

household head; the educational attainment of the household head; the number of members of the household; average income of the household in a year; and the state support policy for households participating in the cooperative. In particular, the role of the State in orienting, supporting and promoting sustainable economic, social and environmental development in Thai Nguyen tea professional villages is synthesised analysis at each specific content.

6. To develop tea professional villages in Thai Nguyen province in the direction of sustainability, it is necessary to understand some viewpoints, orientations and objectives of development and to implement three groups of basic solutions: (1) economic solutions; (2) social solutions; (3) environmental solutions. The proposed solutions will bring economic efficiency with higher gross profit, increase the average income of the labor; preserve and develop the cultural values of the tea professional villages, and environmental protection in the tea professional villages in Thai Nguyen province as well.

RECOMMENDATIONS

- * Recommendations to central agencies
- * Recommendations to local authorities
- * Recommendations for economic organizations outside the village

INTRODUCTION

1. The necessity of the study

Craft villages, in other words, professional villages are special characteristics of Vietnamese rural, associated with the socio-economic development of the country. In the past years, along with the process of industrialization and modernization, our craft villages are experiencing rapid growth in both quantity and types of production which create more job opportunities, increase incomes, contribute to poverty reduction and economic restructuring in rural areas.

Thai Nguyen is a midland and mountainous province in the North, which has great potentials to develop heavy industries. Therefore, the development of rural industry and craft villages is not really being interested in. Currently, there are 174 craft villages and craft-having villages in Thai Nguyen province. However, only 163 craft villages and craft-having villages has been recognized by Thai Nguyen People's Committee as the traditional craft villages with 11,720 member households and 22,760 professional employees (as of 2016) [33]. Thai Nguyen craft village with main professions such as tea processing, agricultural and forestry products processing, foodstuff, embroidery, building materials, mechanical engineering, flower growing, petting, mulberry growing. Of which, 140 craft villages are tea professional villages, accounting for 86.42%. These villages have formed into famous tea professional villages areas such as Tan Cuong (Thai Nguyen city), Phuc Thuan (Pho Yen town), Trai Cai, Minh Lap, Song Cau (Dong Hy district), Khe Coc, Tuc Tranh (Phu Luong district), La Bang (Dai Tu district), and so on.

In the process of developing craft villages in the province, many limitations have been revealed such as uneven product quality, weak competitive capacity, not diversified product model design, inadequate attention to environmental pollution, and so on. Hence, it

is necessary to orient appropriately the development of craft villages in general and of tea professional villages in particular in the direction of sustainable development. Therefore, the the topic: "*Development of tea professional villages in Thai Nguyen province towards sustainable development*" has been chosen as the topic of the Ph.D. dissertation.

2. Objectives of the study

2.1. General objective

To research theory and practices on tea professional village development in Thai Nguyen province in recent years; then propose solutions to develop tea professional villages in Thai Nguyen province towards sustainable development in the near future.

2.2. Specific objectives

- To systemize and further develop theory of craft village development towards sustainable development;
- To analyze and evaluate the current status of the development of tea professional villages in Thai Nguyen province in the perspective of sustainable development.
- To analyze the impacts of factors affecting tea professional village development in the sustainable direction in Thai Nguyen province.
- To propose major solutions to develop tea professional villages in Thai Nguyen province towards sustainable development.

3. Subjects and scope of the research

3.1. Research subjects

Theoretical and practical issues related to the development of tea professional villages in Thai Nguyen towards sustainable development.

3.2. Research scope

- Content: Study on current status and development trends of tea professional villages in terms of economy, society and environment. In particular, attention has been paid to the economic efficiency of households participating in tea professional villages and the linkages

professional villages contributed increasingly to the export turnover of green specialty tea of the province helped to restructure the economy of the tea regions in the direction of increasing industrial and service proportions, to increase income of the tea households; preserve the traditional cultural values of tea professional villages; helped to clear the bare land and to protect the environment in the tea professional villages.

3. However, the development of tea professional villages in Thai Nguyen province has been facing with many difficulties such as small scale of production and business; outdated production and processing technology; lack of capital for production and business activities; brand development and community tourism development have not been paid adequate attention by the households; the awareness of the households about the environment and safe tea production is still insufficient, leading to economic inefficiency, social inefficiency and environmental inefficiency.

4. The dissertation has pointed out many factors affecting the production and business efficiency of tea households in tea. Factors include: market factors; cost factors of raw materials for tea production and processing; regional factors - natural conditions; linkage factors in tea production and consumption; the educational attainment of the household head; policy elements; cost of labor materials; labor costs; households engaged in safe tea production; years of experience of the household head.

5. The thesis analyzes the role of economic linkages between households through co-operatives is a form of linkage that plays a key role in helping households access credit capital, market, and state agencies and scientists services, and so on; those could help tea households and tea professional villages to develop sustainably. Factors affecting the ability to participate in cooperatives of the households include: gender of the household head; the age of the

5.4.3. Environmental solutions

- i) To minimize the environmental pollution
- ii) To raise awareness of households on environmental protection
- iii) To development tea zone plan meeting VietGAP standards
- iv) To invest in construction and develop infrastructure for tea professional villages
- v) To protect the environment of teaprofessional villages associated with sustainable development in the new context.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Tea professional villages in Thai Nguyen province has existed and developed hundreds of years associated with tea plantations. The preservation and development of tea LN is particularly important for the economic and social development, preservation and promotion of ethnic cultural identity and environmental protection. The dissertation "Tea professional village development in Thai Nguyen province towards sustainable development" came up with the following conclusions:

1. Sustainable development of tea professional villages based on the view of sustainable development associated with the characteristics of tea professional villages consists of three contents: (1) the economic development of tea professional villages; (2) social development of tea professional villages; and (3) environmental protection in tea professional villages.

2. In the period 2011-2015, in Thai Nguyen province, tea professional villages grew steadily towards sustainable growth: the number of tea professional villages grew over the years; forms of business production became more diversified; linkage among households in tea production and consumption increased; tea

between households in tea villages. From that point, the main solutions for developing tea professional villages in Thai Nguyen province have been introduced.

- Space: tea professional tea villages in Thai Nguyen province.
- Time: The status of tea professional villages in Thai Nguyen province was studied in the period of 2011-2015, the primary data of 2015 was collected by the author in 2016, solutions for developing tea professional villages were proposed for the period 2017-2022, vision to 2030.

4. Contribution of the dissertation

(1) Systematization and development of theory one tea professional village development have been made.

(2) An analysis framework has been designed; indicator system for sustainable development of the tea professional villages has been created.

(3) As the first research on the development of tea professional villages; the dissertation paves the way to combine successfully traditional research methods with modern research methods, qualitative research methods with quantitative methods.

(4) Analysis of the real status of tea professional villages development in Thai Nguyen province in a sustainable manner on economic, social and environment aspects has been successfully made. Of which, effect of influencing factors on the economic efficiency of member households in tea professional villages and effects of affecting factors on the linkages possibility (cooperative participating possibility) of the households have been studied.

(5) A comprehensive system of solutions to develop tea professional villages in the province of Thai Nguyen associated with sustainable development has been introduced in the new context.

5. The composition of the dissertation

Apart from the introduction, conclusion, reference and annex, the dissertation is divided into 5 chapters:

Chapter 1: Literature Review

Chapter 2: Theoretical and practical bases for tea professional village development towards sustainable development

Chapter 3: Research Methodology

Chapter 4: The development status of the tea professional villages in Thai Nguyen province

Chapter 5: Solutions to develop tea professional villages in Thai Nguyen province towards sustainable development.

Chapter 1

LITERATURE REVIEW

First, this chapter focused on published studies on village economy development in general, craft village development in particular in terms of economy, society and environment.

Second, it reviewed researches that have been conducted in Vietnam on village economy development in general, craft village development in particular in terms of economy, society, and environment.

Third, tea industry development in foreign countries and in Vietnam have been reviewed.

Unfortunately, the documentation of tea professional villages development in the world and in Vietnam is not available since tea professional villages are unique in Thai Nguyen province. However, results in craft village development and tea industry development could be good food for thought to come up with theory construction and real status analysis of tea professional villages in Thai Nguyen province.

trade villages in association with developing tourist villages; vii) support the associated forms in the production and trade of the product; viii) preserving and promoting cultural values of craft villages; ix) promoting the role of artisans and craftsmen in craft villages; x) raise awareness of village people in environmental protection. These strategies will be elaborated into solutions for tea professional village development in Thai Nguyen.

5.4. Solutions to develop tea professional villages towards sustainable development

5.4.1. Group of economic solutions

i) To promote the planning of tea professional villages associated with raw material areas;

ii) To improve the efficiency of production and business activities for the tea households;

iii) To develop science and technology and application to reality

iv) To mobilize capital to develop tea professional villages

v) To develop the market for tea product consumption

vi) To develop product brands

vii) To develop tourism activities

viii) To encourage economic organizations inside and outside the tea professional villages to participate in production and business in the tea professional villages

ix) To develop economic linkages in tea professional villages

x) To develop tea professional village economy associated with the goal of sustainable development in the new context.

5.4.2. Social solutions

i) To encourage young labors to participate in the tea industry

ii) To train human resources for tea professional village development

iii) To conserve cultural values of tea professional villages

iv) To develop tea professional village in social aspect associated with the goal of sustainable development in the new context.

4.5. General assessment on the development of tea professional villages in Thai Nguyen province towards sustainable development

4.5.1. The results achieved in the development of tea village in Thai Nguyen province towards sustainable development

4.5.2. Limitations on the development of Thai Nguyen tea professional village towards sustainable development

4.5.3. The causes of the limitations

Chapter 5. SOLUTIONS TO DEVELOP TEA PROFESSIONAL VILLAGES IN THAI NGUYEN PROVINCE TOWARDS SUSTAINABLE DEVELOPMENT

5.1. Party's viewpoint on craft village development

5.2. Development orientation of tea professional villages in Thai Nguyen province by 2025, vision to 2030

5.2.1. Economic development orientation

5.2.2. Orientation for social development

5.2.3. Orientation on environmental protection

5.3. Strategies to develop tea professional villages in Thai Nguyen province towards sustainable development.

Based on the results from the PRA tool and the actual situation of Thai Nguyen tea professional villages, SWOT method was used to synthesize and evaluate data in SWOT format in a logical, easy to understand order. SWOT matrix show that there are 11 strategies for developing tea trade villages in Thai Nguyen including: i) encouraging investment for tea industry development; ii) expansion of tea material area planning; iii) to train human resources to promote the application of science and technology in craft villages; iv) development of Thai Nguyen tea brand; v) to develop clean production models according to VietGAP, Global GAP and UTZ standards; vi) to develop tea

Chapter 2

THEORY AND REALITY BASES OF TEA PROFESSIONAL VILLAGES DEVELOPMENT IN SUSTAINABLE MANNER

2.1. Theoretical basis for tea professional villages in sustainable manner

2.1.1. Development of tea villages in sustainable manner

2.1.1.1. Development of craft villages

a) Concept of the craft village

One village is called a craft village or professional village when converging two conditions:

- There is a relatively large number of households producing the same professional products;

- Income from the production of the profession/occupation accounts for a large proportion of the total income of the villager. As such, not all villages that have occupational activities are also called craft villages but certain standards are required. The village is called a craft village when the size of the craft is large enough, the income from the occupation occupies the majority of the income of the households in the village.

b) Craft village classification

Based on tradition property, craft villages are classified into two categories: ordinary craft village and traditional craft villages.

Base on occupation property, craft villages are classified into many categories: carpenter craft village, ceramic craft villages, drum craft village, tea craft villages, and so on.

c) Criteria for recognition of trade villages

To be recognized as a craft village, a village must meet the three specified criteria: (1) At least 30% of all households in rural areas participate in rural occupations; (2) Production and business activities are stable for at least two years up to the time of application for accreditation. (3) To well implement policies and laws of the State.

d) Develop sustainable craft villages

The concept of sustainability of craft villages generally must be based on the concept of sustainable development by including the three pillars: economic, socially and environmentally sustainability.

Economic sustainability is the development of the craft villages economy including its size and the efficiency in both breadth and depth, long-term and continuous direction.

Social sustainability is to ensure the preservation and development of the identity and cultural values of the profession, improve the effectiveness of community cohesion; and create success in the village movement; and mobilize the contribution of people in craft villages to the society as well.

Environmental sustainability is to improve the environment, to reduce pollution, to protect the health, and to improve the quality of life of the population in the craft villages, thus contributing to sustainable socio-economic development in rural areas. .

2.1.1.2. Developing craft villages in sustainable manner

2.1.1.3. Developing tea professional villages in sustainable manner

Development of a tea professional village implies the development of the village by sustainable manner in terms of economy, society and environment. This is the expansion of the scale of production, the increase of revenue and efficiency from production and trading of tea products of the tea village households, development of the village organizations in the lines of technology changes and long-term stability to increase income of villagers, improve the environment in the tea villages, protect the health and improve the quality of life in the village.

2.1.2. Characteristics and role of tea professional villages in sustainable development

2.1.2.1. Characters of tea professional village

The tea professional villages have some distinction properties, including: i) the conditions for production and business are closely linked with agriculture and rural areas; ii) characteristics of labor; iii)

equipment expenses; CPLD: labor expenses; HOCVAN: education attainment of household head; KNGHIEM: years of experiences; LIENKET: linkages (=1 if participated in cooperative, = 0 if not); THITRUONG: market access (= 1 if good; = 0 if not good); DINH HOA: Dinh Hoa district (=1 if correct; = 0 if not); CHINHSACH: policy (=1 if received supporting policy; =0 if not); CHE ANTOAN: safe tea (=1 if Global GAP, VietGAP; =0 if not)

Regression model:

$$\begin{aligned} \text{LnLOINHUAN} = & 6,183 + 0,267 \text{ LnCPNL} + 0,078 \text{ LnCPTLLD} \\ & + 0,111 \text{ LnCPLD} + 0,229 \text{ LnHOCVAN} + 0,100 \text{ LnKNGHIEM} + \\ & 0,286 \text{ LIENKET} + 0,433 \text{ THITRUONG} - 0,381 \text{ DINH HOA} - 0,162 \\ & \text{DONGHY} + 0,191 \text{ CHINHSACH} + 0,102 \text{ CHEANTOAN} \end{aligned}$$

4.4.2. Factors affecting the linkages development of households in the tea professional villages

In order to analyze the factors influencing the linkage among households, the study analyzes the possibility of participating in cooperatives of tea producing and processing households in tea professional villages by using the Binary Logistic regression model:

$$\begin{aligned} \text{Ln Y} = & -3,632 + 0,913 \text{ GTINH} + 1,447 \text{ DTUOI} + 0,125 \text{ HOCVAN} \\ & + 0,308 \text{ TV} - 0,740 \text{ DT} + 0,667 \text{ CSHT} \end{aligned}$$

Where Y is Odds Ratio; GTINH: Gender; DTUOI: age; HOCVAN: educational attainment; DT: ethnicity of the household head; CSHT: infrastuture.

As shown by the Binary Logistic model, factors affecting the ability of households to participate in tea professional villages in order of their importance are: i) the age of the household head; ii) the gender of the household head; iii) support policy of the state; iv) number of members; v) education level of household head and household income. This is the basis for proposing a number of specific solutions suitable to the actual tea professional village in Thai Nguyen.

4.3.3.3. Investment in treating environmental pollution

After 10 years of tea variety restructuring in Thai Nguyen (from 2005 to 2015), tea growing area increased 12.66% on average, tea area for harvest increased 13.55% on average. The increase of tea plantation area plays a big role in limiting soil erosion and greening bare land. During this time, a large proportion of tea area expansion was devoted to good agricultural practice that helps to limit environmental pollution in tea areas and to ensure that tea products meet the requirements of food safety.

By 2015, the whole province had more than 70% of tea production areas in safe tea production areas, applying good agricultural production practices (VietGAP) with 54 production models VietGAP- certified safe tea, including one certified by GlobalGAP, one certified by UTZ, with 641.70 ha and 1,865 households.

Table 4.17. Area certified as safe tea

Area scope	Năm 2013		Năm 2014		Năm 2015	
	Area (ha)	No. of households (HH)	Area (ha)	No. of households (HH)	Area (ha)	No. of households (HH)
Tea professional villages	86.7	221	201.5	583	315	827
Whole province	362.08	1.021	561.18	1.545	641.70	1,865

Source: Tea Development Project - Department of Agriculture and Rural Development of Thai Nguyen province

4.4. Factors affecting the development of Thai Nguyen tea professional village towards sustainable development

4.4.1. Factors affecting the performance of households in tea trade villages

Cobb-Douglas production (CD) was used to assess the effect of factors on profit of tea producing and processing households in the tea professional villages with 11 basic variables. Where, LOINHUAN: profit; CPNL: tea material costs; CPTLLD: tool and

source of raw materials; iv) characteristics of the product; v) characteristics of the market for the product; vi) characteristics of the form of business organization; vii) characteristics of technology.

2.1.2.2. The role of tea professional village development in sustainable manner

2.1.3. The main contents of tea professional village development in sustainable manner

2.1.3.1. Economic development in tea professional villages

Contents of economic development in tea professional villages includes: First, development of production and business in the tea villages; Second, the development of business forms in the tea villages; Third, development of linkages in production and business at tea villages; Fourth, promote the restructuring of tea villages; Fifth, expand domestic and foreign markets; Sixth, the impact of tea development on local economic development

2.1.3.2. Social development in tea professional villages

Contents of social development in tea professional villages includes: First, poverty reduction for the households; Second, job opportunity creation for rural laborers; Third, improvement of people's knowledge and vocational training for rural workers; Fourth, developing tea professional villages must be associated with the preservation of cultural values in the tea.

2.1.3.3. Environmental protection minimizes environmental pollution in tea professional villages

Contents of environmental development in tea professional villages includes: first, limiting the level of environmental pollution in the tea professional villages; secondly, the development of tea villages must be associated with protection, regeneration of resources, raising awareness of people about the protection of natural resources and environment; thirdly, rational exploitation, use of savings, planning, planning material areas for tea villages.

2.1.4. Factors affecting the tea professional development in the direction of sustainability

Natural conditions; scale of material investment; Quality of labor force; Production tools; scale Capital; The development of science and technology; Consumption market; Environment in the tea villages; Elements of policy;...

2.2. Practical experiences for sustainable development of tea villages

2.2.1. Experience in craft villages development from foreign countries

Experience from some countries: Experience from Japan; Experiences from China; Experience from Thailand.

2.2.2. Experience in tea industry development from foreign countries

Experience in tea industry development from foreign countries from a number of countries: Experiences from India; Experiences from China; Experience from Japan.

2.2.3. Lessons learned for sustainable tea professional village development in Thai Nguyen province

Chapter 3. RESEARCH METHODOLOGY

3.1. Approaching methods include participatory approach, economic organization approach, system approach, tea supply chain approach, economy-society - environment- specific approach

3.2. Research design and analytical framework

3.3. Methods of collecting information

3.4. Methods of information summarization and analysis

3.5. Research indicator system

3.5.1. Economic indicators

3.5.2. Social indicators

3.5.3. Environmental indicators

4.3.2.3. Enhancement of people's intellectual level and vocational training for laborers

4.3.2.4. Conservation of cultural values in tea villages

i) Bringing into play the role of artisans and professionals in tea companies

ii) Improving the spiritual life of the villagers (conservation of traditional values, customs)

4.3.3. Current status of environment in tea village

4.3.3.1. The level of environmental pollution in the tea village

The results of the survey of 385 households in tea villages show that 49.09% of households used fertilizers, plant protection drugs according to experience; the number of households used according to instructions on the package accounts for 21.30%, 29.61% of households used as instructed by technical staff.

4.3.3.2. Awareness of environmental pollution.

The results of the survey on the awareness of environmental pollution in households indicates that 68.57% of respondents said that pollution was not significant. 7.02% of respondents said that pollution was very serious, 5, 45% of the households said that they were not polluted.

Table 4.15. Evaluation of people in tea professional villages on environmental pollution in 2015

Answer	No. of respondents	Proportion (%)
No pollution	24	6,23
In significant pollution	157	40,78
Pollution	111	29,35
Serious Pollution	80	18,96
Very Serious Pollution	23	4,68
Total	385	100

Source: Survey by the author, 2016

Table 4.12. Tea Export of tea professional villages in the province

Indicator	2013	2014	2015	Increasing rate (%)		
				2014/2013	2015/2014	BQ 2013-2015
Quantity (Ton)	67,6	85,3	115,0	126,18	134,82	130,43
Value (USD 1.000)	124,02	165,75	223,46	133,65	134,82	134,23

Source: Thai Nguyen Craft Village Association

ii) Economic restructuring of local tea professional villages

iii) Develop infrastructure in craft villages

iv) Development of tourism activities

4.3.2. Social development

4.3.2.1. Poverty reduction for households in tea villages

4.3.2.2. Create jobs, attract labor and increase income for labor

Average income of a regular household labor in 2013 was 37,830,000 VND/year, equivalent to 3,152,500 VND/month. Income levels increase in 2014, 2015 was equivalent to 3,190,667 VND/month and 3,250,000 VND/month.

Table 4.13. Income of labor in Thai Nguyen tea professional villages

Unit: VND 1000

	No. of observation	Min	Max	Average	Standard Deviation
2013	385	17.081	100.003	37.830	18.648
2014	385	17.021	97.500	38.288	19.093
2015	385	16.028	100.373	39.000	19.589

Source: Survey by the author, 2016

Increased income, material and spiritual life of the tea village households was improved. The development of tea trade played an important role in reducing the rate of poor households in the province.

Chapter 4

REAL STATUS OF TEA PROFESSIONAL VILLAGES IN SUSTAINABLE MANNER IN THAI NGUYEN PROVINCE

4.1. Overview of Thai Nguyen province

Natural conditions and socio-economic characteristics provide Thainguyen province with advantages in producing highly famous quality tea. As such, they are favorable conditions to develop tea professional villages

4.2. Organizing the management of Thai Nguyen tea village

Formation process of tea professional villages in Thai Nguyen province has been briefly reviewed. Organizational mechanism for tea village management and institutional development of tea professional villages have been introduced. An analysis of the development of tea professional villages in Thai Nguyen province towards sustainable development has been made. Thais Nguyen has been the pioneer province in Vietnam in set up legal regulations for establishing tea professional villages; and tea professional village is now the unique phenomena of Thai Nguyen so far.

4.3. Analysis of the development of tea professional villages in Thai Nguyen province towards sustainable development

Table 4.1. The number of tea professional villages recognized by district, town and province at the end of 2015

STT	District/ Town	2009	2010	2011	2012	2013	2014	2015	Total
1	Định Hóa					3	3	3	9
2	Đại Từ		-	10			8	6	24
3	Võ Nhai		-	1	4				5
4	Phú Lương	5	5	7	2	2	4	2	27
5	Đông Hy		4		5	1	4	4	18
6	Thái Nguyên City		2	5	6	2	3	6	24
7	Phổ Yên Town		5	5	3	8	3	2	26
8	Phú Bình		-					4	4
9	Sông Công City						3		3
	Total	5	16	28	20	16	28	27	140

Source: Thai Nguyen Craft Village Association

As seen in Table 4.1, number of villages recognized as tea professional villages in different districts has been increasing continuously, especially in Phu Luong district, Dai Tu district, Thai Nguyen city, and Pho Yen town.

ii) Average output of the household

The results of the survey of 385 households in tea professional villages in 3 representative districts of Thai Nguyen province (Dinh Hoa district, Dong Hy district and Thai Nguyen city) show that many households have high revenue from production and processing tea, on average from 147,530,000 VND/household to 154,817,000 VND/household (2013 - 2015). However, the revenue gap between households in the village is very large. The household has the highest revenue of VND 335,267,000 (2015), the lowest revenue of VND 34,749,000, the standard deviation of VND 70,553,000 (Table 4.2).

Table 4.2: Average revenue of households in tea professional villages in 2015

Unit: VND1.000

Year	No. of observaion	Min	Max	Average	Standard Deviation
2013	385	25.741	332.000	147.530	71.667
2014	385	35.621	345.240	153.957	71.299
2015	385	34.749	335.267	154.817	70.553

Source: Survey by the author, 2016

4.3.1.2. Economic organizations in the tea village

In the tea professional villages in Thai Nguyen, the main forms of economic organizations are: households, cooperative groups, cooperatives, and enterprises. In 140 tea professional villages, there were 10,290 tea households, accounting for 15.59% of total tea-producing households in Thai Nguyen. Non-household production establishments in tea professional villages were relatively developed: cooperative groups accounted for 42.5% of the total number of tea

Table 4.11. Main machinery, equipment for tea households in tea professional villages in the province in 2015

	Machinery and equipment	Quantity of machinery and equipment of tea households				Total (unit)
		Self sponsored (unit)	Percentage (%)	Granted (unit)	Percentage (%)	
1.	Drying machine	474	80,48	115	19,52	589
	-Tea revolving iron machine	181	69,35	80	30,65	261
	-Tea revolving inox machine	293	89,33	35	10,67	328
2.	Creasing machine	279	80,87	66	19,13	345
3.	Vacuum sealing & packing machine	73	80,22	18	19,78	91
4.	Incensing machine	3	60,00	2	40,00	5
5.	Gas frying machine	2	50,00	2	50,00	4
6.	Screening machine	12	66,67	6	33,33	18

Source: Survey by the author, 2016

4.3.1.5. Expanding the market and developing the tea product brand for the tea professional villages of the province

- i) Stabilizing supply of inputs for tea production
- ii) Developing sales channels
- iii) Developing product brand

4.3.1.6. The impact of tea professional village development on local economic development

- i) Contributing to the province's export turnover.

The total tea export value of tea in Thai Nguyen accounted for about 7% of the total green tea production produced by households exported by cooperatives. and export enterprises [20]. The tea export data of the province's tea in 3 years from 2013 to 2015 was sharply increased as shown in the following Table:

participating in the cooperative groups and cooperatives. Vertical linkages between enterprises, cooperatives, and cooperatives were very limited, mainly through raw material purchase contracts and not close.

4.3.1.4. Economic restructuring of tea village

i) Labor structure in tea professional villages

The total number of labors in the whole province was 22,760 labors, including 21,000 regular labors, accounting for 92.27% and 1,760 laborers hired, accounting for 7.73% of total labors.

Table 4.8. Number of laborers engaged in tea professional villages in the province in 2015

	Regular labors		Hired laborers	
	Number (labor)	Percentage (%)	Number (labor)	Percentage (%)
- Male Labor	6.573	31,30	510	28,98
- Female Labor	14.427	68,70	1.250	71,02
Total	21.000	100,00	1.760	100,00

Source: Thai Nguyen Craft Village Association

ii) Capital size and structure of households in tea professional villages

The survey results of 385 households of tea professional villages show that 72.20% of production and business capital of households was their own capital, 19.76% was loans from credit organizations and 8.04% was loan from informal credit sources and a small part from black credit market. 75.06% of the total households in tea professional villages had capital under VND 50 million. 15.84% of households had capital from VND50 to 100 million. 9.1% of the total households had a capital of over VND 100 million.

iii) Technology level

The results of the survey of 385 households of tea in Thai Nguyen province in terms of main machinery and equipment are for tea production and processing through the following table.

cooperative groups; cooperatives accounted for 66.67%; enterprises accounted for only 8.82% of their total numbers in the province.

i) Tea professional households

Table 4.4. Basic information of tea professional households in the tea professional villages in 2013-2015

Indiator	Unit	Average
1. Labor	Person/hh	2.7
2. Age of household head	Tuổi	48.0
3. Education attainment	Schooling year	6.05
4. Capital	VND/hh	46,540,279
5. Tea Area	Ha/hh	0,51
6. Revenue	VND/hh	154,817,000
7. Monthly income	VND/labor	3.250.000

Source: Survey by the author, 2016

A survey of 385 households in tea villages shows that the average number of laborers per household was 2.7 labors. The education level of the household head was low, the average schooling years is 6.0, the number of laborers with high school level accounted for only 9.35%. The average age of the head of household was 48 years. At this age, they were still healthy, still ambitious and much experienced; this is the decisive factor for the success of household economy. The average capital per household was 46,540,279 VND, which is the amount of working capital accumulated from the production and business over the years, used for investment in tea production, processing and trading. Average tea area per household was 0.51ha, higher than the average area of the province's tea farmers (0.31 ha/household). The average income of the household was 154,817,000 VND, the average income per month was 3,250,000 VND.

ii) Cooperative groups

By the end of 2015, the whole province had 40 tea producing and trading enterprises with 137 participating households, of which 17 were in the tea villages (42.5%) with 62 participating households in tea villages [33].

Table 4.5. Basic information of tea cooperatives in tea professional villages in Thai Nguyen provinve in 2015

Indiator	Unit	Average
1. Labor	Person/hh	3.2
2. Age of household head	Tuổi	45
3. Education attainment	Schooling year	6.00
4. Capital	VND/hh	50,100,000
5. Tea Area	Ha/hh	0.58
6. Monthly income	VND/labor	3,290,000

Source: Thai Nguyen Craft Village Association

Table 4.5 shows that households involved in cooperative groups had an average number of laborers per household of 3.2 person. The education attainment of the household head was grade 6. The total capital was VND 50,100,000 per household. Average farm per household was 0.58 ha. The general information shows that households involved in cooperative groups have higher resources than households who does not participate in cooperative groups, but the difference is not significant. The average monthly income of one tea labor belonging to households in cooperative groups was 40,000 VND/person) higher than that of non-coopearative- group households.

iii) Co-operatives

In the three years from 2013 to 2015, the number of newly established cooperatives for tea production and processing increased by 6 cooperatives, the annual average number of cooperative members increased by 11.8%. Total fixed assets and capital grew significantly, fixed assets grew by 15.12% annually on average. Capital size annally increased by 20.67% on average. Income of cooperative members increased steadily over the years, from 2750 .000 VND/month in 2013 to 3,210.00 VND/month, the average income growth rate annually of a cooperative in 3 years is 8.04%.

Table 4.6. Basic information on tea cooperatives in the province during 2013-2015

TT	Indicator	2013	2014	2015	Growth rate (%)		
					2014 /2013	2015 /2014	average
1	No. of cooperatives (cooperative)	30	35	36	16.67	2.86	9.55
2	Average members/coop. (household)	16	19	20	18.75	5.26	11.80
3	Average fixed assets/coop.(mill.VND.)	369	435	489	17.89	12.41	15.12
4	Average working capita /coop. (mill.VND)	489	686	712	40,29	3,79	20,67
5	Mothly income/labor	2,750	3,050	3,210	10,91	5,25	8,04

Source: Survey by the author, 2016

However, difficulties for tea cooperatives are the quality of tea was not equal among members of cooperatives. HTX mainly bought raw materials in the form of semi-finished tea (green tea), then complete and pack. Consequently, the cooperative only consumed 30% -70% of the tea output of the members (the quality tea and meet the needs of the orders). The rest of tea material, the members self-processed and consumed by themselves.

iv) Enterprises

By the end of 2015, there were 34 tea producing and trading enterprises in the whole province. However, only three tea enterprises were operating in the tea professional villages of Thai Nguyen province. These enterprises were engaging with households in and outside the villages to buy raw materials in the form of cooperating with farmers to consume the products but not to invest, not to participate directly in the production process.

4.3.1.3. Development of linkages among member households in production and business in tea professional villages

By the end of 2015, the tea companies had formed linkages, but the linkage was mainly horizontal linkages between the members