea production were different among the three groups of farmers. Full CFs had the highest level with about 36 million VND per hectare because they invested much more in tea growing than the other groups and also because they strictly followed the company's guide for tea processing. The Semi CF group had the lowest cost of tea production.

Comparison of tea production costs between 2013 and 2014

Table 5.25. Economic analysis of tea production from 2013 to 2014 (Unit: Mil.VND/ha)

	2013	2014	2014/2013
Gross output (GO)	71.538	75.556	1.055
Intermediate costs (IC)	27.112	28.752	1.06
Fertilizers	15.643	16.317	1.043
Pesticides	5.359	6.258	1.17
Harvesting	4.603	4.639	1.008
Transportation	0.355	0.369	1.04
Fuel and others	1.150	1.169	1.016
Value added (VA)	44.216	46.658	1.06
Interest payment	0.685	0.685	1.00
Depreciation equipment	1.722	1.722	1.00
Depreciation investment cost	1.964	1.964	1.00
Hired labor	0.760	0.793	1.043
Total cost	32.008	33.680	1.05
Return to family labor	39.365	41.757	1.056

The cost of tea production varies considerately between 2013 and 2014

Between 2013 and 2014, the costs of fertilizers and pesticides constituted the majority of the Intermediate cost (Table 5.25). These costs were higher in 2014 than in 2013, with an increase of about 6%. Fertilizer cost increased slightly, by 4.3% from 2013 to 2014. The increase was mainly due to the increase in the price of fertilizers and the amount of fertilizers used. As the age of tea trees increases, a greater amount of fertilizers is needed for their development. The cost of pesticides increased considerably in 2014 (by around 17%) due to bad weather conditions as compared to 2013. Due to the drought, pests proliferated and farmers had no choice but had to use more pesticides during the production of tea. Although the price of pesticides increased slightly, the amount needed to be used greatly increased.

Basis for the application of plant protection chemicals

According to the growing characteristics of tea trees, as they are perennials, pests are always present and accumulate in tea plantations. In addition, as the trees have fresh leaves and buds with high water content, they are attacked by many types of pests and diseases, such as Chlorita flavescens, Physothrips setiventris, Oligonychus coffeae, Helopeltis theevora, tea leaves folders, tea buds folders, Exobassidium vexans, Pestalotiopsis theae and Colletotrichum camelliae, among many others. Pest prevention has a great impact on the yield and quality of tea leaves and tea buds, therefore, solutions must be developed and focused on detecting and preventing pests and diseases in a timely manner.

The only way to get rid of tea pests and diseases is by applying plant protection chemicals. There are many chemicals used in tea production and their application should be timely and correct. Based on the practical requirements, the company

must take an active role in ensuring the volume and suitable types of agrochemicals to supply Full CF households on time.

In 2014, the companies paid a lot more for the purchase of plant protection chemicals than in 2013. This is due to the complicated and unstable weather conditions in 2014, which resulted in a pest and disease boom. Moreover, high inflation led to a rise in the prices of all commodities, including agrochemicals.

Other costs, such as harvesting, transport, fuel and others, and hired labor, slightly increased (by 1 to 4 %) between 2013 and 2014.

GO/ha in 2014 increased by 5.5% due to the increase in the price of fresh tea. VA/ha in 2014 increased by 5%. Similarly, Return to family labor/ha in 2014 increased by 5.5%. In general, during this time, tea production was relatively stable.

5.2.1.6 Influence of contract farming on outcome and tea production efficiency

Table 5.26. Performance of tea production by farmer groups in 2014

Indicators	Unit	Contract farmers (n = 70)				Non-contract farmers (n = 40)		F test	P values
		Full CFs (n = 40)		Semi CFs (n = 18)					
		Mean	S.D.	Mean	S.D.	Mean	S.D.		
Yield	tonnes/ha	**21.4**[a]	3.9	**16.28**[b]	3.74	**16.69**[b]	3.1	21.783	0.000***
Fresh tea price	VND/kg	**3921**[a]	151	**4048**[b]	161	**4247**[c]	322	19.183	0.000***
Gross output	mil.VND/ha/year	**83.999**[a]	15.966	**65.854**[b]	16.003	**70.940**[b]	14.575	11.345	0.000***
IC (Intermediate cost)	mil.VND/ha/year	**31.220**	9.643	**26.659**	6.595	**27.226**	9.136	2.622	0.078*
Fertilizers	mil.VND/ha/year	**19.400**[a]	4.872	**13.945**[b]	4.627	**14.298**[b]	3.764	16.594	0.000***
Pesticides	mil.VND/ha/year	**5.507**	2.872	**6.746**	3.066	**6.789**	3.570	1.850	0.163
TC (Total costs)	mil.VND/ha/year	**36.097**	10.953	**32.407**	7.680	**31.846**	8.979	2.139	0.12
VA (Value) added)	mil.VND/ha/year	**52.779**[a]	11.941	**39.195**[b]	13.772	**43.782**[b]	13.147	8.663	0.000***
Return to family labor	mil.VND/ha/year	**47.901**[a]	13.084	**33.447**[b]	13.040	**39.107**[b]	13.251	8.761	0.000***

Note: ***, **, and * denote significance at 1%, 5% and 10%, respectively, [abc] Means in the same row without common letter are different at P < 5% by Anova test.

The Post Hoc test showed that there was a significant difference of the tea yield, GO, IC, Fertilizers, VA, Return to family labor between Full CFs and Non CFs but there was no significant differences of the these indicators between Semi CFs and Non CFs. Moreover, there was a significant differences of fresh tea price between Full CFs and Non CFs, between Semi CFs and Non CFs.

Influence of contract farming on yield

The yield of the Full CFs was the highest, with a significance level of 1% (Table 5.26).

Full CFs obtained the highest yield of tea, much higher than that of the other two groups. Their yield was 21.4 tonnes of fresh tea per hectare per year, while those of the Non-CFs and Semi CFs were 17 and 16 tonnes per hectare per year, respectively.

The reasons behind the high yield of the Full CFs include the fact that companies provided them with quality materials (fertilizers, pesticides, and variety, etc.) and that farmers were trained about the process of growing fresh tea to obtain high yields. In addition, their tea areas were larger than those of the other two groups, helping them to exploit the economy of scale in production.

Influence of contract farming on fresh tea price

As can be seen clearly from Table 5.26, in comparison to the two remaining group, Full CFs had the lowest tea price with 3,921 VND/kg in 2014. The tea price of the Semi CFs reached 4,048 VND/kg which is only 100 VND higher than that of the Full CFs. However, Non CFs had the highest tea price in the three studied groups with 4,247 VND/kg.

In fact, Phu Da and Phu Ben companies have tried to maintain a stable tea price of Full CFs. Prices can be adjusted according to market fluctuations. However, tea prices of these companies are always lower than market price because companies have to pay high investment rates for raw material areas, for example, the investment in new tea farms during the first three years or interest rate of advance materials payment for Full CFs. Moreover, they spend management fees to organize tea production teams. One team usually has one leader and one leader assistant. Each team is responsible for 50 - 100 Full CFs. Each company has about 40 teams. Teams provide fertilizer, pesticides for Full CFs and are tea collection sites of households. In the harvest season, households transport tea to the teams. In addition, these companies have to spend money on technical training for households. Moreover, companies also incur other expenses for management of production team, construction of team's office with expensive furniture and equipment, as well as road construction for easy tea transport. Therefore, the price of tea received from the company is not low as the complaints of Full CFs households. In case that tea prices of Full CFs and Non CFs have a large difference or Full CFs' fresh tea price is too low to ensure stable income for household, however, their complaint is justified.

Semi CFs has lower tea price in comparison to Non CFs because Phu Ben Company also spends costs on advance materials payment and management of technical training course for Semi CFs. Additionally, the differential between tea price of Semi CFs and Non CFs depends on transport distance; accordingly, the further distance Non CFs tea is transported, the higher tea price households get.

Influence of contract farming on gross output of tea production

The GO of Full CFs was significantly higher than that of Semi CFs and Non-CFs (Table 5.26).

Full CF obtained the highest gross output of tea production, with almost 84 million VND per hectare per year. This was due to their higher yield. Even though Non-CFs obtained the highest price for their products (because they mainly sold their products in the spot market), their yield and the quality of their products were lower than those of Full CFs.

The Semi CFs obtained the lowest gross output (65 million VND). This corresponds to 77% of the GO of Full CFs even though the price of their products was higher than that of Full CFs (but lower than that of the Non-CFs).

Influence of contract farming on value added

The VA of Full CFs was significantly higher than that of the Semi CFs and Non-CFs (Table 5.26).

Thanks to higher yield and turnover, Full CFs achieved the highest added value, with almost 53 million VND/ha despite their higher production cost. Non-CFs were in the second place, with a high added value of nearly 44 million VND/ha, while Semi CFs had the lowest value with about 39 million VND/ha.

Influence of contract farming on return to family labor

The return to family labor of Full CFs was significantly higher than that of the Semi CFs and Non-CFs (Table 5.26). Owing to higher yield and gross output, Full CFs obtained the highest return to family labor with nearly 47.9 million VND/ha in spite of their higher production cost. Non-CFs ranked in the second place with about 39 million VND/ha, while Semi CFs had the lowest value with nearly 33.4 million VND/ha.

Table 5.27. Household income in 2014 (Unit: Mil.VND)

Indicators	***Contract farmers***				**Non-contract farmers** *(n = 40)*	
	Full CFs *(n = 40)*		**Semi CFs** *(n = 18)*			
	Value	***Rate***	***Value***	***Rate***	*Value*	***Rate***
Tea income/household/year	*29.860*	***0.52***	*15.285*	***0.31***	*16.815*	***0.31***
Other crop income	*5.705*	***0.10***	*6.410*	***0.13***	*8.679*	***0.16***
Animal income	*8.558*	***0.15***	*13.806*	***0.28***	*15.188*	***0.28***
Non farm activities	*13.123*	***0.23***	*13.806*	***0.28***	*13.560*	***0.25***
Total income/household/year	***57.055***	***1***	***49.309***	***1***	***54.243***	***1***

With an average area of 0.6 hectares, Full CFs' income from tea accounted for about 50% of the total income. However, the income from tea is the highest and quite stable in comparison with all other sources of incomes. Other sources of income from animal husbandry and cultivation were very low because of a shortage of land. Non-agricultural income sources, which made up only an average of 23%, were unstable due to fluctuated labor market demand. Therefore, income from tea for Full CFs was considered as the most important and stable source of income. For these households, they fully invested in finance and put all of their efforts in tea business. According to their own testimony: “If we continue to work the land and we invest everything in the tea industry, then we can obtain great profits from this business”.

For the Non CF and Semi CF groups, the average tea growing land was 0.4 hectare per household, thus their income from tea accounted for a moderate proportion of their total income (30%). Apart from tea cultivation, they could make money through other agricultural activities such as planting rice, vegetables and trees and livestock, etc. Besides, some of the households also had other incomes from trading, etc. Although incomes from tea cultivation only accounted for 30% tea plantation was still important, they were still an important income source of these households. This suggests that household's income strongly depends on tea production activities. Tea plantation plays an important role in tea worker's daily life in this place.

5.2.1.7 Farmers's satisfaction with inputs in tea production

***** Ranking inputs:

We used five-point LIKERT scale, ranging from: (1) Very dissatisfied; (2) Dissatisfied; (3) Neutral; (4) Satisfied; to (5) Very satisfied to assess the satisfaction of farmers with tea marketing.

In general, the groups of Full CFs and Semi CFs were more satisfied than the group of Non-CFs in relation to tea production. Regarding the materials to produce tea, Full CFs and Semi CFs were satisfied with company's supply of fertilizers and their convenience. With regard to technical training, Full CFs and Semi CFs were satisfied. Non-CFs had neutral feeling about this service.

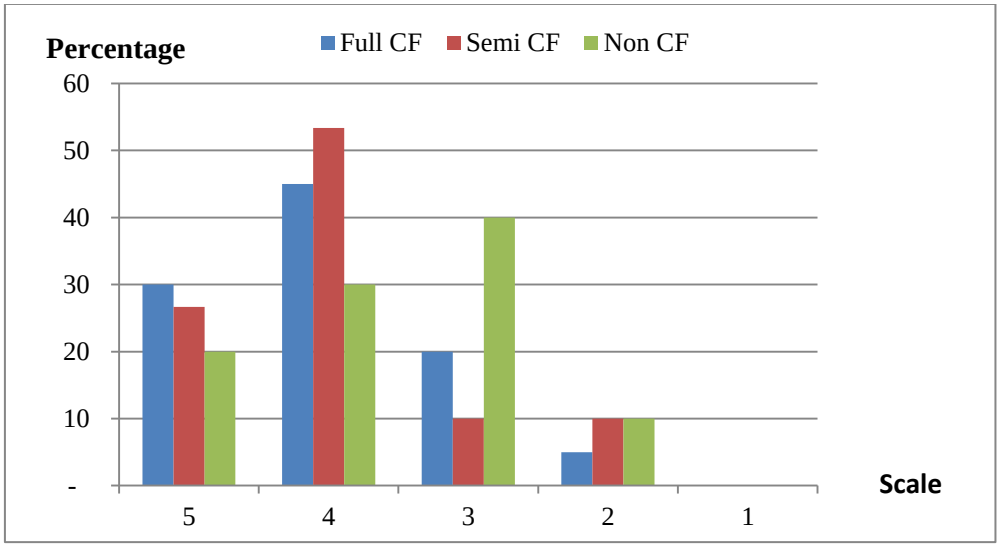

Figure 5.4. Farmers' satisfaction with fertilizer quality in 2014
Source: Household survey, 2015

There was 30% of the Full CFs surveyed who reported that they highly evaluated the fertilizer quality at 5 points and 45% of farmers evaluated it with 4 points, while 20% evaluated it with 3 points and 5% evaluated it with 2 points. The Semi CFs were also generally satisfied with the fertilizer quality. 53 % of the

farmers surveyed evaluated it with 4 points, 27 % of farmers with 5 points, 10% of farmers with 3 points and the remaining 10% evaluated it with 2 points. Non CFs were also less satisfied with fertilizer quality. In particular, 40% of surveyed farmers graded it 3 points (neutral), 20 % of them scored 5 points for their satisfaction (very satisfied) and 30% of them evaluated their satisfaction with fertilizer quality at only 4 points (satisfied). 10% of Non CFs were not satisfied with 2 points (Figure 5.4).

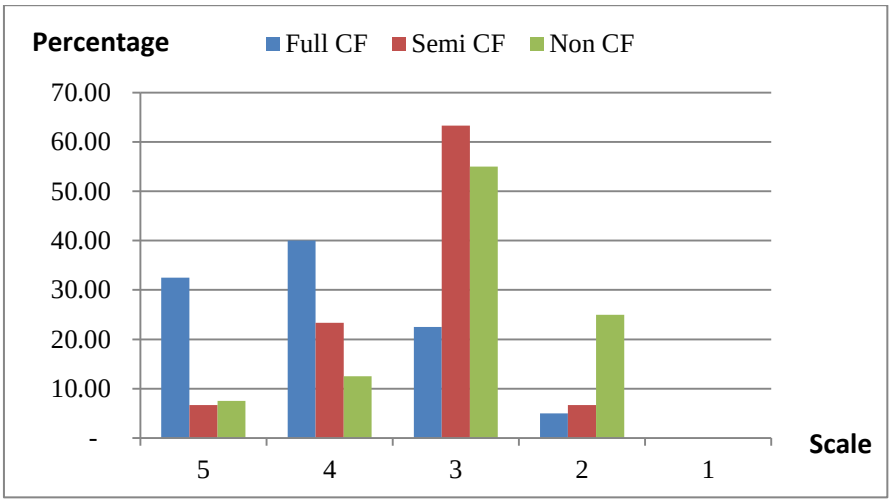

Figure 5.5. *Farmers' satisfaction of pesticide quality* in 2014
Source: Household survey, 2015

Full CFs were also generally satisfied with pesticide quality. 40% of surveyed farmers graded it 4 points, 33 % of Full CFs scored 5 points for their satisfaction. In contrast, 63 % of the surveyed Semi CFs reported that they evaluated pesticide quality with 3 points and a mere 7 % of farmers graded as 2 points. Similarly, 55 % surveyed Non CFs scored their satisfaction at 3 points and 25 % of farmers graded as 2 points (Figure 5.5).

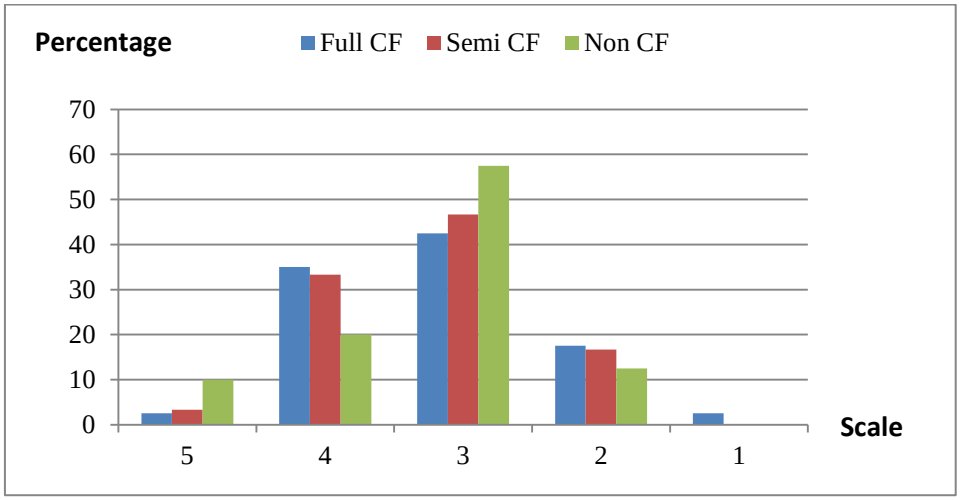

Figure 5.6. *Farmers' satisfaction of input prices in 2014*
Source: Household survey, 2015

In general, three groups of farmer were neutral with price of inputs. As for Full CFs, 43% of surveyed farmers graded it 3 points. 18% of farmers graded as 2 points. 47% of the surveyed Semi CFs reported that they evaluated inputs price with 3 points. 17% of the farmers graded as 2 points. As for Non CFs, 58 % scored their satisfaction at 3 points and 13 % graded as 2 points (Figure 5.6).

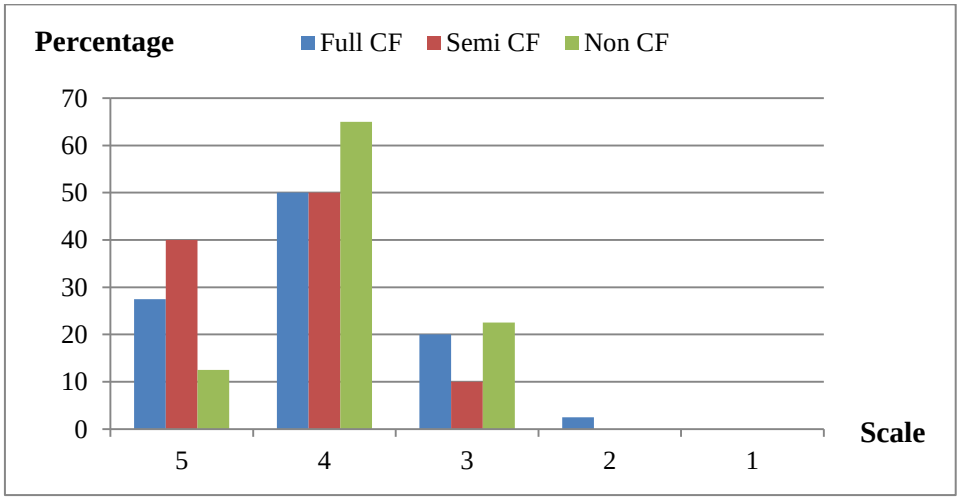

Figure 5.7. *Farmers' satisfaction of* the *convenience in buying inputs in 2014*
Source: Household survey, 2015

Overall, Full CFs were also generally satisfied with convenience in buying inputs. 50% of surveyed Full CF farmers graded it 4 points, 28 % of Full CFs

scored 5 points for their satisfaction. 50 % of surveyed Semi CFs reported that they evaluated this factor with 4 points and 40 % of farmers graded as 5 points. 65 % surveyed Non CFs scored their satisfaction at 4 points and 13 % of farmers graded as 5 points (Figure 5.7).

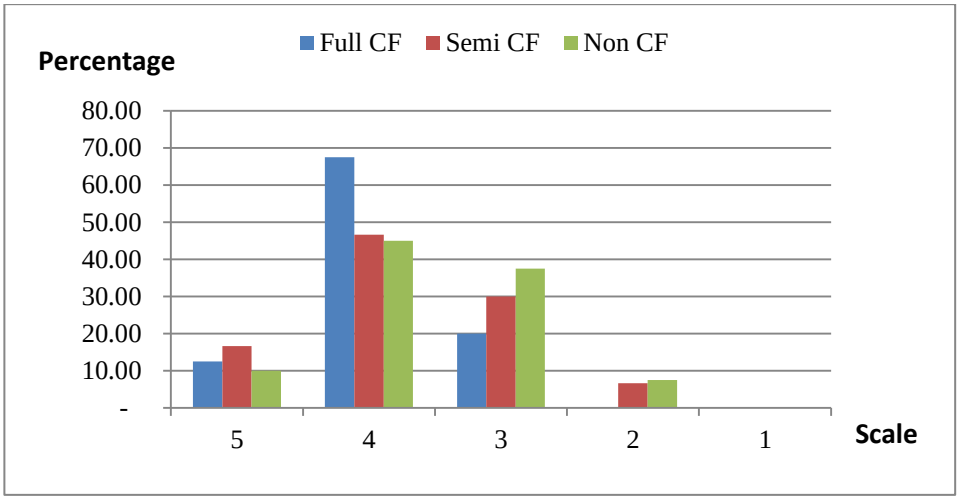

Figure 5.8. *Farmers' satisfaction of late payment for material*s in 2014
Source: Household survey, 2015

Only 13% of the Full CFs surveyed reported that they highly evaluated the late payment for material (5 points). 68% of farmers evaluated it with 4 points. 17% of Semi CFs evaluated it with 5 points and 47% of farmers evaluated it with 4 points. The Non CFs were also generally satisfied with this factor. 10 % of the farmers surveyed evaluated it with 5 points, 45% of farmers with 4 points, 38 % of farmers with 3 points and the remaining 8 % evaluated it with 2 points (Figure 5.8).

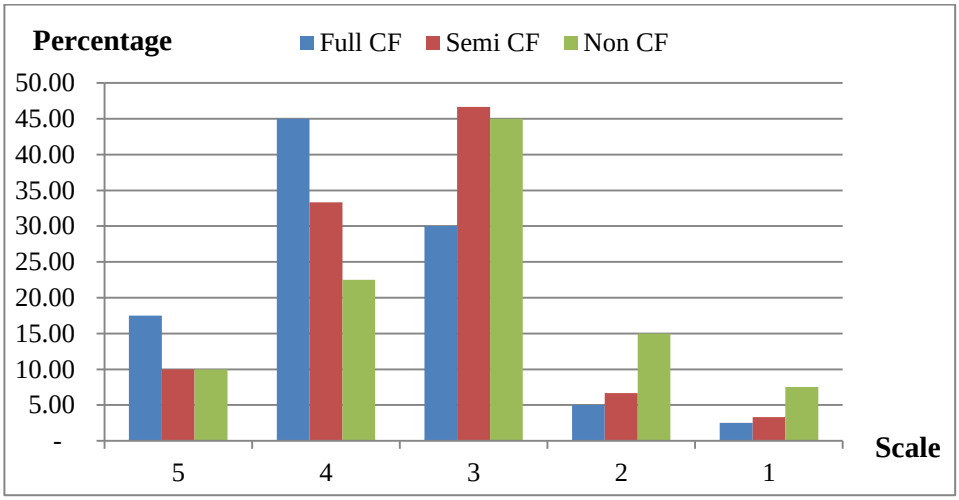

Figure 5.9. *Farmers' satisfaction of technical training in 2014*
Source: Household survey, 2015

As for technical training, Full CFs were the most satisfied group with 18% of the Full CFs surveyed reported that they highly evaluated the technical training (5 points). 45% of Full CFs evaluated it with 4 points, while 30% of farmers evaluated it with 3 points and 5% of farmers evaluated it with 2 points. The Semi CFs also generally felt satisfied with this factor (neither satisfied nor unsatisfied). 10% of the farmers surveyed evaluated it with 5 points, 33% of farmers with 4 points, 47% of farmers with 3 points and the remaining 10 % evaluated it with 1 - 2 points. Non CFs were also generally neutral with it. 10% of surveyed farmers graded it 5 points, 23% of them scored 4 points for their satisfaction and 45% of them evaluated their satisfaction with technical training at only 3 points. 23% of Non CFs were not satisfied with 1- 2 points (Figure 5.9).

5.2.2 Tea marketing in Phu Tho province

5.2.2.1 Marketing channels for tea products

ACTORS IN THE BLACK TEA VALUE CHAIN IN THE PROVINCE OF PHU THO

Figure 5.10 illustrated actors in the black tea value chain in Phu Tho as below:

Producers

Full contract farmers (Full CFs): These farmers receive land allocated by the company for a maximum of 30 years with the condition that farmers produce tea leaves according to the company requirements. They must strictly follow all company rules in terms of tea production process, quality control standards, use of materials and fresh tea sale.

Semi contract farmers (Semi CFs): These farmers sell a portion or the entire production of fresh tea to the Minh Tien Cooperative, which in turn signs a contract with the Phu Ben Company. This contract assures farmers that the

company will acquire their fresh tea products. The company also provides them with some technical assistance regarding tea growing technology, good fertilizers and financial support through loans with preferential interests.

Non contract farmers (Non-CFs): These farmers do not have a cooperation/link with the company and do not sign contracts with any other actors along the tea value chain. They produce and sell their fresh tea on the spot market through collectors (Le et al., 2016).

Collectors

There are two types of collectors, including the first group who collect fresh tea from companies contracted with farmers and closely bound to these company and the second group who are free collectors in the spot market and more independent to private companies.

In channel 1, Full CF transports the fresh tea to the collection site of the company at tea production teams. One team usually has one leader and one leader assistant. Each team is responsible for 50 - 100 Full CFs. Each company has about 40 teams. The teams provide fertilizers and pesticides for Full CFs households and also play the role of a fresh tea collection site of households. In the harvest season, households transport fresh tea to the Teams. Tea is weighed and classified by grade A, B, C, or D. Then the tea is transported to the processing trees in the company.

In channel 2, Semi CFs transport fresh tea to the cooperative. For households with a large amount of tea leaves, the cooperative shall be transported tea at the hill. At noon and in the evening, the truck of the cooperative will transport fresh tea to the tea processing plant of Phu Ben Company.

In the channel 3, Non CFs transport fresh tea to the collector's house. Households with a large amount of tea leaves are transported tea at hill without transportation fee.

Fresh tea collectors collect fresh tea in local and surrounding areas with the aim of selling it to the company for the processing of black tea for export. Collectors often have a lot of experience (10-20 years) in buying high quality tea. They usually have a strong financial background within the local area, with a working capital of around 200 million VND at all times. Some large-scale collectors also buy trucks to transport fresh tea from households located in remote areas to the processing company.

Collectors play a key role in the black tea processing chain. Most of the tea material is transported to the factories through the system of collectors. The results of the survey show that their purchase price of fresh tea in 2014 is about 4200 VND/kg while their selling price (to factories) is around 4500 VND/kg.

Collectors often collect around 500 – 1000 tonnes of fresh tea per year. Tea trees have five to six harvests per year and tea is collected in the harvest season. Most harvest periods last 15 days, and farmers collect around 10 tonnes of fresh tea each day. Collectors operate around nine months per year with an average amount of 860 tonnes of fresh tea. However, many establishments have debts of between 20 and 30 million VND as they pay farmers in advance. This is how

collecting establishments create stable input materials during the harvest season. Large collectors use trucks to transport tea material. Small collectors use motorcycles, but the number of motorcycles used is fairly low. Collectors divide fresh tea into two types: young and old tea leaves. The price of fresh tea in 2014 ranged from 3700 to 5200 VND based on the quality of fresh tea. Tea is usually sold to a tea processing company. Collectors usually choose companies that can be counted totally paid and do not have to pay because they have to pay farmers immediately. Collectors transport fresh tea to the company or vice versa. Shipping costs per ton of fresh tea are based on the distance between collectors and processors. In case that tea collection by the company is taken at the households, the price of tea paid to collectors will be reduced because the collectors are not subject to transportation charges.

The company informs the collectors about the purchase price of fresh tea before they buy the tea. This price is determined based on the export price of tea that the company settles with its foreign partners. The price of fresh tea collected is determined based on the company's promulgated price, the current situation in the tea market and the costs that the collectors have to pay. Normally, collectors estimate a margin of 2-3% compared to the price promulgated by the company to buy fresh tea from farmers.

The Minh Tien Cooperative buys fresh tea from Semi CFs to sell it to the Phu Ben Company. The transportation fee is about 250,000 VND per ton of fresh tea.

Processors

There are two types of tea processing companies, in which qualified companies are large scale companies, mainly investing in technology lines, housing and trees to access export markets because of black tea is mainly exported. However, there is a fairly large amount of households who organize small-scale processing establishments that affect considerably the quality and reputation of the tea processing industry.

In general, the raw material of tea processors in different companies is quite different considering the types of ownership, investment level and business strategy of each company. For example, for the Phu Ben Limited Company, around 80% of the tea material is grown in its own tea areas, while the Hung Ha Limited Company fully depends on tea material from Non-contract farmers and some collectors.

There are usually two types of export of black tea: direct export with large-scale companies and indirect export with small-scale companies. However, to reduce the intermediate costs and to increase the added value, the processing companies often make efforts to export directly. Currently, it is estimated that around 70% of the black tea export is through the direct export channel, and the remaining 30% are indirectly exported.

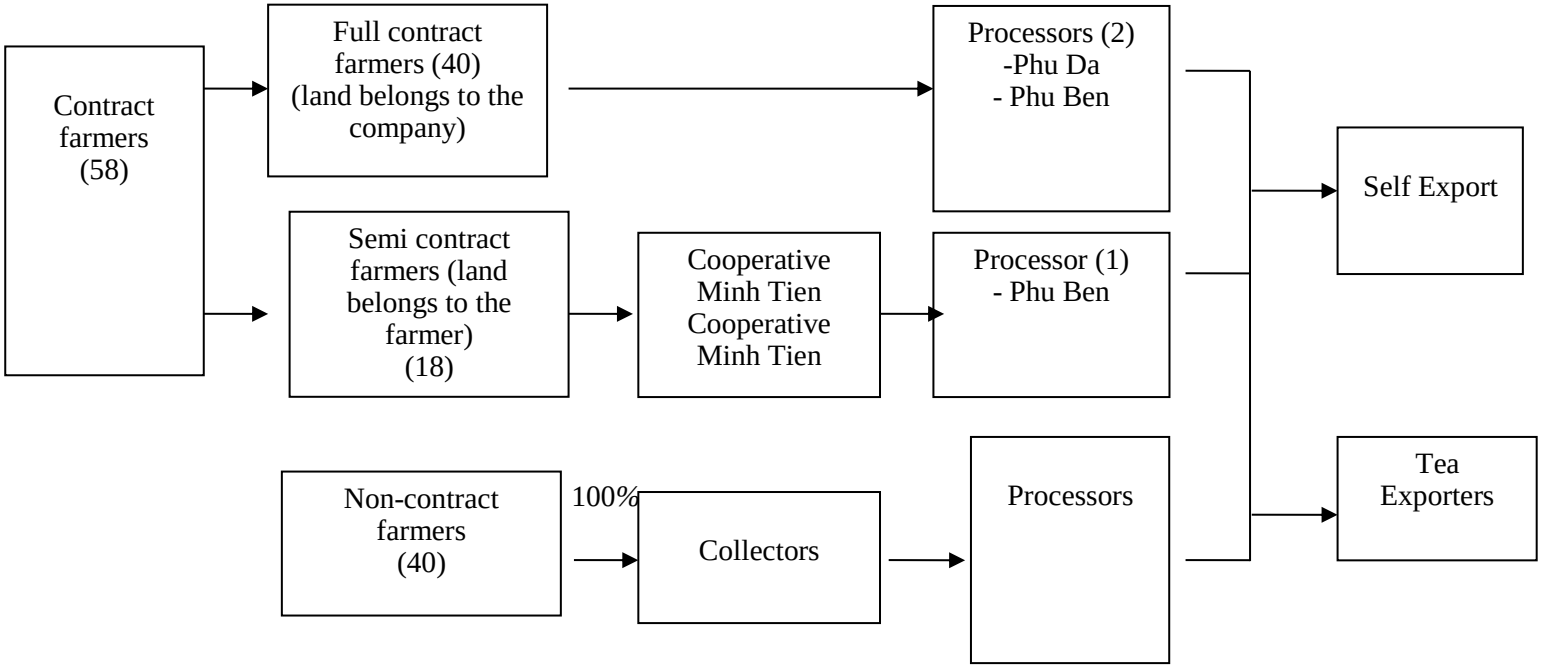

Figure 5.10. Marketing channels for black tea in Phu Tho province

5.2.2.2 Tea prices among farmers' groups

The price of fresh tea in Phu Tho was resurveyed in June 2014 - 2016 to compare fresh tea prices between the three farmer groups. Only 30 full CFs, 15 Semi CFs and 30 Non CFs were selected to survey tea prices in June. Since not all households harvest tea in June, we chose fewer households than with real samples.

During the three studied years (from 2014 to 2016), the price of tea in June for the Full CF group was always the lowest among the three groups. However, the difference in the price of tea between groups was smaller in 2015 and 2016 compared to that of 2014. In fact, in 2015 and 2016, the back tea market faced more difficulties than in 2014. These difficulties led to a great decrease in tea price for the Non-CF and Semi CF groups, while tea price for the Full CFs did not experience wide fluctuations (Figure 5.11).

Non-CF group was generally more vulnerable than the two CF groups due to the substantial decrease of tea price.

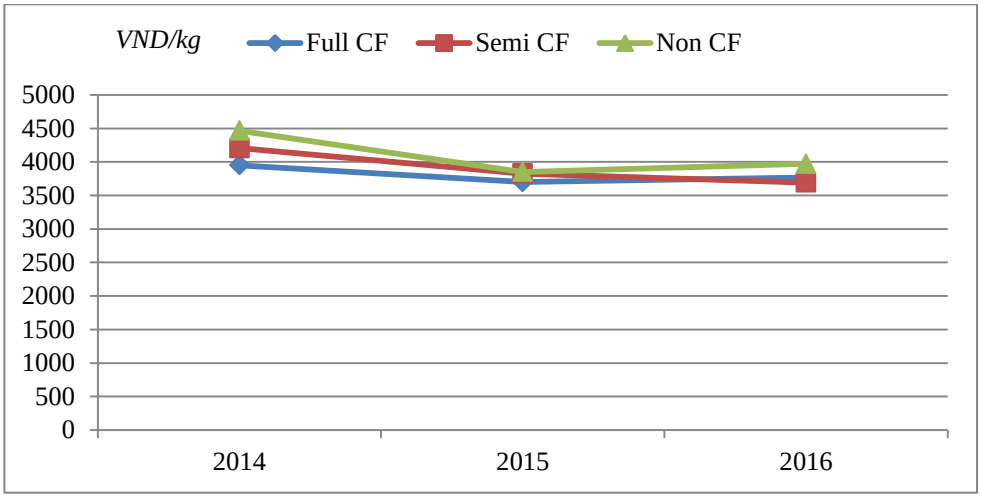

Figure 5.11. Fluctuation of fresh tea prices by farmer groups in June from 2014 to 2016

5.2.2.3 Farmers' satisfaction with tea marketing activities

We employed the five-point LIKERT scale, ranging from: (1) Very dissatisfied, (2) Dissatisfied, (3) Neutral, (4) Satisfied, (5) Very satisfied in order to assess the satisfaction of farmers with tea marketing.

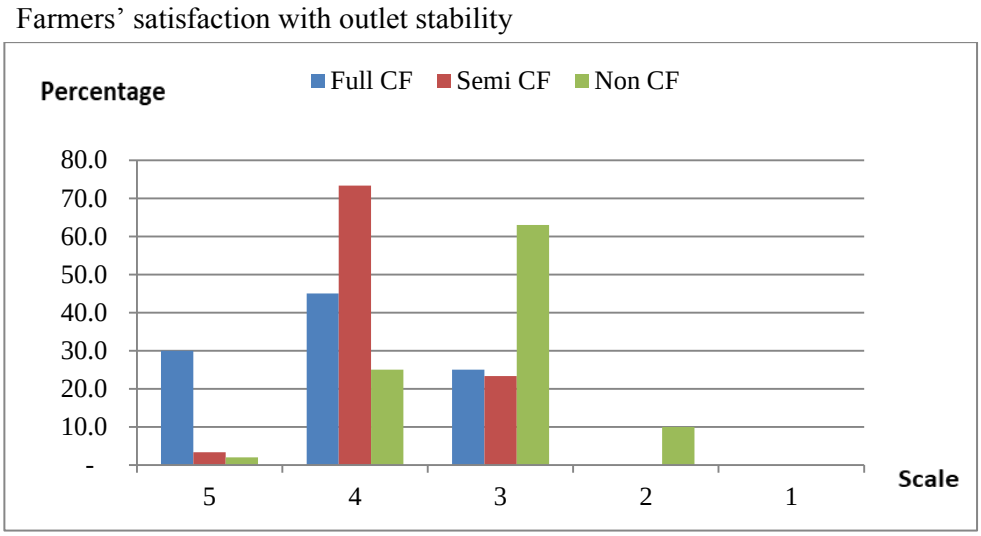

Figure 5.12. *Farmers' satisfaction of outlet stability in 2014*
Source: Household survey, 2015

Outlet stability means market stability. 30% of the Full CFs surveyed reported that they highly evaluated the outlet stability of fresh tea (5 points). 45% of farmers evaluated it with 4 points, while the remaining 25% of farmers evaluated it with 3 points. The Semi CFs were also generally satisfied with the outlet stability. 70% of the farmers surveyed evaluated it with 4 points, 3.3 % of farmers with 5 points and the remaining 23.3% evaluated it with 3 points (Figure 5.12).

As Phu Ben Tea Company is part of the largest producer of tea in the world, its production is considerably stable. As a result, Full CFs and Semi CFs sell their fresh tea to the company in a steady manner.

Moreover, when the quality of black tea is high, it is much easier and more stable to sign contracts with large companies. The tea raw materials of the companies that are produced by Full CFs have a high standard because farmers had enough inputs and applied good husbandry practice. Furthermore, not only the facilities and technologies are modern but workers in the tea processing are also well trained, which facilitate the improvement of black tea quality.

Black tea is the largest tea export sector of Vietnam, contributing to more than 70% of the total tea export of the country. Black tea is produced by two major technologies:

- OTD (Orthodox) Technology; Despite being an old technology, the facilities are imported from Russia, which are still good compared to others in the world. Phu Da Tea Company produces tea based on this technology. In addition, the company always seeks to renovate its facilities and imports them from Japan and Russia.

- The Black tea processing technology CTC (Crush, Tear, Curl) was imported by India and was used when Vietnam joined the World Trade Organization

(WTO) in 2007. Phu Ben Company employs this technology for their production of black tea. Being a subsidiary of one of the most famous tea companies in the world (India Tea Company), Phu Ben Company has the most modern facility systems and tea processing technology in Vietnam.

Regarding Non-contract farmers, a good part of the farmers (25%) assessed the outlet stability with a score of 4 points, while a mere two percent of the surveyed households rated it with the maximum score (5 points), and a large proportion (63%) rated it with 3 points. Finally, only 10% of households were dissatisfied with the outlet stability, whereas none of the Full CFs nor Semi CFs evaluated it that low (less than 2 points) (Figure 5.12).

On the other hand, Non-CFs often sell fresh tea to private companies through collectors, which creates many difficulties to households. Most private companies do not have their own areas of raw materials; therefore, they have to buy fresh tea in the spot market, which have a lower standard. In addition, the facilities and tea production technology of private companies are not as good as those of other big tea companies. As a result, their black tea products are of poor quality. Consequently, the consumption through this marketing channel is understandably unstable.

The facilities of the OTD black tea processing technology are not maintained nor replaced adequately, leading to lower tea quality of the finished products and corresponding lower prices.

As for the facilities of the CTC black tea processing technology, although they are modern facilities and have a good standard compared to others in India or Kenya, private companies do not manage them properly, the training level of workers for the processing stage and the controlling quality methods are not good. Therefore, the quality of Vietnam's CTC is lower in comparison with other parts of the world.

Farmers' satisfaction with the stability of fresh tea prices

In general, Full CFs highly appreciated the stability of fresh tea prices. Based on the survey conducted, 25% of the Full CF households rated the price stability with the maximum score (5 points), while 50% evaluated it with 4 points, and 25% with 3 points. Semi CFs were also fairly satisfied with the price stability of fresh tea. More specifically, 43.3% rated the stability with 4 points, 16.7% of households evaluated it with 5 points, a third (33.3%) evaluated it with 3 points, and finally, the remaining 6.7% rated it with 2 points (Figure 5.13).

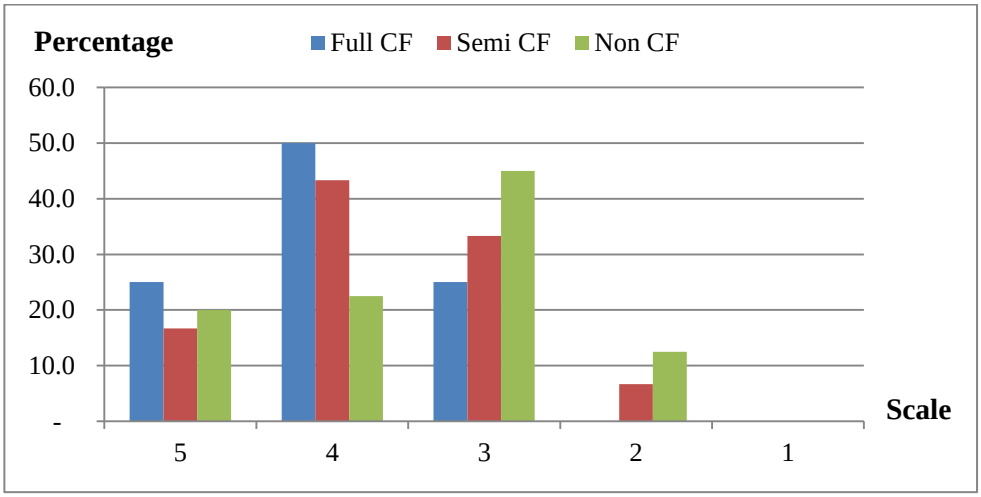

Figure 5.13. *Farmers' satisfaction of the stability of fresh tea prices* in 2014
Source: Household survey, 2015

In fact, Phu Da and Phu Ben companies have always tried to maintain a stable fresh tea price level for their Full CFs. Prices can be adjusted according to the market change. However, fresh tea prices of these companies are always lower than that of the market because these companies have to pay high investment rates for raw material areas, such as the investment fee for new tea farms during the first 3 years or the interest charge of the deferred payment of materials. The fluctuation level of the price of fresh tea in one year for Full CFs is lower than that of Non-contract farmers. When the market price of tea increases, the companies adjust their price to ensure that the difference between the price of tea of Full CFs and that of the market is reduced. This also ensures the motivation of farmers and a fair economic benefit for Full CFs. As tea prices on the market go down, the companies strive to maintain Full CFs's prices to make them feel less stressed and still motivated to take care of their tea gardens. Because tea gardens are the property of the company, the company always maintains, reverses and improves them from the beginning to the time of harvest. They also try to extend the life cycle of the tea plantation by reinvesting in tea farms after the harvest, for example by adding manure, etc. (in-depth interviews with the company managers).

The main tea season is from July to September. During this time, fresh tea price usually low, people are often forced prices. At the end of the year, in November and December, bad tea, in addition to the companies also cut down the processing of tea at this time so tea prices down. Non CF households receive low prices during these times. On the other hand, the tea price of the CFs was relatively stable during the year. For example, in 2014, the price for Full CFs ranges from 3600 VND to 4200 VND around the average price of 3,900 VND/kg. The tea prices of the good quality batches, such as the first batch (in April) and second batch (in June), are relatively high. For Semi CF households, the degree of

fluctuation between the tea batches is also relatively large, ranging from 3800 to 4300 VND, with the average price of about 4000 VND/kg. For Non-CF households, the fluctuation is highest as compared to the above two groups, from 3700 VND to 5200 VND, with the average price of 4200 VND/kg. The prices are generally high for batches of good quality tea and relatively lower yield such as the first and second batch. However, tea prices are relatively low for the batches with high yield such as the third batch (in July - August), the fourth batch (in August - September) and at the end of the harvest (in October - November) because the harvested fresh tea is of low quality. Meanwhile, tea processing companies also need a smaller amount of materials for their processing activity during these periods.

45% of the surveyed Non-contract farmers rated price stability with a score of 3 points, about twenty two percent of the households assessed it with 4 points, and the remaining 20% with the maximum score of 5 points. Finally, 12.5% of the Non-contract households were unsatisfied with the price stability of fresh tea (2 points), while none of the Full CFs were unssatisfied and only 6.7% of the Semi CFs rated the price stability with this score (Figure 5.13).

Private companies buy fresh tea at a high price when they are in need of materials to produce black tea. When there are problems with the production or when it is the main tea season and its yield is high, these companies force Non-contract farmers to lower their prices and they end up buying fresh tea at extremely low prices. In addition, during the production process, Non-contract farmers use unsafe fertilizers and pesticides and do not follow a strict process like the Full CFs do, therefore they obtain lower quality fresh tea. This is why the price of fresh tea drops drastically every time the tea yield is high. Due to all of the above factors mentioned, the fluctuation of the prices of fresh tea produced by Non-contract farmers is fairly drastic, which then leads to a low satisfaction level of this group with the stability of tea price.

Farmers' satisfaction of reasonable price of fresh tea

Most Full CFs were not satisfied with the prices of tea they received from large companies. 42.5% of the households gave 2 points and 27.5% of the farmers assessed it with a score of 3 points. Only 15% of the households were satisfied (4 points). As can be seen clearly from Table 5.34, the average price of fresh tea for this group in 2014 was 3,922 VND/kg, being the lowest among the three groups (Figure 5.14).

The stability of fresh tea price reflects the fluctuation of fresh tea price during a year. It is also important to note that a stable price is different from the reasonable price.

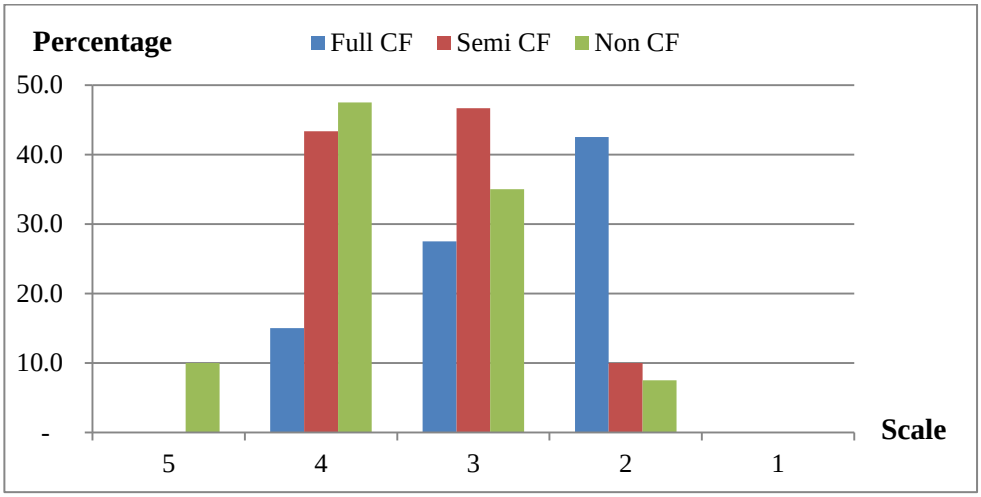

Figure 5.14. Farmers' satisfaction of reasonable prices of fresh tea in 2014
Source: Household survey, 2015

Semi CFs were temporarily satisfied with the price they received. However, their satisfaction level was not as high as that of Non-CFs. It is apparent from Table 5.34 that the price of tea for this group occupies the second place with 4,048 VND/kg, higher than that of Full CFs but lower than that of Non-CFs. 46.7% of the households surveyed rated the price with 3 points (Neutral). 43.3% of the households were fairly satisfied and rated the price with 4 points. The remaining 10% evaluated it with 2 points (Dissatisfied) (Figure 5.14).

Semi CFs has lower tea prices in comparison with Non CFs because Phu Ben company also has to pay for advanced materials and offer technical training courses for Semi CFs. Additionally, the difference between tea price of Semi CFs and Non CFs also depends on transport distance; accordingly, the further distance Non CFs tea is transported, the higher tea price households get. However, this tea price was significantly lower than the market price. Thus, the Semi CFs sometimes decided to sell their tea to other collectors, not to the cooperative, which resulted in the situation when the cooperative managers found it difficult to ensure the tea quantity as stated in the contract with the company.

The Non-CF group had the highest satisfaction level when it comes to the price at which they sell their tea produce to collectors. The average price of fresh tea for this group in 2014 was 4,247 VND/kg, being the highest among the three studied groups. 47.5% of Non-CF households evaluated this price with 4 points and 10% of households were very satisfied with their price (5 points). 35% evaluated it with 3 points and 7.5% with 2 points (Figure 5.14).

Farmers' satisfaction with buyers' payment

Non contract farmers were the most satisfied with the payments of tea purchasers. 27.5% of the households were very satisfied, giving them the maximum score (5 points) and 55% of the households assessed the payment with

4 points (satisfied). Only 15% and 2.5% of the households were either neutral or unsatisfied, respectively. As for private companies, since they did not possess their own tea material zones, they were always afraid of the shortage of fresh tea, thus they focused on paying farmers immediately in order to attract non-contract farmers to sell fresh tea to them (Figure 5.15).

Semi CFs were fairly satisfied with the payment of the cooperative. 13.4% of the households were very satisfied (5 points) with the payment of the cooperative when purchasing their tea. A vast majority (73.3%) of the households were satisfied (4 points). Only 10% of the households felt neutral and evaluated the payment with 3 points and only a mere 3.3% were dissatisfied (2 points). Phu Ben Company effectively focused on paying the cooperative, and therefore, the cooperative was able to pay the Semi CFs immediately after receiving the payment from the company (Figure 5.15).

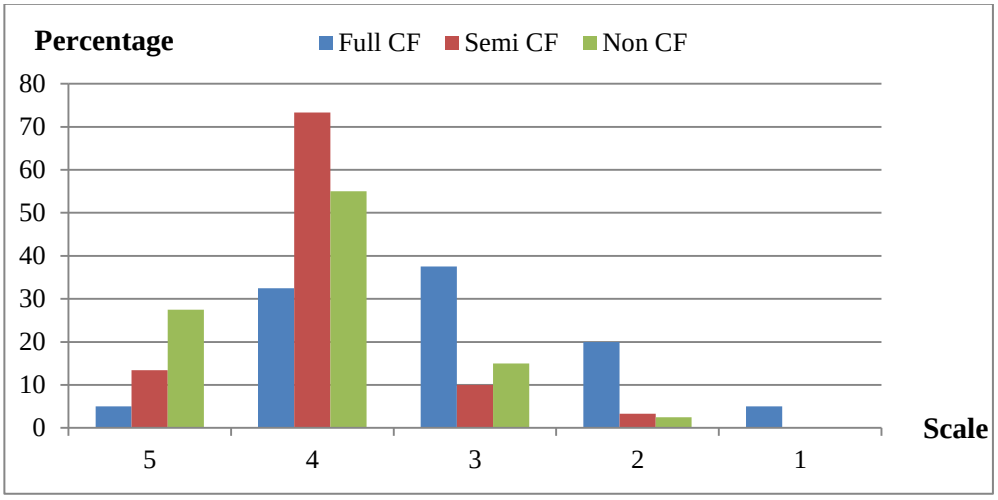

Figure 5.15. Farmers' satisfaction with buyers' payment in 2014
Source: Household survey, 2015

Full CFs were dissatisfied with the payments of Phu Da and Phu Ben companies. A small fraction (5%) of the households were very satisfied (5 points) and almost a third (32.5% to be exact) of the households were satisfied (4 points), while more than a third (37.5%) felt neutral (3 points). Up to 20% of the households were dissatisfied (2 points) and only 5% were very dissatisfied with the company's payments (1 point). This could be explained by the fact that Phu Da and Phu Ben Companies only paid for tea transactions in the last period, or only offer a partial payment at the survey period when Full CFs sold them their tea (Figure 5.15).

However, Full CFs households were unsatisfied with the deferred payment of Phu Da and Phu Ben companies when they made a comparison with other collectors. In fact, Phu Da and Phu Ben companies had provided fertilizers and pesticides without any interest rates like the other agents in the market. The

deferred payment made by the companies was still in conformity to the contract, which was therefore justified.

5.2.2.4 Influence of contract farming on the tea value chain in Phu Tho province, Vietnam

Analysis of the tea value chain in Phu Tho province

The added value per ha (VA/ha) of Full CFs appeared to be by far the highest among the three groups, with nearly 53 million VND. It was followed by Non-CFs and Semi CFs, with over 44 million VND and almost 39 million VND, respectively.

It could be seen that the investment of the companies in fertilizers, pesticides and their strict management in tea production had helped Full CFs obtain higher yield, and thus, attaining the highest VA/ha among the three farmers' groups.

According to the estimates of tea the companies, approximately 4.3 to 4.4 kg of fresh tea was needed to obtain one kg of black tea. Thus in order to calculate the ratio of VA per ton of black tea, VA/ha was converted to VA/ton black tea through the following two steps: (i) First, VA/ha was converted to VA/ton of fresh tea; (ii) Secondly, VA/ton of fresh tea was converted to VA/ton of black tea, provided that 4.3 – 4.4 kg of fresh tea is equal to one kg of black tea).

The VA per ton of black tea products was 11.407 million VND for Non-CFs, 10.882 million VND for Full CFs and 10.622 million VND for Semi CFs.

As can be seen clearly from Figure 5.16, although the VA per ton of black tea for Full CFs (10.882 million VND) and Semi CFs (10.622 million VND) were lower than that of Non-CFs (11.407 million VND), the total VA per ton of black tea of the value chain for Non-CFs was lower than those of the value chains for Semi CFs and Full CFs. The total VA for the three groups were 20.201 million VND (Non-CFs), 23.944 million VND (Semi CFs) and 26.126 million VND (Full CFs). Also, the enterprises having areas of high quality raw materials obtain higher black tea prices. All of this were due to the advantages of Full CFs that their outputs were guaranteed and stable. Large processors possess close links with foreign companies; for example, Phu Da Tea Company has made a joint venture with Iraq and Phu Ben Tea Company has also done so with a branch of the famous Indian tea company.

Distribution of the VA among actors per ton of black tea

In the first value channel, the VA comes mainly from the company, which accounts for 58%, while the remaining 42 % comes from Full CFs.

In the second channel, the VA comes mainly from the company, which represents 52% and the remaining shares are 45% from Semi CFs and 3% from the cooperative.

In the third channel, the VA comes mainly from Non-CFs, accounting for 57%, from companies with about 39% and 4% from collectors.

We can observe that in the third channel, the highest percentage of the VA comes from Non-CFs. However, it is important to consider other aspects of the black tea value chain and not just the economic benefit.

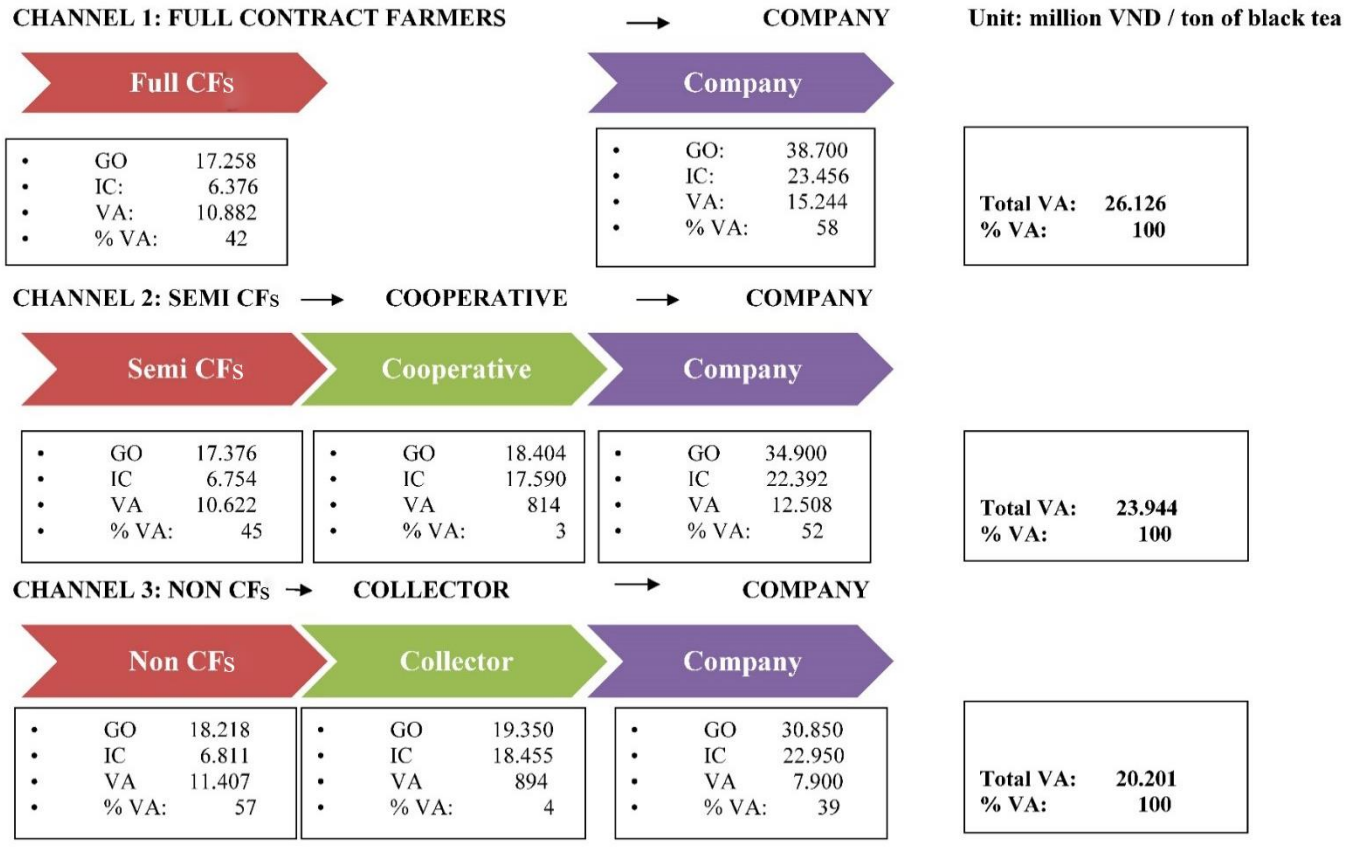

Figure 5.16. Costs and benefits of actors in the black tea value chain in Phu Tho in 2014

Influence of contract farming on the value chain of black tea in the Phu Tho province, Vietnam

Influence of contract farming on the whole value chain of black tea

Increase of the total added value (VA) in different channels

According to the results in Figure 5.16, the total added value of the first chain (Full CFs) attains 26.126 million VND per ton of black tea and the total value added of the second chain (Semi CFs) reaches 23.944 million VND per ton. The third chain (Non-CFs) shows the lowest total value added, with 20.201 million VND per ton. In the first chain, thanks to the contract signed with the big tea company, the fresh tea produced in this channel is of higher quality because farmers are adequately supplied with good quality fertilizers and pesticides by the company, while strictly following the husbandry practices as instructed by the company. In addition, the companies entering into contract farming with Full CFs all have modern black tea processing technology and a skilled workers. Therefore, they are able to produce high quality black tea products, achieving the highest prices of black tea among the three value chains at the study sites.

In the second channel, the grade of fresh tea is not higher than that of the market because the companies only provide pesticides for Semi CFs but they do not closely control the manufacturing process of farmers. However, the Phu Ben Company signs contracts with cooperative to purchase most of their fresh tea to add to the manufacturing process so that the quality of black tea in this chain is still higher than that of the market. Therefore, the VA of the second chain occupies the second place in Figure 5.16. In general, depending on the contract, the total VA of the CF chains are improved, being higher than the total VA of the Non CF's chain.

Increase of the close links between actors in the chain

In the first chain, we can clearly see the close relationship between farmers and the processing companies. Farmers must carefully follow all terms specified in the contract, from receiving materials to the practices of growing and harvesting tea. The companies have to supply materials in advance and buy all of the outputs. That is a close relationship between different actors in the chain.

In the second chain, the relationships between Semi CFs, the cooperative and the companies are quite sustainable. Semi CFs sell their tea to the cooperatives according to oral agreements (which are binding since farmers are usually neighbors and even cousins of the cooperative managers). Farmers sell most of their tea to the cooperative despite the fluctuations in the market's tea price. This is partly because they believe that the managers of the cooperative are dynamic and have a good reputation due to the experience they have gained as collectors, and partly due to the respect of knowing each other. Also, as the cooperative provides fertilizers in advance, they also have a certain attachment to the cooperative. Semi CFs highly appreciate the benefits of the contract in relation to fertilizers provided in advance because their quality is guaranteed and they are affordable and comfortable to buy. This is important for the farmers in a context where there is often a shortage of cash due to numerous family expenses. The relationship between the cooperative and the company is quite close, through

selling contracts signed by both sides. Thus, in both of the above chains, the relationships between actors are quite sustainable and contribute to the strengthening of the value chain.

Influence of contract farming on actors in the black tea value chain

Producers

Stability of input supply for producers

In the first and second chains, Full CFs and Semi CFs are both provided with high quality fertilizers in advance. In addition, Full CFs are also provided with pesticides in advance. This contributes to increasing yield, fresh tea quality and ensuring the best production conditions for the manufacturer (Oanh et al., 2016). For Non CFs, in the spot market, quality of materials is often not guaranteed. In addition, purchasing in advance is neither convenient nor easy, as Full CFs and Semi CFs do.

In the first and second chains, Full CFs and Semi CFs are both provided with high quality fertilizers in advance. For the Full CFs, they are also provided with pesticides in advance. The selling of products of households provided with contracts is more stable than that of non contract farmers.

Ensuring the stability of output markets

The products of Full CFs and Semi CFs are sold through contracts with the companies of Phu Da and Phu Ben. These are the companies with vast experience in the market, having large capital, modernized production technology, a high level of management and good reputation. They have often signed contracts with major and stable partners. Thus, the selling of households' products through contracts is more stable than that of Non-CFs.

Create higher added value for Full CF

Full CFs have largest tea land area with 0.64 ha thanks to the company's land allotment. Besides that, thanks to the support provided by the company, which includes inputs with deferred payment, tea production technology recommendations and strict control of management, the yield of Full CFs is the highest among the three studied groups. As a result, the added value for Full CF/ household/year is the highest, making them feel more self-assured about tea production.

Processors

Thanks to contract farming, processors have more stable material areas that meet the requirements of qualified products. Due to the supply of good inputs (fertilizers, pesticides and production technologies for Full CFs and Semi CFs), companies receive fresh tea of higher quality. In addition, the tea material is generally ensured because of the close interaction between both sides in the contract.

5.3 Factors affecting tea contract farming in Phu Tho

5.3.1 Internal factors

5.3.1.1 At the farmer side:

Benefits for farmers in Contract farming

Table 5.28. Benefits of contract farming for Full contract farmers

Benefits	Rank
Outlet stability	1
Social insurance and health insurance contributions	2
Tea price stability	3
Support materials	4
Higher yield	5
Higher quality of tea land	6
Technical training	7

Note: 1: most important; 7: least important

Source: Group discussion, 2016.

Farmers believe that benefits in contract farming are the factors promoting them to join in contract farming. They listed different benefits and ranked the important level of these factors. Below are the results of the discussions with the Full CF group about ranking the benefits obtained from their participation in contract farming.

Table 5.28 shows the benefits for Full CFs farmers and their corresponding ranks of importance. The table reveals that the outlet stability was considered the most important benefit gained from contract farming. Outlet stability ensures their investment in tea production and helps them be satisfied with certain income. Farmers is inherently interested in stability are scared of risk.

Insurance benefit was considered as the second most important benefit for Full CF households. This was really important to promote them to participate in CF. Health fee was a large expenditure for them. Besides, when they retire, they often can not work because of poor health. In this case, if they have retirement pension, their lives can be guaranteed. If they do not join in CF, they can not enjoy this benefit.

The third important factor was fresh tea price stability. In fact, Non CF households' tea price was higher than that of Full CF households; however, this price was not steady. When tea market faces with difficulty, fresh tea price can even drop dramatically. Since 2015, tea industry has experienced this situation. Thus, Full CF households highly appreciate price stability of fresh tea. They can accept that tea price is lower than that of spot market as long as this price is stable during at least a year and fluctuates slightly in comparison with the average price. This still gives them the incentive to participate in CF.

In addition, Full CF households appreciated that support materials, including late payment for materials and high quality materials will promote them to join

in CF. However, this factor was only ranked as the fourth most important factor. Following that, higher yield and higher quality of tea land provided by the company were ranked as the fifth and the sixth important factor, respectively. Finally, Full CFs households also appreciated technical training provided by the company, being ranked as the seventh important factor out of the seven benefits mentioned by CF households.

Table 5.29. Benefits of contract farming for Semi contract farmers

Benefits	**Rank**
Outlet stability	1
Tea price stability	2
Material support	3
Rapid payment	4
Technical training	5
Easy transport	6

Source: Group discussion, 2016

1: most important; 6: least important

The benefits for Semi CFs and their corresponding ranks of importance are illustrated in Table 5.29 above. As can be seen from the table, Semi CF households also highly evaluated the outlet stability factor. Outlet stability was the most important factor which makes them surely to make an investment in tea plantation and be satisfied with a certain level of stable income. The second important factor was fresh tea price stability. Besides that, Semi CF households appreciated that late payment for materials with high quality will encourage them to join in CF. However, this factor was only ranked as the third important benefit. Rapid payment was ranked as the fourth important factor. Following that, technical training was accepted as the fifth important factor. Finally, Semi CF households also appreciated easy transport as an important factor. However, this factor was only ranked as the sixth important factor.

Table 5.30. Benefits of contract farming for Non-contract farmers

Benefits	**Rank**
Outlet stability	1
High tea price	2
Tea price stability	3
Material support	4
Technical training	5
Rapid payment	6
Easy transport	7

Source: Group discussion, 2016

1: most important; 6: least important

In addition, we conducted the survey with Non CF group to rank the benefits that promote them to participate in CF. Table 5.30 shows the list of the obtained benefits and their corresponding importance for Non CFs.

As for non-CF households, outlet stability was ranked first among the acquired benefits. In other words, it was considered as the most important factor that

encourages Non CFs to join in CF. Following that, they also highly appreciated the high tea price. This factor was ranked as the second most important factor. Then, the third most important factor was fresh tea price stability.

Non-CF households also appreciated that the late payment for materials with high quality and reasonable price as the fourth most important factor promoting contract participation because they are often buy materials at the agents in spot market. It can be clearly seen from the table that technical training was accepted as the fifth important factor. Specifically, they would like to be trained in pest prevention because the weather conditions are becoming harsher and harsher, leading to severe pest explosion, whereas pesticides sold on the market are not really effective.

Of the seven benefits listed, rapid payment was sixth in importance for Non CFs. Their life is hard, therefore, they always need cash. On-time payment will help maintain a stable life for the households. Finally, Non CF households also appreciated easy transport as an important factor. However, this factor was ranked as the seventh important factor. Labor of households was not abundant, with an average of two labors per household. In the harvest time, households always face a shortage of labor because they also have to produce other agricultural products, such as rice, vegetables, pig, and chicken at the same time. If companies transport tea directly from their tea garden, it would promote them to favorably join in CF.

Farmers perception of contract farming

If farmers realize that they have benefits and obligations in contract farming, they will follow the terms specified in the contract. Therefore, companies are not afraid of risks associated with contract breaches. In fact, companies in Phu Tho province are not satisfied with farmers due to their limitations in terms of education qualification and knowledge, which means they are not fully aware of their rights and obligations in the contract.

Farmers are not aware of their interests when negotiating conditions of the contract, leading to their dissatisfaction when entering into contract farming. Moreover they are not aware of their obligations, which might result in a breach of contract. This is the main cause of the unwillingness of the tea companies in contract farming, because they are concerned with the potential risks arising from the contracts. For example, it is highly likely that the farmers might breach the contract when the fresh tea price in the spot market is higher than the pre-agreed price in the contract (Box 5.1).

Box 5.1: *Perception of farmers about contract farming*

"We are afraid of the risks that could arise from signing contracts with farmers. They usually break the farming contracts. If the tea price on the spot market is higher than that of my company, they would immediately sell their fresh tea to other collectors. We are not satisfied with farmers due to their tendency to break the contract. Because their education level and knowledge are limited, they are not fully aware of their rights and obligations in the contract. This causes serious consequences. My company signed contract with importer last time. If tea

materials are not sufficient to process the required quantity of black tea in the contract, which may lead to an undesired breach of contract with our importer, then we will be punished in accordance with the contract terms".

Source: In-depth interview with the Director of Hung Ha Tea Company, 2016

The scale of production

Companies generally find it more attractive to work with bigger producers. The reason is that bigger producers are more likely to commit to manufacture a large number of products; therefore overhead costs related to the contract would account for a smaller percentage of the total costs. In addition, big producers can deal with arising problems better because they have had good experiences in farming and labor management. Lastly, big producers can manage product quality better, their products are less likely to be mixed, it is thus easier to trace back if quality issues happen. The finding was supported by CDC (1989), Runsten (1992), and Little and Watts (1994). Thus, tea processing companies prefer big producers to small producers when it comes to contract farming (Box 5.2).

Box 5.2: *Influence of scale production on contract farming*

"We only want to sign contract with households who are close to my company and own a large area of tea plantation. This will allow my company to save transportation cost and help me monitor the tea production well. Managing a smaller number of farmers is easier than a big number of small farmers. Besides, if farmers are far away from my company, it is a waste of transportation cost, apart from the fact that long distance transportation will also negatively affect fresh tea quality".

Source: In-depth interview with the Director of Phu Ha Tea Company, 2016

The organization of farmers in groups or other associations

Considering Carlos Silva 2005, thanks to their associations, it is more likely for farmers to have stronger voices when negotiating with the companies and therefore better protect their benefits. Meanwhile, companies can decrease farmer defaults by group loans, effective communication, strict monitoring and supervision, by a wide range and good quality of services that they offer and by implying strict treatment for defaulters (Coulter et al., 2000).

Provision of credit and distribution of inputs via groups facilitate peer pressure among group members and so encourage individuals to conform to their obligations. Farmers and companies' collaborative relationship can be promoted by effective communication, while good supervision can help prevent default when it may occur (Box 5.3).

Box 5.3: *Influence of farmers' group of on contract farming*

"We want to sign contract with groups of farmers or cooperatives of farmers. This will enable my company to save transportation cost and help me monitor the tea production better. Managing farmers through leaders of the farmers' group or the cooperative is easier than managing a large number of small farmers. Moreover, leaders of the farmers' group or the cooperative understand farmers more deeply than my company. Therefore, they will encourage contract farmers to strictly follow the terms prescribed in the contract in a favorable manner. However, this model will be

successful only if there is close relationship between members in groups or cooperative. In fact, in my opinion, the cooperative model is really effective because there is close integration between contract farmers and the leader of the cooperative. Besides, there is close relationship between cooperative and my company. My company used to sign contract with groups of farmers. However, since the relationship among members in a group was not strong, they easily broke the contract, therefore, we no longer enter into contract farming with farmer's groups. In particular, the group leader found it difficult to control members to implement the contract".

Source: In-depth interview with the Deputy Director of Phu Ben Tea Company, 2016

5.3.1.2. At the company side

Demands for processing materials of companies

To process and export black tea, companies need a large amount of materials (fresh tea leaves and buds). Companies want to maintain stable material sources to remain and extend their operations. Thus, they have to develop material zones by integrating with farmers in terms of tea production (Box 5.4).

Box 5.4: *Demands for processing materials of the tea companies:*
"We sign contract with black tea importers, therefore we need large material zone. Fresh tea from my own plantations is not enough, so we need to expand material areas by signing contracts with farmers. We will provide them with inputs, including technical guidance, fertilizers, and pesticides. They produce the required quality and quantity of fresh tea as stated in the contract. Contract farming helps us to achieve a more stable material zone".

Source: In-depth interview with the Director of Phu Ben Company, 2016.

Policies offered by processing and export companies

The companies' policies in terms of technical support and pricing play a significant role in the successful connection between farmers and companies. It is evident that farmers have ample experience in growing fresh tea, but they do not have much experience in the field of growing fresh tea which meets quality requirements for processing and export. It is thus vital for the companies to assign their scientists as well as technical employees to support farmers in their production. In addition, the companies should clarify and alter pricing on the basis of market prices.

Capacity in looking for markets of processing and export companies

Regarding the demand for crop output, there must be a huge demand for it (i.e., a market of sellers) which encourages the traders with access to capital to participate in CF. This will typically be connected with traders who make investments in several forms of particular assets in crop trading, an investment which requires the service by a high turnover. Particular assets may consist of investments in trees (such as in processing) or in a unique relationship (including reputation) with a big retailer or exporter (Bijman, 2008).

The market is a necessary factor for tea business. If importers do not sign contracts with tea processing companies, companies do not need a huge amount of fresh tea. They are not interested in signing contract with farmers if the market is not stable. In fact, they need steady marketing channels to ensure the success of contracts signed with farmers.

Phu Da and Phu Ben Tea companies in Phu Tho province in this study are the two large tea exporters. They produce high quality black tea because they own their own materials zones and modern processing lines. Thus, they can sign valuable contracts with big foreign importers in the world and thus export their finished products to a large number of countries in the world. Therefore, they are more likely to enter into contract farming with tea farmers than other small tea processing companies (Box 5.5).

Box 5.5: *Capacity in looking for markets of processing and exporting companies*.
"If we have large orders from importers, we need stable sources of tea materials, thus we will need to sign contracts with tea farmers to provide tea in a ready manner. In the contrary, if the company can not achieve the orders to export stably, we do not want to sign contract with tea farmers because we are concerned about unpredictable risks".
Source: In depth interview of the Director of Phu Da, Phu Ben company, 2016

Requirement for enterprises' financial strength

Most start-up companies often lack the necessary capital and are not well-established enough in a stable market, which can make them find it hard to complete contract obligations. If they violate their contracts, not only will their reputation be destroyed which then severely affects their long-term development but also the whole concept of contract farming might be damaged from the perspective of local farmers. This finding was confirmed by Konishi, Ayumi Yi, Yang (2015). Thus, developing the contract farming model face many barriers such as high investment capital (Box 5.6).

Box 5.6: *Demand for big capital of companies participating in contract farming*
If we follow the strategy of developing material areas by signing contracts with tea producers, we need a large amount of capital. First of all, we need money to provide fertilizers and pesticides with deferred payment for farmers. Secondly, contract farmers want higher prices than the market price. Thus fresh tea produce must be of high quality. To do this, we need large capital to invest in high quality inputs, technical training, and close supervision, etc. and to find out the high purchase price of black tea we process. Thus, we also need to spend a large proportion of marketing expenses on market access, to find out the customers who are willing to pay high prices in a steady manner. Moreover, the risk of a breach of contract is also very high. We must have the reserved financial resources to deal with that risk. In conclusion, if a company wants to join in contract farming, it must have strong financial resources.
Source: In-depth interview with the Director of Hung Ha Tea Company Ltd., 2016.

Contract enforcement

In many developing countries, there is still a lack of the laws and succeeding legal framework that support contractual agreements. Agreements themselves can be hardly enforceable or legally binding (Glover and Gee, 1992). The probability of the breach of contract by farmers will increase when the number of willing purchasers increases. The development of alternative markets and the competitive prices offered by competing purchasers provide the incentive for farmers to violate their contracts, often failing to repay input credit to the contractor (Coulter et al., 1999).

In Phu Tho, directors and the chief of teams also complained about the breach of contract in Phu Da and Phu Ben companies (Box 5.7).

Box 5.7: *Demand for contract enforcement*

There are some cases of breach of contract because farmers sold their tea to outside collectors or applied the pesticides that were not listed by the company. If the process of contract research and signing contract is mutually exclusive, it will increase the sense of self-control and high execution of the implementation of the contract.

For example, if the fresh tea price of the company is not significantly lower than that of the market, Full CFs will not try to sell fresh tea to other collectors. In addition, if the penalty clauses are stricter, Full CFs will not breach the contract. For instance, as for company's policy that if the volume collected by the households is lower than the volume stipulated in the agreement, Full CFs must pay 300 VND per kg to the company, they are ready to pay 300 VND per kg for the amount of tea they do not supply to the company as required because sometimes, they can even sell their tea at the price that is 1000 VND per kg higher than market's fresh tea price. Conversely, if the volume collected by the households exceeds the agreed volume, the households will be rewarded with 300 VND per kg for the volume exceeded. This reward is not really reasonable as it is still lower than market's price, therefore Full CFs still sell fresh tea to other collectors. The company should raise the reward level to about 500 VND per kg.

Source: In-depth interview with the Capital of Team 7, Phu Da Company, 2016.

In an interview with the leader of a Full CFs' team, he claimed that one factor contributing to the success of contract farming was the validity of the contract. Bonus and penalty clauses in the contract must be reasonable. Bonus policies must be attractive enough to provide participants the incentive to strictly comply with the contract. Similarly, penalties must be strict enough to deter both parties from denying the contract.

Conflict resolution

Many misunderstandings and disagreements incurring in contracts between company and farmer, thus contract managers need to be able to tackle them when they occur (Glover and Kusterer, 1990). It seems likely that a contract tightening phase will come after a 'honeymoon' phase after the establishment of a contract. If this happens, it will give smallholders the accurate perception that

the contract was becoming stricter over time and, presumably, that they had something to complain about.

The interviewed leader of team 7 in Phu Da Company agreed that one of the ways to encourage contract farmers to continue signing contract with companies is to resolve the conflicts in the contract satisfactorily. If contract farmers are satisfied with the way the companies handle the conflicts, they will continue to maintain a close relationship with the companies, and strictly follow the signed contract. Conversely, they can easily make a decision to breach the contract. For example in terms of the volume stipulated, as for bad (exhausted) tea gardens or unfavorable weather conditions, the company still stipulates high volumes, causing stress and dissatisfaction for Full CFs. In addition, because the stipulated price of tea is usually significantly lower than that of the spot market, Full CFs often sell tea to other collectors or companies and accept to pay fines. These farmers carried out their estimation that selling tea outside brings higher profits, which were high enough to compensate for the punishment for of the lower quantity of tea than stated in the contract. There were even some severe cases where some households neglected their tea gardens or returned them to the company because they found that after deducting all costs, the benefits or profits they earned was not rewarding.

5.3.2 External factors

Black tea market

One of the major elements impacting the suitability of contracts as agreed between retailers and customers is the kind of market. If customers are sensitive to quality of products, for example, requirements for food safety assurance, it is more likely for them to take control of the entire manufacturing process. Foreign markets (developed countries) as well as local supermarkets (which belong to foreign companies) are considered markets with high standards and strict regulations (Bijman, 2008).

Vietnam's tea has just been exported to Pakistan and Russia markets, the country's main importers. They are relatively easy markets which attract a large number of exporters of Vietnam due to their huge demand. In 2016, Vietnam's total export volume to these two markets together was 55 thousand tonnes. In addition, many Vietnam's companies have also paid attention to other markets such as Indonesia, Taiwan and China. Thanks to global economic integration, export can be done more easily when a number of tariff barriers are gradually removed. However, it also poses a number of limitations because many strict technical barriers appear, especially in terms of food security for agricultural commodities. Food security is a trend that many customers are becoming increasingly concerned about. They want to buy agricultural products that are cleaner and safer. Vietnamese tea is exported to 61 countries in the world, of which a very low amount is exported to European and American nations. Taiwan and Pakistan import almost all of their tea supplies from Vietnam (The richest, 2013). In the long term, processing companies should focus more on meeting

that new requirement of the customers by investing more in clean material sector.

There are only a few companies signing contracts with farmers at the moment because black tea of Phu Tho (as well as Vietnam's black tea) are mainly exported mainly to easy markets like Pakistan, and Russia, etc. which do not require high quality of fresh tea (Vitas, 2016). Therefore, companies do not invest in material zone. As for Phu Da and Phu Ben companies, since their customers require high quality products, they need to invest in full contract farming. However, low quality black tea is still consumed considerably easily in the market.

The enterprises who export their finished products to complaisant markets, on the other hand, do not require high-quality raw material. Therefore, those companies do not invest into material zones or sign contracts with tea farmers. Should the weather be favorable for tea plantation that yield high yield, the enterprises only buy high quality products in addition to supply and price squeeze that lead to farmers' discontent.

Due to the increasing demand of consumers, many tea producing countries in the world have paid special attention to safe tea production and to organic tea production to meet the demand in the world tea market. The practice of safe tea production is based on the synchronization of various technical solutions such as mechanization, seeds, fertilizers, pesticides, harvesting, preserving and processing so as to minimize pesticide residues in the final products to an acceptable level (Box 5.8).

Box 5.8: *Black tea market*

"We found that demand of importers is high. They want to buy high quality and safe product. Therefore, we need to strictly control tea material zone. We will provide all inputs, including high quality fertilizers, pesticides and technical suport. Besides, we will control production process through our technical staffs. Contract farming helps us to obtain quality materials that are the foundation for processing safe black tea".

Source: In-depth interview with the Director of Phu Ben Tea Company, 2016.

The role of Government and macro policies

When we conducted in-depth interviews with the directors of Phu Da, Phu Ben, Hung Ha, and Phu Ha companies, etc. and some key non contract farmers, they all shared a common belief that there are many difficulties in implementing contract farming in Phu Tho province. It is partly due to the limitations of macro policies and contract enforcement. Land fragmentation leads to difficulty in large-scale production, so it is difficult to gain a stable output. Moreover, they need government's supports in high-technology development to provide useful technical knowledge for contracted farmers that could help to attract them to join in contract farming. In addition, companies also have to face with the issues of limited infrastructure and resources, such as credit, transport, electricity, and fuel, etc. For contract enforcement, the directors and farmers claim that the Government has not issued any strong law enforcement to punish either companies or farmers when they fail to follow contract's terms, which is the

main reason why they are not ready to join in contract farming given that these risks are generally likely to arise. On the other hand, when we conducted in-depth interviews with the leader of Minh Tien Cooperative, he said that the cooperative have to deal with several difficulties. Firstly, the cooperative does not have an official office, but only the house of the leader. Secondly, it is truly difficult for the cooperative to borrow capital because they do not have land ownership. Thirdly, the Government does not establish any policies to encourage the establishment of cooperatives and to offer preferential loan policy for the cooperatives. Finally, companies have not had any cooperation and investment policies for the processing and collecting black tea for cooperatives.

In terms of the motivation contract farming, the directors of Phu Da and Phu Ben said that if the Government does not strictly control black tea quality, other private companies will not invest in materials zones, therefore they would not join in contract farming. The regulations on food hygiene and safety are currently not strict, thereby not encouraging enterprises to invest in clean agriculture, which makes it hard to obtain safe and quality products. As a result, tea price is low, which again does not motivate incentives for farmers to engage in contract farming. This finding is confirmed by Simmon (2002). He states that governments of developing countries pursue a variety of policies aiming at dealing with strategic concerns, improving incomes and wealth, as well as ensuring socio-economic stability. The macro policies likely to influence contract farming are land ownership rules, taxes, exchange rates and food security.

Roles of local Governments

The connection between farmers and export processing companies can be strongly developed thanks to local governments' assistance (at village and commune levels). On behalf of farmers, village chiefs can enter into contracts with the companies. Commune People's Committee will certify contracts signed by farmers and companies and ensure that the contracts come into effect and have legal validity. Obviously, it is local governments that are regarded as the bridges to connect farmers and export processing companies.

Material competition in tea processing

When we conducted in-depth interviews with the directors of Phu Da, Phu Ben, Hung Ha, and Phu Ha companies, etc. they all stated that there are many difficulties in implementing contract farming in Phu Tho province due to the limitations of macro policies. There are a large number of tea processors in tea sector, while the current tea volume is not sufficient for all processors to produce dry tea. As a consequence, there is a strong competition in obtaining fresh tea materials among tea processors. At present, there are many private processing facilities with processing capacity of different sizes in the district. These processing facilities are founded and run in a very free manner without the control of the local government. They freely trade raw materials on the market and freely produce at their own discretion without paying attention to quality of input materials as well as quality of finished tea. As a consequence, contract

breaches are relatively common when the market price is higher than the pre-determined price in the contract.

5.4 Advantages and disadvantages of tea contract farming in Phu Tho province

5.4.1 Advantages of tea contract farming in Phu Tho province

As discussed above, contract farming brings various benefits to tea farmers. It is therefore apparent that CF appears to be a determinant in promoting households tea production through the following aspects:

(i) Firstly, CF promotes tea yield.

Full CFs had the highest tea yield, much higher than that of Semi CF and Non CF groups. Their yield was 21.4 tonnes of fresh tea per hectare per year, whereas those of the Non-CFs and Semi CFs were 17 and 16 tonnes, respectively (Table 5.26). However, the Post Hoc test showed that there was no a significant difference in tea yield between Non-CFs and Semi CFs. The reasons behind the high yield of the Full CFs include good materials and technical support provided by tea companies. Furthermore, Full CFs could exploit the economy of scale in production because their tea areas were considerably larger than those of the other two groups.

(ii) Secondly, CF enhances gross output (GO), value added (VA) and return to family labor.

The GO, VA and Return to family labor of Full CFs were significantly higher than those of Semi CFs and Non CFs (Table 5.26). Thanks to higher yield, Full CFs obtained the highest GO, VA, and Return to family labor with almost 84 million VND, 53 million VND and 47.7 million VND/ha, respectively despite their lowest tea price. Non CFs ranked in second place with around 71 million VND, 44 million VND, and 39 million VND/ha, respectively; while Semi CFs had the lowest values of GO, VA and Return to family labor with approximately 65 million VND, 39 million VND, and 34 million VND/ha, respectively. However, the Post Hoc test showed that there were no a significant differences in GO, VA, Return to family labor between Semi CFs and Non CFs.

(iii) Thirdly, contract farmers are more satisfied with inputs for tea production.

Overall, Full CFs and Semi CFs were more satisfied with inputs for tea production than None CFs. Full CFs and Semi CFs were very satisfied with the quality and prices of fertilizers and pesticides as well as technical support provided by the tea processing company. Besides, they were also satisfied with deferred payment for materials. Furthermore, contract farming appears to be a determinant in promoting tea marketing of tea growing households in Phu Tho province. Based on the analysis of farmers's satisfaction, it can be seen that Full CFs and Semi CFs highly evaluated outlet stability and fresh tea price stability. As for payment of buyers, only Semi CFs were fairly satisfied with cooperative's payment.

In terms of economic efficiency, Semi CFs did not achieve higher yield, GO, VA, or Return to family labor in comparison to those of Non-CFs, however, they were more satisfied than Non-CFs with their production inputs in terms of quality of fertilizers as well as technical support provided by the tea processing company and deferred payment for materials. In addition, they were more satisfied with tea marketing in term of outlet stability, fresh tea price stability and payment of buyers than Non-CFs.

Regarding the perspective of promoting black tea value chain, contract farming positively influences the whole black tea value chain as well as each actor in the chains.

Firstly, as shown in Figure 5.16, the total value added of the first chain (Full CFs) was the highest, reaching 26.126 million VND per ton of black tea, while the total value added of the second chain (Semi CFs) was not much lower, around 23.944 million VND per ton. The total value added of the third chain (non-contract farmers) was the lowest, approximately 20.201 million VND per ton. In the first chain, thanks to the contract signed with the company, fresh tea was of higher quality because the company provided them with adequate inputs, (such as good quality fertilizers, and pesticides), and because contract farmers strictly complied with the plantation procedures of the CF company.

In addition, companies signing contracts with Full CF farmers have modern manufacturing technology and higher skills, which helps them to produce high quality black tea, thereby obtaining the highest prices of black tea among the three chains.

In the second channel, the grade of fresh tea is not higher than that of the market because the companies only provide fertilizers for Semi CFs but they do not strictly control the manufacturing process of the farmers. However, Phu Ben Company have a more modernized technology in black tea manufacturing process than other private processing companies, so the quality of black tea in this chain is still higher than that of Non-CF's chain. Therefore, thanks to contract farming, the total VA of the first chain and second chain generally tend to increase, being higher than that of non-contract farmers'chain.

In the first chain, we can clearly see the close relationship between farmers and processing companies. Farmers must carefully follow all specified terms in the contract, from receiving materials to the cultivation processes and harvesting practice. In the second chain, the relationships between Semi CFs and the cooperative and companies are quite sustainable. Semi CFs sell tea to the cooperatives according to oral but strong agreements because they are often neighbors and even cousins with the cooperative managers. That is partly because they believe that cooperative managers are dynamic, experienced as longtime collector with good reputation; partly because of the reverence of knowing each other. Consequently despite the price fluctuations in the market, they still sell most of their tea produce to the cooperative. Thus, in both of the above chains, linkages between actors are quite sustainable, contributing to the strengthening of the value chain.

Secondly, contract farming has a number of impacts on the actors involved, including producers and processors in the black tea value chain. In the first and second chain, Full CFs and Semi CFs are both provided with high quality fertilizers in advance. For the Full CFs, they are also provided with pesticides in advance. The selling of products of contracted households is more stable than that of non-Contract farmers. Moreover, Full CFs have the highest tea land area with 0.64 ha due to land allotment from companies. Besides that, thanks to supports from the tea companies, including inputs with deferred payment, tea production technology advices, and strict management, the yield of Full CFs is the highest. Owing to contract farming, processors have more stable material zone that can satisfy requirements of qualified products. By providing quality inputs (fertilizers, pesticides, and technology for tea production for Full CFs and Semi CFs), companies receive fresh tea of higher quality in return. Moreover, tea material source of these processors appears to be always active because of the close integration of both sides in contract.

5.4.2 Disadvantages of tea contract farming in Phu Tho

Full contract farmers' evaluation of the disadvantages of contract farming

Table 5.31. Full contract farmers' evaluation of the disadvantages of contract farming
(Unit: Percentage)

Factors	Level of difficulty				
	1	2	3	4	5
Low fresh tea price	90	10			
High water discount rate	85	15			
High quality requirements of fresh tea	80	10	10		
Inability to participate in spot market	75	15	10		
High quantity requirements of fresh tea	75	10	15		
The high levels of social insurance and health insurance contributions	70	20	10		
Late payments	20	50	30		
Commitment of company in the contract	15	50	35		

Source: Group discussion, 2016

1: very difficult 2: difficult 3: neutral

4: not difficult 5: favorable

Besides the undeniable benefits of CF, households also have to face a number of disadvantages. Here are the results of the group discussions with the Full CF group about the difficulties they had when entering into the contract. Table 5.31 shows the major disadvantages of participation in contract farming as well as their corresponding levels of difficulty.

Low fresh tea price

The vast majority (90%) of the surveyed Full CFs evaluated low tea price as a very difficult factor (1 point). The average tea price of Full CFs group was 3.900 VND/kg, 300 VND/kg lower than that of Non CF group (4200 VND/kg). Only minor of 10% of the farmers evaluated the difficulty level of tea price at level 2 (difficult). In general, low tea price was ranked first in the disadvantages that

farmers encounter in CF participation. The price of fresh tea from Full CFs was usually the lowest. Sometimes, the gap was so wide that the Full CFs were unsatisfied when comparing their efforts with the results received, leading to the situation that they decided to sell their tea crops to buyers other than the company, illegally. In reality, they said that if the gap between Full CFs's price and Non CFs's price was not over 500 VND/kg, they would be satisfied. However, during a year, sometimes, Non CFs'price was higher about 500 – 1000 VND/kg than that of Full CFs's. Thus Full CFs were not content because their income was not higher than that of Non CFs at this low price although their yield was considerably higher than that of Non CFs.

In fact, tea prices of Full CFs are always lower than market price because companies have to pay high investment rates for raw material areas, for example, the investment in new tea farms during the first three years or interest rate of advance materials payment. Moreover, companies also incur other expenses for management of production teams. Thus, the complaints of Full CFs on low tea price are not completely reasonable.

High water discount rate

The massive 85% of the surveyed Full CFs rated high water discount rate as the leading difficulty at the highest level (1 point). Only 15% of the farmers evaluated the difficulty level of this factor with 2 (as being difficult). It appears that high water discount rate was ranked second in terms of difficulties. In fact, the company imposed a higher water discount rate compared with that of the collectors in the spot market. Full CFs complained about this because of the high water discount rate, their tea production volumes declined by around 10-15%, higher than that of the outside market (based on Group discussion with Full CFs). This made their actual tea production volume sold to the companies to decline significantly. Therefore, they wanted to look for companies with more transparent procurement system.

High quality requirements of fresh tea

The majority of the surveyed Full CFs (80%) reported that the requirements for high-quality fresh tea were very difficult at the highest level (1 point). Only 10% of the farmers evaluated the difficulty level of this factor at 2 point as being difficult and the same proportion of the farmers (10%) evaluated the difficulty level of this factor at 3 point (not difficult for them). Overall, the requirements for high quality fresh tea were ranked third in difficulty level. The company required Full CFs to cut young tea leaves to make sure the black tea quality according to the increasingly strict requirements of customers. This made tea production volume of Full CFs to greatly decrease. Non-contract farmers often had to wait longer, about 45-50 days to cut tea leaves, so tea leaves were longer and weigh more. Thus, along with declining volumes of fresh tea, the tea price was also so low that Full CFs argued that they were more disadvantageous than Non-contract farmers.

Inability to participate in spot market

A large proportion of the surveyed Full CFs (75%) reported that this factor was very difficult. 15% of the farmers evaluated the difficulty level of this factor with

2 point (as being difficult factor) and 10% of the farmers evaluated the difficulty level of this factor with 3 (as being not so difficult). In other words, the factor "inability to participate in spot market" was ranked fourth in the disadvantages for CFs. All Full CFs could not sell fresh tea in the spot market. Therefore, their tea price was really low. Sometimes, the gap in tea price between Full CFs and Non CFs was relatively considerable, up to 1000 VND/kg. Many Full CFs wanted to sell their extra crops to the spot market.

High quantity requirements of fresh tea

A high percentage of the surveyed Full CFs (75%) reported that this factor was very difficult. Only 10% of the farmers evaluated the difficulty level of this factor with 2 (difficult), while 15% of the farmers evaluated the difficulty level of this factor with 3 (not difficult). More specifically, the factor "High quantity requirements of fresh tea" was ranked at the fifth difficulty level. Full CFs group had to meet the delivery quality and quantity requirements for fresh tea produce. However, the required tea quality did not always match the yield of their tea garden. Some Full CFs households are given unproductive tea gardens with dry, steep tea land. Other households received tea garden with old tea variety, such as HAT variety with the lowest yield. Moreover, the unfavorable weather conditions such as dry weather or heavy rain, might result in low tea yield in a certain year. Therefore, many Full CFs households were discontent with the company's requirements of fresh tea quantity.

The high levels of social insurance and health insurance contributions

More than two-thirds of the surveyed Full CFs (70%) reported that this factor was very difficult. 20% of the farmers evaluated the difficulty level of this factor with 2 as difficult and 10% of the farmers evaluated the difficulty level of this factor with 3 (not so difficult). That means the factor "high levels of social insurance and health insurance contributions" was rated as the sixth difficulty CF households encountered. Although social insurance contribution was voluntary and Full CFs were entitled to health insurance, receiving pensions when retiring, the insurance cost appeared to be a financial burden to the Full CFs. In fact, the average value added of Full CF households/year was only 33.8 million VND, whereas the average insurance cost of Full CF household was 10 million VND annually (in-depth interview with Full CFs). Hence, after paying insurance contribution, the remained annual household value added per year was only about 23 million VND per year, not much higher than the average value added of Non-contract farmers (annually 19.9 million VND).

Late payments

Only one-fifths (20%) of the surveyed Full CFs reported that this factor was very difficult, while around 50% of the farmers evaluated the difficulty level of this factor with 2 (difficult) and 30% of the farmers evaluated the difficulty level of this factor with 3 (not difficult). To put it another way, the factor "Late payments" was ranked at the seventh disadvantages for farmers out of the seven mentioned disadvantages. Sometimes, Full CFs did not receive payment in time like collectors payment for Non-CF households. In general, tea producers had a hard life. Therefore, they always needed cash for their everyday living expenses,

such as food, electricity, water, medicine, and clothes, etc. If they did not receive payment for tea, they could not pay for their daily lives. In comparison with Semi CFs and Non-CF households, Full CF households were more unsatisfied with this factor. In fact, Phu Da and Phu Ben companies have provided fertilizers and pesticides without any interest rates unlike other agents in the market. The deferred payment made by the companies is still in conformity to the contract, which is therefore justified.

Commitment of company in the contract

Moreover, Full CFs complained that the companies had not been really concerned about their tea production. According to the commitment of company stated in the contract, the companies have to support Full CFs when they face with unusual tea production conditions, such as drought, flood, and pest infestation. In fact, when Full CFs suffered from these bad conditions, they did not receive much support from the companies. They even still had to sell fresh tea to the companies under the contracted requirement as usual. That is really disadvantageous to Full CFs (Group discussion, 2016).

Semi CF's evaluation of the disadvantages of contract farming

Table 5.32. Semi contract farmer's evaluation of the disadvantages of contract farming (Unit: Percentage)

Factors	Level of difficulty				
	1	2	3	4	5
Low fresh tea price		90	10		
High material price		80	10	10	
Binding to the Cooperative		70	10	10	

Source: Group discussion, 2016

1: very difficult 2: difficult 3: neutral 4: not difficult 5: favorable

Table 5.35 illustrates the leading disadvantages that semi contract farmers face when engaging in contract farming as well as their corresponding levels of difficulty.

Low fresh tea price

It is apparent from the table that the massive 90% of the surveyed Semi CFs reported that low tea price was difficult at the highest level (2 point) (Table 5.32). A mere 10% of the farmers evaluated difficulty level of tea price with 3. In general, low tea price was ranked at the most serious difficulty. The price of fresh tea from Semi CFs was ranked the second, lower than that of non-contract farmers and higher than that of Full CFs (Table 5.26). Semi CFs also complained about prices, which were usually lower than the market price. This tea price was significantly lower than the market price. Then, sometimes, Semi CFs sold their tea outside, not to the cooperative, leading to the situation that the cooperative managers found it very difficult to ensure tea quantity as stated in the contract with the company. In fact, semi CFs has lower tea price in comparison to Non CFs because Phu Ben Company also pays for the costs of providing materials in advance and for the management of technical training courses provided for Semi CFs. Additionally, the difference between tea price of Semi CFs and Non CFs

depends on transport distance; accordingly, the further distance Non CFs tea is transported, the higher tea price households get.

High material price

The vast majority of the surveyed Semi CFs (80%) reported that this factor was very difficult. Only 10% of the farmers evaluated the difficulty level of this factor with 2 point (as being difficult) and also 10% of the farmers evaluated the difficulty level of this factor with 3 (as being not difficult). In brief, the factor "High material price" was ranked at the second difficulty level. Some Semi CFs stated that the price of fertilizers which the cooperative provided was higher than that of market. They did not consider the quality of fertilizers because they thought the quality of fertilizers provided by the cooperative and materials agents were the same. Therefore, they complained about the prices of fertilizers which the cooperative provided. In reality, the cooperative provided Full CFs with fertilizers from Phu Ben company. Thus, fertilizer quality was higher than that of material agents and their prices were also higher.

Binding to the Cooperative

70% of the surveyed Semi CFs reported that this factor was very difficult. 10% of the farmers evaluated the difficulty level of this factor with 2 (difficult) and 10% of the farmers evaluated the difficulty level of this factor with 3 (not difficult). In brief, the factor "Binding to the cooperative" was ranked final in difficulty among the three mentioned disadvantages for Semi CFs. Some Semi CFs did not like to be tied with the cooperative. They complained that when they received fertilizers from the cooperative, they had to sell all of their fresh tea produce to the cooperative. However, in reality, when the price offered by the cooperative is lower than that of the spot market, Semi CFs still sell their tea leaves to other collectors to obtain a higher price.

6

Conclusions and implications

Conclusions

Currently, there are two tea contract models in Phu Tho province, including Full CF and Semi CF. Each of the two models has their own advantages and disadvantages. However, both of them contribute to promoting tea production and sales for farmers. While Full CFs have many advantages in tea production and sales, the criterion for participating in this model that farmers must have the company-owned land is not easily met. Therefore, non-CFs find it difficult to engage in this model. This seems to be a limitation of the Full CF model. For Semi CFs, this model is suitable for small-size tea farmers who can gather together to establish a cooperative. Cooperatives have stronger voice when it comes to signing the contract with the enterprises.

Factors affecting contract farming on tea production and marketing

There are many internal and external factors that promote or prevent contract farming. *Internal factors affecting agricultural contracts for tea production and marketing include factors associated with farmers and companies*. Farmers-related factors consist of the interests of contract farmers in contract farming, farmers' perceptions of contract farming, production of scale, and role of producer organization or farmers' group. In addition, company-related factors include the need for processing raw materials of the companies, the policies of the processing and exporting companies, the capacity of the processing and exporting companies to find markets, the requirements of the financial strength of the company, contract validity and conflict and dispute resolution.

More specifically, farmers-related internal factors consist of the followings: (i) Firstly, benefits acquired are the factors that help to attract farmers to participate in tea contract farming. Farmers' discussions reveal that market stability (output) was the most important factor that engaged farmers in contract farming. The other crucial factors were the relatively high price, price stability, input supports, technical guidance, fast payment and fast transport; (ii) Secondly, as for farmers' perceptions of agricultural contracts, companies are often not satisfied with their counterparts. In other words, the limited education level and knowledge of some farmers are generally associated with the potential risks that could arise for the companies; (iii) Thirdly, as regard to scale production, the interviews conducted show that the interviewed tea companies only prefer tea households which are close to the companies and own a large area of tea; (iv) Fourthly, regarding the roles of farmers' group or organization, it is quite apparent that contract farming model will be more successful thanks to the connection with large and powerful farmers' organizations such as cooperatives. The intrinsic factors derived from the company include: (i) Firstly, companies need raw materials (fresh tea) for processing and export; (ii) Secondly, policies in technical support and pricing introduced by processing and exporting companies are important for the success of the linkage between the companies and contract farmers; (iii) Thirdly, market availability is an important element in the tea business, so the ability to seek for markets of the processing and export companies is another important factor that directly affects the development of contract farming; (iv) Fourthly, the financial

strength of the business plays a crucial role in their ability to attract farmers to engage in contract farming. In particular, many tea businesses are still in the development stage, and it is hard for them to find farmers to sign contracts with if they can not find the marketing channels with high-value products; (v) Fifthly, as regard to contract validity, if the enterprise offers reasonable contract terms, the contract will be valid and effective; (vi) Finally, contract managers should have the ability to resolve conflicts and disputes that may arise during the course of farming contracts.

On the other hand, the external factors affecting tea production and marketing of agricultural contracts include: (i) the black tea market; (ii) the role of Government and macroeconomic policy; (iii) the role of local governments; and finally (iv) strong competition in purchasing tea material among private processing facilities. Firstly, it can be seen that there is a high demand for black tea in the world; in particular, there are many markets that have large demand for tea imports such as European, American, Middle East and Asian markets. They can be broadly classified into strict markets (such as USA, and EU, etc.) and easy markets (such as Middle East, and Asia, etc.). The majority of Vietnam's tea is exported to Middle East market, notably Iraq market. In addition, there are other important markets such as Japan and Russia. Secondly, contract enforcement and macroeconomic policies that may affect agricultural contracts are land tenure regulations, tax rates, exchange rates, and food security. Thirdly, local governments (at village and commune levels) play an important role in promoting the linkages between farmers and processing companies. Finally, the current competition in material purchase of private processing facilities is extremely intense. The large number of tea processing facilities with a capacity that exceeds local tea production leads to intense competition in purchasing or sale of tea produce, consequently resulting in an easy breach of the contract.

CF as a determinant in promoting tea production of households

CF appears to be a determinant in promoting tea production of households on a number of aspects as follow:

The more Full CFs produce, the higher income they obtain even though their selling price is lower than that of the other groups. CF promotes tea outcome, such as yield, GO, VA, and Return to family labor. Moreover, CFs are generally satisfied with their tea production inputs provided by the companies, such as materials and technological guidance, etc.

The average tea land area of Full CFs is the highest among the three groups. This is an important factor contributing to their good production performance. Full CFs owns the largest average tea land area of 0.64 ha thanks to the land allotment by the companies. The size of the land division of the companies to Full CFs varies from 0.3 ha (minimum area) to 2 ha (maximum area). With this average tea land area, Full CFs who often come from households specialized in tea farming could live on their higher income from tea production. Currently, based on the new policy, each Full CF household must acquire a minimum area of 7000 m^2 to become a Full CF of the company because with a larger area of tea land, Full CFs are able to pay for the social insurance for the companies if they

want to. Besides, Full CFs will have the motivation to care for tea trees due to higher incomes that is often associated with larger-scale production.

Tea yield obtained by Full CFs was also higher in comparison with that of Semi CFs and Non CFs thanks to high quality of materials (fertilizers, pesticides, and tea varieties) provided to Full CFs and tea growing training courses that aims to boost yield. Specifically, Full CFs' yield reached 21.4 tonnes/hectare in 2014, while Non-CFs and Semi CFs reached a yield of 17 and 16 tonnes per hectare, respectively.

It is apparent from Table 5.26 that the tea price of Semi CF group ranks second with 4,048 VND/kg, which is higher than that of Full CFs but lower than that of Non-CFs because the companies entering into contract farming have to pay high costs to Full CFs for tea production such as investment in new tea farms during the first three years, interest rate of advance materials payment and expenses for the management of production teams. Semi CFs has lower tea price in comparison to Non CFs because Phu Ben company also has to pay for advance materials payment and management of technical training course for Semi CFs. Additionally, the difference between tea price of Semi CFs and Non CFs also depends on transport distance; accordingly, the further distance Non CFs' tea is transported, the higher tea price households get.

Thanks to the highest yield and gross output, the value added of Full CFs was the highest, at nearly 53 million VND/ha in spite of their highest production cost. This was an important benefit that helped to prove that the land use efficiency of Full CFs was the highest, which should be encouraged and replicated. Return to family labor of Full CFs was significantly higher than that of Semi CFs and Non CFs.

Contract farmers were relatively satisfied with the inputs the company provided for their tea production. Overall, Full CFs and Semi CFs were more satisfied than Non-CFs in terms of inputs for tea production. Full CFs and Semi CFs highly appreciated input supports of the contract company, especially in terms of fertilizers and pesticides. As for technical training, Semi CFs were also satisfied, whereas Full CFs and Non-CFs felt neutral about this service. Semi CFs's GO, VA, Yield, Return to family labor were not significantly different from the figures of Non-CFs, however, Semi CFs appreciated inputs supports, especially in terms of fertilizers, technical training and deffered payment for materials more highly than the Non-CFs.

CF appears to be a determinant in promoting tea marketing of households in Phu Tho province. Having examined farmers' satisfaction with the tea marketing activities, including outlet stability and fresh tea price stability, it is possible to conclude that CF brought important benefits in marketing for contract farmers. Moreover, CF promoted black tea value chain in Phu Tho province.

The survey on farmers satisfaction indicates that Full CFs highly appreciated the stability of the output of fresh tea. As regards to farmers's satisfaction of the stability of fresh tea prices, it can be seen that the stability of the price of fresh tea was highly appreciated by the Full CFs. The semi-CFs were also relatively satisfied with the price stability of fresh tea. As for payment of buyers, Semi CFs

were fairly satisfied with cooperative's payment. However, Full CFs were dissatisfied with payments of Phu Da and Phu Ben Tea Company.

Although fresh tea price of Semi CFs is lower than that of Non CFs, the Semi CFs were often more satisfied with the market stability of fresh tea price stability and payment of buyers in comparison to Non CFs.

Regarding the promotion of the black tea value chain, CF has a positive influence on the whole value chain of black tea and the actors involved in the chains. Firstly, the effect of contract farming on the whole black tea value chain can be seen in the increase in the total value added (VA) of the chain and in the growing close linkages between the actors in the chain.

As shown in Figure 5.16, the total value added of the first chain (Full CFs) reached 26.126 VND million/ton of black tea and the total value added of the second chain (Semi CFs) reached 23.944 VND million/ton. The third chain (Non-CFs) obtained the lowest added value, at 20.201 VND million/ton. In the first value chain, farmers depend on contracting with the company to achieve better quality of fresh tea thanks to the adequate and quality input supply, especially effective fertilizers and pesticides; and better production monitoring and quality control that the company provided. In addition, with the modernized technology for black tea production and higher technical levels, companies with Full CFs have contributed to the production of high quality black tea as well as the highest price of black tea. In the second chain, the quality of fresh tea was not higher than that of the market because the company, instead of strictly controlling the production process of farmers, only provided fertilizers for Semi CFs. However, Phu Ben Company have a more modernized technology in black tea manufacturing process than other private processing companies, so the quality of black tea in this chain is still higher than that of Non CFs chain. Therefore, the VA of the second chain was ranked the second in Figure 5.16. Generally, depending on the contract, there was a strong increase of total VA of the chain compared to the chain of the non-CFs. Besides, CF increases close links between actors in the chain. The close relationship between actors involved in the value chain, specifically farmers and processing companies, was clearly shown in the first chain, of which famers was responsible for carefully complying with all contract terms, from material receipt to planting and harvesting, while the companies, on the other hand, were responsible for providing production inputs and purchasing of all tea outputs. The relative sustainability of the relationships between Semi CFs, the cooperative and the companies was shown in the second chain. Fresh tea of Semi CFs was sold to the cooperative under oral agreements (via binding because members of the cooperative, are usually neighbors or even relatives of the cooperative managers), in spite of the fluctuations in tea prices on the market. This is partly because of the dynamics and prestige of the cooperative managers which were built from their experiences gained from the collectors, and partly because of the mutual understanding between farmers and cooperative managers. Thus, in both chains, the quite stable relationship between the actors has contributed to the promotion of the value chain.

Secondly, CF has a favorable impact on its actors, namely producers and processors in the black tea chain. For the producer, the first impact of contract farming was the stabilization of input supply to the producers when Full CFs and Semi CFs were supplied with high quality fertilizers in advance, which contributed to the improved tea yield and quality and better production conditions. Secondly, the stability of the output market was ensured because products of the Full CFs and the Semi CFs were more sustainable than Non-CFs. Thirdly, a higher added value was created for Full CFs through extensive tea growing area (0.64 ha) and processing facilities with more stable material areas to meet the requirements of qualified products. Thanks to contract farming, processors have achieved more stable materials zone that could satisfy requirements of qualified products. By providing quality inputs (fertilizers, pesticides, and advanced technology for tea production for Full CFs and Semi CFs), companies received fresh tea of better quality in return. Moreover, tea material source of these processors was always active because of the close integration of both sides in the contract.

Disadvantages for contract farmers

Apart from the benefits of contract farming, contract farmers found that they also had to face various disadvantages in contract farming, such as low tea prices, slow payment for tea, high material prices and obliged relationship between them and the companies. Tea prices of contract farmers were lower than those in the free market but in fact, this complain is not completely reasonable because Phu Da and Phu Ben companies have to pay high costs for tea production such as investment in new tea farms during the first three years, interest rate of advance materials payment and expenses for management of production teams. For Full CFs, the requirements for high-quality fresh tea, high water discount rates and high insurance cost from the companies made their real incomes to fall considerably. The factor "Late payment" was ranked at the seventh difficulty level. In fact, Phu Da and Phu Ben companies have provided fertilizers and pesticides without any interest rates unlike other agents in the market. The deferred payment made by the companies is still in conformity to the contract, which is therefore justified.

Moreover, Full CFs usually complains that companies did not follow commitments in the contract when they face undesirable conditions in tea production.

As for Semi CFs, the factor "low fresh tea price" was ranked at the first difficulty level. They had lower tea prices in comparison with those of Non CFs because Phu Ben company also has to pay for advanced materials and offer technical training courses for Semi CFs. Additionally, the difference between tea price of Semi CFs and Non CFs also depends on transport distance; accordingly, the further distance Non CFs tea is transported, the higher tea price households get. Factor "high material price" was ranked at the second difficulty level. The factor "binding to the cooperative" was ranked at the third difficulty level. They did not consider the quality of fertilizers because they were unaware of the quality difference of fertilizers provided by the cooperative and fertilizers provided by

materials agents. Therefore, they complained about the price of fertilizers provided by the cooperative. In reality, the cooperative provided Semi CFs with fertilizers from Phu Ben Company. In other words, fertilizer quality was higher than that of material agents, and their prices were also higher.

Implications

Based on the above findings, there are some important recommendations as follows:

Firstly, it is of significant importance to improve contract terms.

Both farmers and companies should participate actively in negotiating the terms in the contract which are usually prepared beforehand by the business. The interests of each party should be satisfied through discussion between both parties. Companies should organize surveys and meetings to analyze farmers' interests and appreciate the recommendations of farmers to come up with new or adjusted terms in the contract. Even though it is relatively hard for the company to negotiate with individual farmers, there are many forms of indirect negotiation with farmers to be employed such as survey and investigation of farmer's interests, and negotiations with farmers' representatives through the cooperative management board, or the leaders of the farmers' group, and the farmer association, etc.

The terms of the contract should be more specific and more reasonable, which means being able to satisfy two parties, including farmers and companies, when entering into contracts.

Pricing terms

The price reflects the most basic benefits of both contract parties and therefore is the cause of most disputes. It needs flexibility in determining the contract price which can satisfy the benefits for both parties and at the same time follow market fluctuations of. Both companies and Full CFs need to directly participate in the buying – selling process and both sides need to agree upon the price prescribed in the contract. Therefore, price should be adjusted to the negotiation of two parties, suitable with market and help avoiding the losses for companies or farmers. This would ensure the efficiency as well as the equality of the contract implementation.

For example, when the market price increases by 10%, the companies would have to raise tea prices as promptly as possible. On the contrary, companies have to pay high investment rates for raw material areas, for example, the investment in new tea farms during the first three years or interest rate of advance materials payment for Full CFs. Moreover, they have to invest on technical training for households. Besides that, the companies also have to bear other expenses such as expenses for management of production team, construction of team's office with expensive furniture and equipment, as well as road construction for easy tea transport, etc. Therefore, Full CFs need to be aware of all these arising expenses for the companies and then come to an agreement with the company to partly share these costs because of the fact that their incomes tend to be higher than the other households despite their lower tea prices.

Quantity terms

In agriculture, yields are highly dependent on variety, fertility land, natural factors, weather, and diseases, so it is difficult to determine quantitative constraints accurately. However, companies should require tea volume of Full CFs based on their tea variety and land quality in order to avoid unequality among Full CFs. In reality, from the group discussion with Full CFs, it can be seen that Full CFs with higher yield variety, for example PH1 receive lower volume requirement than that of other Full CFs with low yield, such as HAT.

Excess quantity

As for the rule applied in the contract in terms of selling quality, all tea volume will be bought by companies. However, companies should permit Full CFs to sell excess quantity to the market so that they have the chance to increase their income.

In reality, for Phu Da Tea Company, although not specified in the contract, it is understood by the company that, when the delivery volume of the household has reached the agreed target, households can freely sell the excess crop. This policy gives farmers the opportunity to earn more through the sale of quantities in excess of other parts at market prices (about 500 VND per kg, higher than the purchase price of the company).

In the case of the Phu Ben Tea Company, the rule applied is, however, less convenient. If the company finds out that the household sells the excess of production in the market, the household suffers a penalty even if they have reached the volume stipulated in the agreement.

Compensation for natural disasters

Full CFs complained that the companies had not been really interested in their tea production. If the companies complied with the commitment as stated in the contract, then they would have to support Full CFs when they face unusual tea production conditions, such as drought, flood, and pest infestation. In reality, when Full CFs suffered from these bad conditions, they did not receive supports from the companies. In fact, the farmers still had to sell fresh tea to the companies under the normal requirement without any modification. It is really disadvantageous to Full CFs (Group discussion, 2016). Therefore, companies should strictly follow this contract term. In the case of natural disasters, epidemics and crop failure, companies need to share some of the risks with farmers in any of the following forms: (i) restricted collection of investment loans, or (ii) increased purchase prices for farmers so as to encourage farmers to stick with the companies in the long term and also to increase the ability to effectively implement the contracts.

Rule of insurance

Full CFs are currently not satisfied with the high insurance level which they are paying for companies. However, it is the decision of the government which the companies have to follow. In order to avoid a considerable decrease in the incomes of Full CFs who participate in the insurance program, companies should encourage new Full CFs to receive larger tea land area in order to have enough

money to afford the new insurance level and to maintain their income at the same time.

Payment timing

Payment time for Full CFs is usually every 15 months. However, sometimes, there can be delays for payment by the companies. Since there is a strong market competition in obtaining materials for processing, it is appropriate for companies to receive fresh tea produce at the farmer's farm or in the farmer's house before directly transporting fresh tea back to their processing facilities and to pay farmers immediately. That would match the farmer psychology because they always need cash for daily expenses. When companies are not able to pay farmers in time, they should inform farmers early so that farmers can be more understanding with companies' difficulties, helping to avoid dissatisfaction from Full CFs.

Fresh tea criteria

In terms of cultural background, there is a lack of trust in the quality system applied by the companies. Thus, there is a need to simplify the process of resolving the quality problems. In addition, quality indicators should be sensed directly by the senses or conventional measuring instruments that Full CFs could understand and apply.

Secondly, it is essential to enhance the role of local governments

Contract disputes are an indispensable phenomenon of all types of contracts. A contract dispute arises when a party in a contract has a disagreement regarding any of the contract terms. However, dispute settlement in agriculture contract farming has its own characteristics: (i) Farmers are less concerned about contractual constraints, they only react when the dispute occurs; (ii) Farmers are unfamiliar with dealing with disputes through courts; (iii) The value of contractual disputes is not substantial.

In order to resolve a dispute in a contract, it is of importance that these are to the mode of settlement of disputes by administrative or legal action when the two parties fail to resolve the dispute themselves. Apart from the current dispute resolution practices in the District Court, there is also a need for adding sanctions for handling disputes and administrative sanctions under the jurisdiction of the Committee at commune level in the contract. Contract dispute shall be negotiated and reconciled by Commune People's Committee and District People's Committee.

In case of commodity quality disputes, the two parties shall invite the competent expertise agency. The results of the inspection agency are final.

Where negotiations or conciliation fail to meet the results of examinations, the parties shall take them to the economic court to settle disputes according to legal regulations.

Thirdly, the companies should consider some solutions in the negotiation, implementation, and termination of the contract.

Companies always discuss with Full CFs before adjusting or adding a new contract term. If the companies fail to obey the contract, they have to compensate to contract farmers according to the detail terms in the contract.

As for value sharing, companies should pay more attention to the benefits offered to farmers. To attract farmers' participation in contract farming, companies should increase the availability of different benefits for contract farmers which are not available for non-contract farmers such as being trained with useful husbandry techniques; production loans; good quality input supplies, especially pesticides, and, most importantly, reasonable prices. Furthermore, companies should continue to ensure market stability along with tea price stability for contract farmers.

In the case of natural disasters, epidemics and crop failure, companies need to share some of the risks with farmers in any of the forms regulated in the contract. In addition, companies should suspend or terminate the contract and recover the tea garden if the contract farmers breach the contract.

Fourthly, contract farmers should consider different solutions in negotiation, implementation, and termination of the contract.

Farmers themselves should be more aware of their interests in negotiation and should not easily accept the contract prepared by the business without fully understanding it. Farmers should actively participate in negotiations or make suggestions to express their interests whenever given the chance. When wishing to change any terms, they should have a discussion with the company one month before implementing. They should strictly follow contract terms to ensure stable linkage with companies which would help to ensure the benefits for both parties for a long time. After receiving the land use rights, Full CFs can still return the land to the company without any complication if their production is not effective.

Fifthly, the government should implement different groups of measures to promote tea contract farming as follows.

- Based on the material competition in tea processing, the government stipulates that agricultural product processing enterprises are conditional businesses. Accordingly, investment is only allowed when the enterprise commits and invests in the materials zone within the assigned scope, and the government will protect that investment for the enterprise so that other enterprises cannot compete with the permitted enterprise.

Accordingly, the raw materials will be zoned for each member on the basis of members' capacity and traditional area. This solution must also be implemented within the limits stated above.

- There should be policies on investment in construction of technical infrastructure for agricultural production in rural areas to attract processing companies to join in contract farming.

- In order to improve investment for businesses that create a premise for linkages with farmers, it is essential for the government to: (i) Adopt preferential policies for foreign investors to invest in processing agricultural products and invest in rural areas that create linkages with farmers; (ii) Develop preferential policies for investors applying advanced technology in agricultural products processing; (iii) Develop preferential policies for investment in the remote areas and poor areas.

- The government should develop more policies to motivate and facilitate contract farming.

A market for agricultural products with strong pressures on product quality is a precondition for the linkage between processing companies and farmers. Market pressures include quality standards, the demand for traceability, food hygiene and safety standards, etc. The government plays an important role in supporting, encouraging, controlling and verifying product quality. Therefore, the government should: (i) Have strict regulations and practices on managing product origin and ensuring food hygiene and safety standards; (ii) Adopt policies to encourage the export of processed agricultural products, restricting the export of raw agricultural products; (iii) Establish legal provisions to regulate and encourage the implementation of the policies that facilitate the formation of supply chains and value chains in the country as well as abroad.

- Furthermore, the government should consider improving legal environment and contract validity: To prevent the situation of breaching contract from two parties, the government should improve the legal environment for economic linkages between agro-processing enterprises and farmers through: (i) Providing more legal education for farmers and businesses participating in contract farming; (ii) The government and the Farmer's Association should provide free legal consultancy services to farmers.

- There should also be policies for improving farmers' production scale.

Based on the limitation in tea production scale and the need to connect with processing enterprises of the farmers, the government needs to have policies to address the need to expand and scale up the production of farmers in order to create conditions for the development of economic linkages. To do that, the government should: (i) Have a strong credit policy for farmers to expand production; (ii) Develop a strong credit policy to facilitate the increase in farmers' scale of production, (iii) Strongly develop the farm economy; (iv) Attract direct investment of enterprises in agricultural production to form concentrated agricultural enterprises; (v) Expand and improve the quality of farmer cooperatives and other forms of cooperative economy.

Sixthly, having examined the success of Full CF, it appears that Full contract farming is a promising model for further application and it is advisable that:

The companies should pay more attention to the Full CF model because many companies controlling Full CF model in Vietnam's tea industry have to face various difficulties and operate ineffectively. The biggest challenge of this model is the ability to expand the scale of production. On the other hand, the advantage of this model is that enterprises have the right to use land on their own farms. Full CFs have the largest tea land area (with about 0.64 ha) thanks to the land allotment by the companies. Besides, thanks to the support provided by the company, which includes inputs with deferred payment, tea production technology recommendations and strict control of management, the yield of Full CFs is the highest. Moreover, fresh tea produced by Full CFs is also of high quality, which leads to the highest value added of black tea for the Full CFs

among the three farmer groups. Even though Full CFs obtained the lowest price for their fresh tea, the return to family labor of Full CFs was significantly higher than that of the Semi CFs and Non CFs because their yield was the highest. Full contract farming appears to be a really successful model. Therefore, Full CFs need to improve their ability to control tea production.

To further enhance this model, it is of importance for the enterprises to:

+ Improve the leading position in service support and technical advancement, and enhance the yield of their own farm in comparison with the outside areas, helping it to become a success model of tea production and a service center for peripheral areas.

+ Improve their management mechanism to facilitate their long-term farmers in promoting their capacity and yield.

Seventhly, having analyzed both advantages and disadvantages of Semi contract farming, we encourage developing this model by applying the following measures:

- Policies for the development of agricultural cooperatives and other forms of cooperative economy in agriculture

The government should: (i) Promote the implementation of the policy of cooperation in agriculture; (ii) Provide incentives on credit and establishment costs for cooperative organizations in agriculture; (iii) Democratize the management of cooperatives, respecting the autonomy of cooperatives in production and business; and (iv) Establish regulations to encourage farmers to use land use rights to contribute more capital to the co-operatives, which would give the cooperatives real capital assets and the ability to obtain credit from banks.

Semi contract farming model should be improved and promoted.

Households with small areas should be supported in the establishment of farmer groups, cooperatives, and tea growing regions to create larger tea area. It is more favorable to generate better conditions for them to coordinate with processors in terms of production and marketing with supports in inputs (materials, technical guidance, credit, and access to market, etc). Legal team/group formation is the only way to help farmers gaining strength in their negotiation with processing plants. Through the economic scale growth and application of the services with market orientation such as product quality management and new technology application, the farmers could partly restraint plants pressure when collecting their tea once harvested and could also enhance their managerial capacity in the goods chain. By doing so, companies will receive higher fresh tea quality, thus creating higher quality black tea product. As a result, black tea price obtained should increase. In turn, companies will be able to raise the prices for raw material tea. It means that farmers who sign contract with company will benefit from a higher tea price which encourages them to better follow the contract.

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APPENDIXES

Appendix 1. Questionnaire for tea production household

HOUSEHOLD QUESTIONNAIRE

Code of the household……...Address……
Name of interviewer ……Date of interview……
……..
Data checked by…… OK or not.....

A. GENERAL INFORMATION

1. Information about the interviewee:

a. Interviewee's relation to householder	***1**= Householder **2**=Wife / husband **3**=children **4**= Father / mother **5**=other:_____*
a. Gender	*[_] 1 =male [_] 2 = Female*
b. Age	

2 Information about householder

2.1 Gender	*[_]Male _____[_]Female*
2.2 Age (years old)	
2.3 Ethnic group:	*…… d. Religion……..*
2.4 Years of schooling	
2.5 Tea growing years	
2.6 Educational Level (circle one)	***1**=No Education **2**= Grade 1 **3**=Grade 2, 3 **4**= Tertiary 1 **5**= other (please specify)*
2.7 Main activities of the household	*1= Tea growing 2= Tea processing collector 6 = Green tea collector 3 = Other cultivation 7 = Black tea collector 4 = Breeding 8 = Others 5= Agricultural or non-agricultural material trading*
2.8 Other activities of the household	*1= Tea growing 2= Tea processing collector 6 = Green tea collector 3 = Other cultivation 7 = Black tea collector 4 = Breeding 8 = Others 5= Agricultural or non-a gricultural material trading*

Full name's spouse of the householder: .....

3– ***How many people in your family****? .....people,* **of which***:*

3.1.The number of people over working age (over 60 for male and 55 for female).....
The numbers of participants in the tea production: .....
3.2 .The number of people of working age: (Male:15-60 and female:15-55) ....
The numbers of participants in the tea production
3.3.The number of people under working age (below 15): .....
The numbers of participants in the tea production: ...
3.4. The level of production of tea workers:
(1) Healthy (2) Healthy sufficient labor (3) Healthy insufficient
***4 The average income of households**: ..... .VND / month*
5 Household income classification:
(1) Poor (2) Medium (3) Rich
6. The situation of using the household's agricultural land

Agricultural land (m2)	**Ownership land**	**Leased land (outside company)**		**Allocated land (of the company)**	**Other**	**Total**
		area	lease			
Tea plantation (m2)						
New tea						
Business tea						
Other cultivation						
Rice						
Cash crops						
Fruit trees						
Others (Specify)						
Livestock						
Pig						
Chicken						
Others (specify)						
Fisheries						
Forestry						

7. Household income in 2013 (Unit: million VND)

TT	***Sources***	***Area (m^2)***	***Number of animals***	***Income (million VND / year)***	***Proportion (%)***
I	***Cultivation***				
1	*Tea*				
2	*Paddy*				
3	*Crops*				
4	*Fruit*				
5	*Others (Specify)*				
II	***Livestock***				
1	*Pig*				
2	*Chicken*				
3	*Others (specify)*				
III	***Fisheries***				
IV	***Forestry***				
V	*Trading*				
VI	*Pension (if any)*				
VII	*Employing*				
VIII	*Others (specify):*				
IX	***Total income***				

B THE SITUATION OF TEA PRODUCTION - CONSUMPTION

I. THE GENERAL SITUATION OF PRODUCTION

8. The number of years in tea production: .....

9. The situation of using the household's agricultural land

Tea variety	***Age***	***Area (hectares)***	***Sales volume (tonnes / year)***

10. Machines for tea production:

Name	***Year of purchase***	***Life-span***	***Purchase price***	***Number of contributor for machinery purchase***	***Note***
Tea cutter					
Cutting Machine					
Water pumping machine					
Advanced sprayers (for pest					

prevention)					

II. Capital for tea production

11. Currently, do you have a loan for tea production?? *1= Yes;* *2= No*

12. If yes, please tell us:

Borrowing sources	*The amount of capital borrowed (million VND)*					***Assessment of loan capacity 1 = easy 2 = normal 3 = difficult***	***Assessment of loan interest rate 1: low 2: medium 3: high***	***Assessment of loan amount 1: Sufficient 2: Ordinary 3: insufficient***	***Assessment of loan period 1: Suitable 2: Medium 3: Short***
	Amount (million VND)	*Borrowing time*	*Term (months)*	*Interest rate (%/year)*	*Borrowing purposes*				
I. ***Orthodox loan***									
1. Borrowing from Bank for Social Policies									
2. Bank for Agriculture and Rural Development									
3. Women's society									
4. Others (specify)									
II. Unorthodox loan									
1. Orthodox borrowing (Without interest rate) from neighbors, family….									
2. Unorthodox borrowing (Without interest rate)									
III. Other									

Borrowing purposes:

1= Growing and caring for new tea trees 2= Purchasing fertilizers and pesticides 3= Hiring labor;

4 = Purchasing equipment for tea production 5 = Others,

If not, why?

1. Sufficient capital for tea production *2. Because of too high loan interest rates* *3. Complicated procedures*

4. No assets for collateral 5. Because of short loan term 6. Because of small amount of loans 7. Others (please specify):

III. TEA PRODUCTION COSTS

13. *INVESTMENT FOR TEA GARDEN FOR PRIMARY 3 YEARS* (VND 1000/years)

No.	Item		*Tea variety ..... Unit price: 1000 VND/kg*						*Tea variety ..... Unit price: 1000 VND/kg*						*Tea variety ..... Unit price: 1000 VND/kg*					
			Year 1		*Year 2*		*Year 3*		*Year 1*		*Year 2*		*Year 3*		*Year 1*		*Year 2*		*Year 3*	
			Q'ty 1	*Price*	*Q'ty 2*	*Price*	*Q'ty 3*	*Price*	*Q'ty 1*	*Price*	*Q'ty 2*	*Price*	*Q'ty 3*	*Price*	*Q'ty 1*	*Price*	*Q'ty 2*	*Price*	*Q'ty 3*	*Price*
1	*Variety*																			
2	*Fertilizer*																			
	- Protein (kg)																			
	- Phosphate (kg)																			
	- Kali (kg)																			
	- NPK (kg)																			
	- Manure (kg)																			
	- Other fertilizer (kg)																			
3	*Plant protection products*																			
	Other costs																			
4	*Labor*																			
	Clearing the vegetation, cleaning the forest (public)	Hire																		
		Family labor																		
	Digging holes	Hire																		
		Family labor																		
	Planting trees	Hire																		
		Family labor																		

	Other	Hire																	
		Family labor																	

14. HARVEST TEA (1000 VND/Year) (from the fourth year)

No.	***Items***		*Variety 3..... Area*		
			Quantity/ time	*Time/ year*	*Unit price*
2. *Fertilizers*	*Protein (kg)*				
	Phosphorus (kg)				
	Kali (kg)				
	NPK (kg)				
	Manure (kg)				
	Other fertilizer (kg)				
3.	***Pesticides / herbicides (bottles)***				
4. Care daywork	*Grassding + Landing (daywork)*	*Hire*			
		Family labor			
	Watering (daywork)	*Hire*			
		Family labor			
	Apply pesticides (daywork)	*Hire*			
		Family labor			
	Apply fertilizers (daywork)	*Hire*			
		Family labor			
5. Harvest daywork	*Cut (daywork)*	*Hire*			
		Family labor			
	Grassding + Landing (daywork)	*Hire*			
		Family labor			
Other expenses	*Hire tea cutters*				
	Oil cost				

IV.SELLING FRESH TEA PRICE
15. Tea price in 2013

Variety	*Batch*	*Month*	***Total tea of Company (A+B+C+D)***	*A-graded tea*		*B-graded tea*		*C-graded tea*		*D-graded tea*		*Common tea*	
				Price	*Q'ty*	*Price*	*Q'ty*	*Price*	*Q'ty*	*Price*	*Q'ty*	*Price*	*Q'ty*
Variety.........	*1*												
	2												
	3												
	4												
	5												
	6												
	7												
Variety......	*1*												
	2												
	3												
	4												
	5												
	6												
	7												
Variety.....	*1*												
	2												
	3												
	4												
	5												
	6												
	7												

V. PRODUCT CONSUMPTION SITUATION OF FARMERS

16. Customers :

Name of customers	***Purpose of processing 1. Green tea 2. Black tea***	***Who are you waiting for***	*Delivery place (a)*	***Distance to the place of delivery (km)***	*Tea volume proportion in 2015 (%)*	*Tea volume proportion in 2014 (%)*	*Payment methods (1) Payment at sight (2) Deffered payment*	*Road Quality Assessment (B)*	***Water deduction ratio***	*Selling price*		
										Max	Average	Min
1.												
2.												
3.												
4.												
5.												

(a) Place of delivery

1 = At your home 2 = At the traffic clues

3 = At the purchasing places 4 = At home of customers

(b) Assessment of road quality

1 = satisfactory 2 = normal 3 = unsatisfactory

17. Do collectors force you to accept low prices? (1) Yes (2) No

Why……

18. Reasons to sell to collectors: (for contractal farmers and freelance)

1 - Sale for a stable price

2 - Sale for regular purchase of collectors

3 - Sale for high price

4 - Sale for easy purchasing criteria

5 - Sale for loan support or other support by collectors (What is ....)

6 - the collectors for cash payment

VI. INPUT MARKET

19

Materials	*Suppliers*	*Most important reason to purchase*	*Relationship with suppliers*	*Note (Suppliers 'name….)*
1. Seed				
2. Fertilizers				
3. Pesticides				

Suppliers: 1 = in the village, 2 = in district, 3 = in the province, 4 = outside the province,
5 = company
Most important reason to purchase: 1= Quality Assurance, 2 = Close and convenient
3= Low input price, 4= Postpaid
Relationships with suppliers: 1 = Trust, 2 = Normal, 3 = Do not trust

20. How do you buy materials for tea production?
1 = from many different agents close to home
2 = from a few nearby agents close to home
3 = from many randomly different agents

VII/ ***TEA PRODUCTION SITUATION OF FARMERS***
21. Tea information source of farmers
1 - Information from collectors
2- Information from other farmers
3 - Information from the radio and newspapers
4 -Information from tea processing facilities
5 - Price information from other sources
22. Who decides the selling price and purchase relationship?
1 - Bilateral agreement
2 - Collector
3 - Farmer
23. Farmer's demand for technical information:
1 - Demand for variety information
2 - Demand for fertilizer information
3 - Demand for information about plant protection
4 - Demand for tea information
5 - Demand for information on care techniques
6- Demand for information on general cultivation techniques
7 - Other technical information needs

24. Sources of technical information by farmers

1 - Technical information from personal experience
2 - Technical information from other farmers
3 - Technical information from extensive training
4 - Technical information from the extensive manual
5 - Information from the radio and newspapers
6 - Technical information from other sources

25. The reason why farmers want to plant new tea garden:

1 - Due to old tea
2 - Due to low yield
3 - Due to pests and diseases
4 - Due to demand for increased yield
5 - Due to low- quality variety
6 - Others

C. FARMING CONTRACT (for Full contract farmers and Semi Contract farmers)

26. Contract type:

(1) Full CF (2) Semi CF_(member of the Cooperative)

27. Condition for participating in contract farming (only for Full CFs or member of the Cooperative)

Factors	*Strongly agree (5)*	*Agree (4)*	*Neutral (3)*	*Disagree (2)*	*Strongly disagree (1)*
Having at least .....m ^{2} company land (for Full CF)					
Having at least .....m ^{2} household land (for co-operative member)					
Young and strong labors					
New labors' at the age of: Male: 18-35 Female: 18-30					
Being Full CF more than two-years					
Conscious work					
Full CF's children or acquaintance					
Tea production experiment					
Education level					
Believe in leadership					
"Kinh" ethnic group					
Relations with company leaders					
Medical insurance contribution					
Capital					

28. Benefits and Disadvantages of contract farmers:

Benefits from entering into a contract	*Very important (5)*	*Important (4)*	*Normal (3)*	*Unimportant (2)*	*Very unimportant (1)*
a. Common benefits upon entering into a contract					
Good quality of materials					
Good quality of fertilizers					
Good quality of pesticides					
Reasonable price of materials (clearly stated whether the materials prices are cheap or reasonable when considering the quality)					
Convenient purchase of materials					
Deferred payment for materials					
Useful technical training					
Stable output					
Stable tea price					
Reasonable price of fresh tea					
Immediate payment					
Other (specify)					
b/Benefits from entering into a contract for the Full CFs	*Very important (5)*	*Important (4)*	*Normal (3)*	*Unimportant (2)*	*Very unimportant (1)*
Payment of pension					
Health insurance					
Tea land is better because of its large investment					
Initial investment for new tea plantation is not required					
Increased yield					
Good infrastructure (Roads, warehouses, and kindergartens)					
Frequent meetings					
Assistance for disasters					

Regular health care					
Holidays and travel					
Reward for higher premiums in the contract					
Other (specify)					
c. Benefits from entering into a contract for the cooperative members					
Get a loan easily					
Visit in case of sickness, marriage or weedings					

e/ Disadvantages of entering into the contract	*Very difficult (1)*	*Difficult (2)*	*Normal (3)*	*Undifficult (4)*	*Very undifficult (5)*
Low purchase price					
High price of materials					
Unprompt supply of materials					
High yields					
Use a lot of pesticides					
No other pesticides other than the company					
Close quality control					
High deduction rate					
Long distance transportation					
Deffered payment					
Hard work					
No day-off					
High insurance premium					
Difficult access to bank loans due to lack of land use certificate					
Lack of market information					
Unacceptable not join the free market					
Partners do not keep true commitment					
Other reasons					

The attitude of non CFs households towards contracting

29. Do you want to join the contract? (1) Yes (2) No

30. If yes, why don't you join the contract (Because of ineligibility to join the contract)

Reason	*Very important (5)*	*Important (4)*	*Normal (3)*	*Unimportant (2)*	*Very unimportant (1)*
Insufficient funds for insurance					
Insufficient tea land as required					
Lack of capital					
Lack of young healthy workers					
Insufficient experience in tea growing					
Unreachable educational conditions					
No relationship with the leader					
Other					

31. If not, why?

Factors not involved in conditions of participating into the contract	*Very important (5)*	*Important (4)*	*Normal (3)*	*Unimportant (2)*	*Very unimportant (1)*
Selling tea on the free market is easy					
The market price is higher					
Contractual purchase price is low					
Close quality control					
High coverage					
High yields					

Use a lot of pesticides					
No other pesticides other than the company					
High deduction rate					
Hard work					
No day off					
Partners do not keep the commitment					
Other					

32. INPUT-OUTPUT RANKING OF FARMER

Criteria (Free household)	***Very satisfactory (5)***	***Satisfactory (4)***	***Normal (3)***	***Unsatisfactory (2)***	***Very unsatisfactory (1)***
1. Supplies a. Quality					
Quality of fertilizer					
Quality of pesticides					
b. Price					
c. Convenience					
d. Defferend payment for materials					
2. Useful technical training					
3. Buyer's payment					
4. Output stability					
5. Stable tea price					
6. Reasonable price					

33. Participation frequency of household in the tea technical course

Participation frequency	*Tick (X) for only 1 row below*
Regular participation	
Occasional participation	
Non-participation	

34. Evaluation of household on tea production technology training courses

Level	Tick (X) for only 1 row below
Very useful	
Useful	
Not useful	

35. Contract farmers' attitudes towards contracting (for current contractual households)

The general attitude of the people who are contracting about contractual participation

Actors	*Very satisfactory (5)*	*Satisfactory (4)*	*Normal (3)*	*Unsatisfactory (2)*	*Very unsatisfactory (1)*
Full Contract farmers					
Members of Cooperative					
Tea seller for Cooperative, not member					

<u>Non contract farmers' attitudes towards the contract model which provides materials in advance but offers similar price to the free market</u>

36. Do you want to participate in the contract model: with advance supplies and similar tea prices to the free market?

(1) Yes (2) No

37. To what extent:

(5) Very desirous (4) Desirous (3) Normal (2) Undesirous (1) Extremely undesirous

38. When the price is lower than the market, do you sell out?

(1)Yes (2) No

39. How much lower the price is acceptable:

(1) 100 (VND/kg) (2) 200 (3) 300 (4) Other

40. Level of sell out:

(5) Very a lot (4) Alot (3) Normal (2) Few (1) Very few

D. FARMERS' DIFFICULTIES IN TEA PRODUCTION

41. Did you say the difficulties in tea production this year, compared with last year in the interpretation? Recommendations?

(a) *1. Very difficult 2 - Moderate difficult 3 - Less difficult*

No.	***Contents***	***Difficulty (Tick No. 1)***	***Degree of difficulty (a)***	***Interpretation***
A	***TEA PRODUCTION***			
I	***Land***			
1	*Lack of tea land*			
2	*Bad land*			
3	*Other*			
II	***Capital***			
1	*No a priority for tea*			
2	*Small amount of loans*			
3	*High interest rates*			
4	*Short borrowing time*			
5	*Complicated procedure*			
6	*No asset for collateral*			
7	*Other (please specify)*			
III	***Labor***			
1	*Hard to hire people*			
2	*Expensive labor hiring price*			
3	*Other*			
IV	*Variety*			
1	*Poor yield*			
2	*Low quality*			
3	*Difficulties for purchase*			
4	*Expensive cost of buying variety*			
5	*Other (please specify)*			
V	***Supplies***			
1	*Poor quality fertilizers*			
2	*Ineffective pesticides*			
3	*Pesticides toxic, difficulty to sell fresh tea*			
4.	*High price of materials*			
5	*Lack of funds to buy supplies*			
6	*Other (please specify)*			
VI	***Technique of tea production***			
1	*Technical difficulties in cutting tea*			
2	*Difficulties in fertilizing*			

	techniques			
3	*Difficulties in plant protection*			
4	*Difficulties in irrigation*			
5	*Other (please specify)*			
VII	***New tea plantation***			
1	*Lack of funds*			
2	*No loan source*			
3	*Loss of general income*			
4	*No new variety*			
5	*Unknowledge of insect prevention*			
6	*Degraded soils*			
7	*Labor shortage*			
8	*Other (please specify)*			
B	***TEA CONSUMPTION***			
1	*Low price*			
2	*Unstable price*			
3	*Unstable output market*			
4	*Difficult consumption*			
5	*High demand for market*			
6	*Poor preservation of fresh tea*			
7	*Other (please specify)*			
C	***Infrastructure***			
1	*Difficult transportation*			
2	*Unfavorable communication system*			
3	*unstable electricity*			
4	*Poor irrigation system*			
5	*Other (please specify)*			
D	***Natural condition***			
1	*Unfavorable weather (sunshine, heavy rain)*			
2	*Pests*			
3	*Other (please specify)*			
E	***Ineffective policies of the State***			
1	*Capital policy*			
2	*Variety policy*			
3	*Other (please specify)*			

Recommendations for overcoming difficulties:

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42. Your concern about tea production*?*

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.....
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Many thanks for your supports!

Appendix 2. Farming contract of Phu Da company and farmers

PHU DA TEA COMPANY
No.182/2013/HDK/PD

SOCIALIST REPUBLIC OF VIETNAM
Independence-Freedom-Happiness
-------o0o-------

TEA GARDEN CONTRACT

- *Pursuant to the company charter dated 26 September 1999 stipulating the functions and duties of the Board of Directors.*
- *Pursuant to the management regulation of Phu Da tea company passed by the the Board of Directors on March 31, 2000, in Chapter VI (Articles 10,11,12) and Chapter V, Article 20,21,22, 23) on the company's property management and land management.*
- *Applying Decree No. 135/2005 / ND-CP dated 08 November 2005 of the Government on the allocation of agricultural land, production forest land and water surface for aquaculture in state-owned and forestry farms, State-owned enterprise.*

This day of 1 January 2013, at Phu Son Tea Factory, Phu Da Tea Company

A/The representative of the contracting party
Name: Position: (authorized by General Director Of Phu Da Tea Company)
Address: Thanh Son town – Thanh Son district – Phu Tho province

B/ The representative of the contracted party:
Name Position:
Date of birth: ID card No.: Place of issue:
Permanent residence address:
Both parties agrees to sign the tea garden contract of the Company as follows:

***Article I: Phu Da Tea Company hands over the tea garden under contract to (name of contractor)**, the area of tea garden at team 15 specifically as follows:*

No.	*Lot name*	*Map umber*	*Area (m2)*	*Tea variety*	*Plantation year*	*Quantity of shade trees*	*Remark*
1							
	Total						

Article II: Responsibilities and rights of parties

1. Responsibilities and powers of the contracting party:

A) RESPONSIBILITIES:

a) Determining the area, boundaries assigned to the contracted party (According to map 299),

b) Establishing and managing the technical process of production. Assigning the annual output of fresh tea bud and fertilizer and plant protection products to the contracted party.

c) Collecting all products produced by the contracted party according to the specific unit price of each tea for each type of tea.

d) Supporting more investment in tea gardens when the company's business operation run effectively

e) Paying in advanced in part by materials and tea for the first time for the contracted party.

B) RIGHTS

a) Supervising and inspecting the implementation of contracts.

b) Considering the exemption and reduction of amounts due to the contracted party upon damage caused by natural calamities or other force majeure circumstances.

c) Recovering loans and advances.

d) Suspending, terminating the contract and recovering the tea garden if the contracted party breaches the contract.

2. Obligations and rights of the contracted party:

A) OBLIGATIONS

a) Managing land, tea trees, shade trees and other assets of the company associated with the contracted tea garden. Not allowed to camp and other trees on the tea garden of the Company. Not deformed.

b) Taking the company's guidance and inspection on the production plan, technical process and product quality during the contracting process. Selling all fresh tea buds for the company.

c) Strictly comply with state laws, internal regulations and other regulations of the company.

d) It is strictly forbidden to transfer the tea gardens to others without the consent of the company.

e) Buying social insurance and medical insurance premiums paid according to the current regime (if being laborers with social insurance premiums).

B) RIGHTS

a) Taking initiative in production on the contracted tea leaves, enjoying the labor results and investment results in the contracted tea gardens.

b) When the contractor is no longer able to perform the contract, the contracted party shall return the garden to the company or request his/her family to continue contracting (on the basis of the consent of the company).

c) Being considered for exemption from or reduction of amounts payable to the contracting party when suffering damage due to ototomy or other force majeure circumstances.

d) When the competent state agency collects garden land for contract farming for

use for purposes of national defense, social welfare or other companies or changes the land use purpose in the contracted tea garden, compensation for the amount of money the contractor made during the year for the contracted tea.

Article III: General provision

- This contract has legal validity for settling rights, obligations and responsibilities between the contracting and contracted parties. Both parties are legally equal.

- This contract is made in 02 copies with the same validity, each party keeps 01 original copy.

- In the course of performance of the contract, if any party has any problems, he/she shall inform the other party to solve it jointly.

The representative of the contracting party	*The representative of the contracted party*
(signed and sealed)	(signed and sealed)

Appendix 3. Farming contract of Phu Ben company and Minh Tien cooperative

FRESH TEA CONSUMPTION CONTRACT

No.: ……../PB-20

- Pursuant to the Prime Minister's Decision No. 80/QĐ-TTGg dated June 24, 2002 on incentive policies for consumption of agricultural produces through contracts;
- Pursuant to the meeting dated 22 March 2010 and dated 14 March 2011 on purchasing and selling raw materials between Phu Ben Tea (one-member) Limited Company and agricultural cooperatives;
This day of, ..., In Phu Ben Tea Co., Ltd, we are:

A. The Buyer (Party A): Phu Ben Tea (one-member) Limited Company
Head office: Thanh Ba Town, Thanh Ba District, Phu Tho Province
Telephone: (0120) 3885.076 - (0210) 3885 332 / Fax: 0120 3 885 076
Account number: 01201.110.110 250 084 at Vietnam Joint Stock Commercial Bank for Industry and Trade - Phu Tho Branch
Tax code: 0600.110.110
Represented by (Name of repesentator) - Position:

B. Producer (Party B) …….. (The list enclosed)
of commune .... works in the form of tea club / co-operative ..... represented by Mr/Ms ....
Address: ……..
Telephone: Fax……..
Account (if any) ....Open at Bank
ID No.: ..... .issued by Provincial Police on .....
Tax code (if any) .....
Both parties agreed to discuss the contents of the contract for supply of bud tea materials as follows:

Article 1: Quantity, quality and price
Party A buys fresh tea leaves of Party B in area ..... .ha with the quantity of ..... .kg
The quality of the tea leaves must be as follows:
Type 1 accounts for 5-10% of the total
Type 2 accounts for 50-55% of the total
Type 3 accounts for 45-50% of the total
The price of tea is negotiable according to each period of the market (excluding the purchase cost as loss if transported to the factory, basket fee and transportation costs).

Article 2: Quality and specifications of products
1. **The quality of fresh tea buds is applied according to the company's specifications as follows:**
Type 1: 1% - 10% of the ratio
Type 2: 10.1% - 25% of the ratio
Type 3: 25.1% - 35% of the ratio

The analysis method of leaf ratio of old leaves in accordance with Vietnamese standard TCVN 1053-86

Determination method of leaf surface according to Vietnamese standard TCVN 1054-86

2. Product specification

Party B must sell fresh tea buds picked in the day for the company. Tea buds must be packed in baskets or bags, not crushed, rancid.

3. i) The pesticide used must be provided by the company, the reimbursement of the pesticide is done as mentioned in Article 5.

ii) Company representatives will visit and inspect the tea lots regularly

Article 3**: **Supplies and advance in advance

Party A advances to party B

- Supplies: Supplies price will be announced for each purchase

** 1st NPK fertilizer: ..... kg*

** 2nd NPK fertilizer: ..... kg*

** 3rd N fertilizer 46% : ..... kg*

- Technique

Free-charge guide for Party B on tea cultivation techniques (planting, picking, intensive cultivation of tea gardens, planting of tea gardens, plant protection).

Article 4: The method of delivering fresh tea buds

In tea, morning, tea is purchased from 10.30h to 12.00h at the station, transferred to the factory from 11.00h to 12.30h. Afternoon, tea is purchased from 17.00h to 19.00h and transferred to the factory from 20.00h to 21.30h.

Tea will be sold directly to the factory by Party B. The company will pay extra transportation fee, basket and loss according to the regulations of the company.

Party B must follow the delivery plan by month and year to ensure the production schedule of the company.

Party A receives enough quantity and quality of Party B as signed in the contract. The specific plans to ensure the production of each plant must be prepared.

After delivery, the invoices must be clearly inscribed with the quantity, quality and unit price of the goods bearing the signatures and full names of Party A and party B as payment vouchers. Invoice with 3 series and one for archieve shall be provided.

Article 5**: **Payment method:

Party A pays the tea to Party B in cash or transfers no later than 1 day after completing the procedures.

Party B shall refund the advance payment to Party A according to the following plan

** Supplies of 1st supply: equivalent to 30% on May, 30% on June, 40% on July*

** Supplies of 2nd supply: equivalent to 40% on August, 35% on September, 25% on October*

** Third time supplies due to less amount equivalent to 50% on January and 50% on November*

If not paid according to the above plan, Party B shall bear the overdue interest rate of 150%, but the duration shall not exceed 20 days.

** The company will subsidize 20,000 VND / ton tea buds delivered at the factory and pay for the purchasing staff of the points at the end of the month.*

Article 6: Force Majeure and Price Fluctuation

In the event of price fluctuation, Party A will inform Party B and local authorities together to come to a mutual agreement.

If for any reason, Party B fails to fully comply with the signed terms, it must notify Party A the reasons and corrective measures in writing.

Article 7: Material responsibility

The two sides pledge to strictly implement the terms of the contract. Any party failing to perform or unilaterally suspend performance without plausible reasons shall have to compensate for damage according to the material value of the products or the remaining supplies and materials at current value. Party A has the right to refuse to receive goods if the quality is unsatisfactory with the provisions of the contract.

**Year-end bonus:*

- In the cooperative / club, if an individual or household head who regularly subscribes and sells tea to the cooperative / club for delivery to the company of 1,000kg or Tet gifts at the company's prescribed rates.

Article 8: Settlement of disputes

Contract dispute shall be negotiated and reconciled by the Commune People's Committee and District People's Committee.

In cases of commodity quality disputes, the two parties shall invite the competent expertise agency. The results of the inspection agency are final.

Where negotiations or conciliation fail to meet the results of examinations, the parties shall take them to the economic court to settle disputes according to law.

Article 9: Validity of contract

The contract takes effect from ... ..month ....year ..... to ..... .month ..... .year ..... and shall be renewed for 5 years.

All amendments and modifications (if any) to this contract shall be legally valid only if it is signed by parties.

This contract is made in ..... (English version, ... English version has the same legal value). Party A keeps ... .. copy (... .. Vietnamese version, ... English version).

REPRESENTATIVE OF PARTY A	***REPRESENTATIVE OF PARTY B***
(signature and full name)	(signature and full name)

Confirmation of Commune People's Committee

(signature and full name)