



ANALYZING THIEU LITCHI VALUE CHAIN IN THANH HA DISTRICT - HAI DUONG PROVINCE

(The report for research contract with GTZ-MOT-METRO on the current situation of fruit and vegetable value chain)

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INDEX TABLE

INDEX TABLE	3
I. ABSTRACT	4
II. OVERALL SITUATION	5
II.1. An overview about Hai Duong province	5
<i>II.1.1. Natural location</i>	<i>5</i>
<i>II.1.2. Natural conditions</i>	<i>5</i>
<i>II.1.3. Socio-economic conditions</i>	<i>6</i>
II.2. The production of Thieu litchi in Hai Duong	6
<i>II.2.1. Thanh Ha district – the production center of the province</i>	<i>6</i>
<i>II.2.2. The distribution of Thanh Ha thieu litchi</i>	<i>8</i>
III. MARKET CHARACTERISTICS AND PRODUCT’S COMPETITIVENESS	11
III.1. Commercial centers’ characteristics	11
III.2. The product’s competitiveness	12
<i>III.2.1. Area and quantity are increasing but the price is falling gradually</i>	<i>12</i>
<i>III.2.2. Litchi characteristics and solutions to overcome</i>	<i>13</i>
<i>III.2.3. The outstanding characteristics of Thanh ha thieu litchi</i>	<i>13</i>
<i>III.2.4. Local support for the development</i>	<i>14</i>
IV. THE DESCRIPTION OF THIEU LITCHI VALUE CHAIN IN THANH HA	14
IV.1. Fresh litchi value chain	14
IV.2. Dried litchi value chain	17
V. STAKEHOLDERS’ CHARACTERISTICS AND RELATIONSHIP BETWEEN THEM	18
V.1. Consumers	18
V.2. Producers	19
<i>V.2.1. General characteristics</i>	<i>19</i>
<i>V.2.2. Production scale and economic effectiveness</i>	<i>20</i>
<i>V.2.3. Shortcomings in the cultivation and harvesting process</i>	<i>21</i>
<i>V.2.4. The storage, processing and commercialization of products</i>	<i>22</i>
<i>V.2.5. Some difficulties faced by producers</i>	<i>23</i>
V.3. Collectors and traders	24
<i>V.3.1. Fresh litchi collectors and traders</i>	<i>24</i>
<i>V.3.2. As for dried litchi value chain</i>	<i>26</i>
V.4. Retailers and supermarkets	27
<i>V.4.1. Retailers</i>	<i>27</i>
<i>V.4.2. Supermarket’s role in litchi channel in Hanoi</i>	<i>28</i>
V.5. The processing	29
<i>V.5.1. The drying method</i>	<i>29</i>
<i>V.5.2. Other processing model</i>	<i>30</i>
V.6. Roles of organization in developing litchi product	30
<i>V.6.1. Thanh Ha’s Association producing and commercializing high quality litchi</i>	<i>30</i>
<i>V.6.2. Roles of agencies and organization in the local</i>	<i>31</i>
VI. THE PRICE FORMATION PROCESS AND THE DISTRIBUTION OF PROFIT AMONG STAKEHOLDERS	32
VII. DISCUSSION	34
VII.1. The matter of technology and product development	34
VII.2. Market access	35
VII.3. Matters about policy, organization and product management	35
VII.4. Input service	35
VII.5. The matter of finance and infrastructure construction	36
VIII. Conclusion and recommendations	36

I. ABSTRACT

Litchi is now very popular in all districts of Hai Duong province with the total cultivation area of 14,250 ha (of which Thanh Ha and Chi Linh accounting for 47% and 43% respectively, making them the most grown litchi districts). As for Thanh Hai district, litchi is the key plant accounting for two third of total cultivation land and brings the main income for farm households. Most of the miscellaneous gardens here have been improved for growing litchi. Over the last ten years, litchi's area has grown very fast with the current area of 6,745 ha and current yield of 25,000 tons.

In the last few years, Thieu Litchi of different quality has been grown in different ecological conditions in the North of Vietnam. Thieu Thanh Ha Litchi is the speciality that has been very famous for its taste and consumers are willing to pay higher price for it than for other regions' litchi. However consumers find it hard to have authentic Thanh Ha litchi on the market due to the lack of bases for distinguishing, which will gradually reduce the consumers' confidence in quality and the popularity of Thanh Ha litchi.

In the distribution channel, Thieu litchi has to go through so many intermediate stages that it is impossible to control the quality until it reaches final consumers. Therefore, Thanh Ha litchi has severe competition in price against litchi from other regions such as Bac Giang, Chi Linh... In recent years, there has been a considerable decrease in litchi price from VND 15,000/kg in 1995 to VND 3,500/kg in 2003 and then to VND 2,500/kg in 2004. Although the price has risen again to VND 5,500/kg, the output of Thanh Ha litchi has dropped significantly (being equal to 40% of the 2004 output). Producers have faced a lot of risks.

Another problem in the distribution channel is that short harvest period (within one month), great quantity and the difficulty in storage stage of fresh litchi all cause lots of difficulties in commercializing litchi, creating risks for traders. In order to reduce risks in the commercialization, traders' demands for litchi are stricter and stricter. Litchi must be fresh, have good looking and high level of even size and must be free from diseases. However, there are several shortcomings in the production. Cultivation technique is poor leading to incomprehensive quality and low rate of fresh litchi which can satisfy the standard for being traded. Further more, the commercialization of Thanh Ha litchi has encountered multiple difficulties due to market instability, the loss in power bargain and severe competition with other region's litchi, limited export markets....

The existence of Thanh Ha litchi production and commercialization association is the new trend and the decisive factor for ensuring the competitiveness of the product in an open market economy. However, the association has met several difficulties, especially in supervising the production, searching for output market, storing and processing products. In order to help this model operate more effectively and can be expanded to strengthen the production and commercialization, it is necessary to gain attention and support from local authorities, scientists and projects...

II. OVERALL SITUATION

II.1. An overview about Hai Duong province

II.1.1. Natural location

Located in the center of the Northern Delta, Hai Duong is inside the important economic tangible of the region (Hanoi – Hai Phong – Quang Ninh). Hai Duong shares border with Bac Giang Province on the north, Thai Binh Province on the south, Quang Ninh and Hai Phong provinces on the east, Bac Ninh and Hung Yen Provinces on the west.

Hai Duong has a very convenient transport system. Most of the National Highways bridging with Hai Phong, Quang Ninh are via Hai Duong such as National Highway 5A, 18, 186, 188, 183, 39B. Two railways Ha Noi – Hai Phong and Ha Noi – Cai port also run through Hai Duong.

II.1.2. Natural conditions

- ✓ Land characteristics and the current land use: Hai Duong has two main land groups:
 - The delta land: it is covered by alluvium mostly from Thai Binh river and a little bit from Red River with the area of 147,900 ha accounting for 88.97% of the total province's natural land.
 - The mountainous land: with the area of 18,320, accounting for 11.03% of the total area.
- ✓ Hai Duong terrain is smooth, gradually sloping from the northwest to the southeast. 90% of the area is covered by alluvium from Red River and Thai Binh river, the rest is mountainous land in the northeast region. (Chi Linh district)

Table 1: The land use in Hai Duong in 5 years

Unit: ha

Kind of land	1999	2000	2001	2002	2003
Total natural land area	164,837	164,837	164,837	164,837	164,837
1. Agricultural land	105,669	105,669	105,534	105,046	104,091
- Land for annual crop	83,125	83,125	80,918	79,950	78,190
- Miscellaneous garden land	4,619	4,619	4,632	4,619	4,650
- Land for perennial plants	10,635	10,635	12,663	13,067	13,547
- land for growing grass	14	14	14	14	10
- Water surface for aquaculture	7,276	7,276	7,307	7,396	7,693
2. Forestry land	9,147	9,147	9,140	9,047	9,049
3. Infrastructure land	26,539	26,539	26,736	27,198	28,049
4. Habitant land	11,089	11,089	11,078	11,194	11,332
5. Not yet used land	12,393	12,393	12,349	12,351	12,316

(Source: The Hai Duong annual statistics, 2004)

✓ Hai duong has a tropical monsoon climate. The average temperature during the year is about 23.3°C, with the highest of 37° - 38°C, and the lowest of 5 - 6°C (in January and February). The average rainfall is 1,600 – 1,700 mm and mostly in June, July and August.

✓ Hai Duong has a busy river and stream network including Thai Binh river system and some other branches of river like: Ke sat river, Cuu an river, Luoc river, Thay river, Bac Hung Hai river system...With the total number of rivers is 14 and the total length is 500 km, more than 2,000 small rivers and streams.

II.1.3.Socio-economic conditions

Located in the Red river delta with the total natural land of 164,837 ha and the population of 1.69 million people, the province has a rather high population density in comparison with other regions and with the country as the whole (1,030 người/km²). The province has 12 districts with the number of 262 communes and towns.

Over the last 10 years, in line with the rapid increase in industries, the economic structure has significant changes. Especially, in the period of 1998-2004, the agricultural proportion in GDP dropped rapidly (-3.73%) from 35.8% in 1998 to 28.5% in 2004; industrial percentage in GDP increased from 35.7% to 42.3% in 2004; the service sector has the slowest change from 28.5% in 1998 to 29.2% in 2004.

Table 2: Some socio-economic development criteria in Hai Duong

Criteria	Unit	1998	2004	Growth rate (%)
- Population	People	1,639,351	1,698,262	0.59
- Population density	People/km ²	987	1,030	0.71
- Labour	People	843,772	1,019,846	3.21
- GDP structure	%	100.00	100.00	
+ Agriculture-forestry -aquaculture	%	35.8	28.5	-3.73
+ Industry and construction	%	35.7	42.3	2.87
+ Commerce and service	%	28.5	29.2	0.41
- Average income/people/month	VND 1,000	273.95	456.24	8.87

(Source: The Hai Duong annual statistics, 2004)

II.2. The production of Thieu litchi in Hai Duong

II.2.1.Thanh Ha district – the production center of the province

Since 1993, the district has implemented the Central resolution No 5 about agro-economic change and diversity. Thanh Ha district has established a project to convert 1,500 ha rice cultivation land to litchi gardens. In 1994, the district found it necessary to convert low economic yield rice land into litchi gardens. Especially in 2000, the district had a project to

convert 3,471 ha alluvium land belonging to 24 communes into litchi gardens increasing the total area of litchi land rapidly.

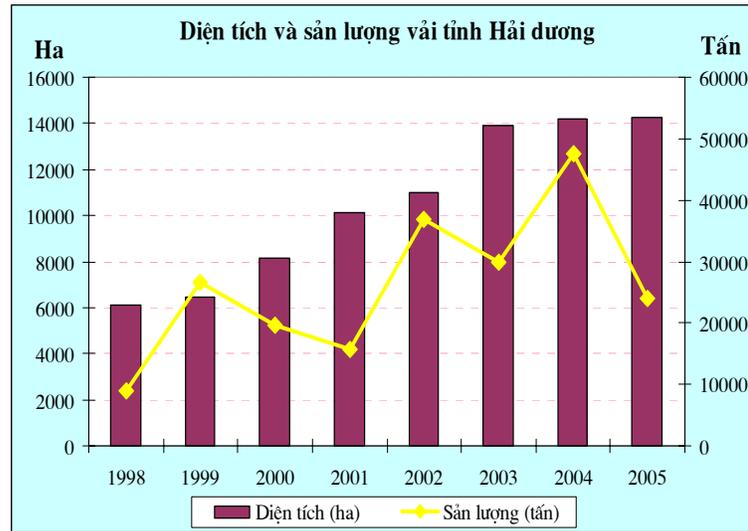


Table3: Area for Litchi product and output in Hai Duong

District	Year 2002		Year 2003	
	Area (ha)	Output (ton)	Area (ha)	Output (ton)
The whole province	10969	36974	13915	29942
Thanh Ha district	5395	18793	5473	13104
Chi Linh district	3280	12017	6009	11785
Nam Sach district	189	481	190	366
Kinh Mon district	310	596	310	521
Kim Thanh district	393	912	427	830
Gia Loc district	350	700	430	625
Tu Ky district	460	1804	466	1372
Cam Giang district	196	465	196	416
Binh Giang district	162	357	167	295
Thanh Mien district	135	417	148	321
Ninh giang district	76	322	76	235
Hai Duong city	23	110	23	72

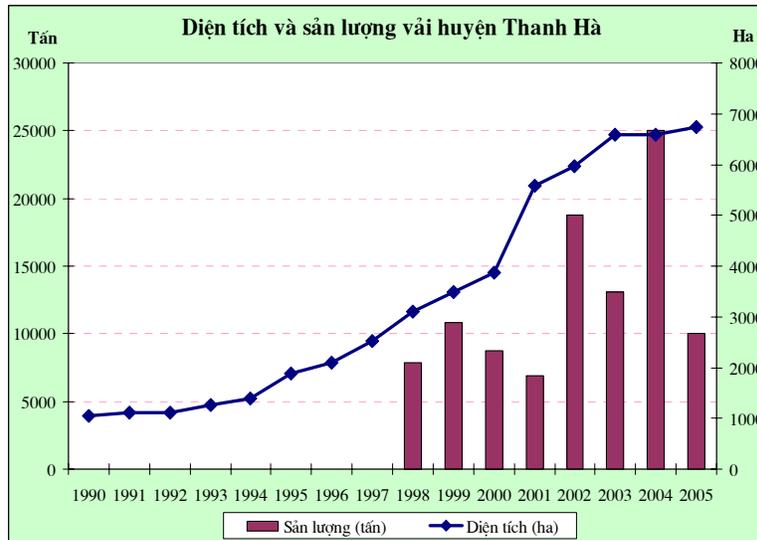
Source: The Hai Duong annual statistics, 2004)

Presently, litchi is grown in every district of Hai Duong province with the total area of 14,250 ha. Thanh Ha and Chi Linh are the two districts which are growing the most litchi in Hai Duong accounting for 47% and 43% respectively. As for Thanh ha, this is considered the origin of Thieu litchi. The ancestral litchi tree has its origin in China and was brought to Thanh Ha 200 years ago and is now still existing and fruiting. Thieu litchi has been grown widely, however

Thanh Ha litchi has been seen to be the second-to-none among litchi grown in Vietnam due to its special quality. Thanh Ha thieu litchi is very sweet (19 – 22 Brix), crisp and aromatic.

II.2.2. The distribution of Thanh Ha thieu litchi

At the present, litchi in Thanh Ha is the key crop, accounting for two third of cultivation area. The total miscellaneous area has been improved for growing litchi. The litchi area in Thanh Ha has developed rapidly over the past 10 years and its current area is 6,745 ha and the output is 25,000 tons.



However, there are many different production regions in Thanh Ha according to each region’s litchi quality, cultivation condition and production tradition, history of growing litchi... it is possible to classify the production of litchi in Thanh Ha according to the following criteria.

1. According to quality

According to local authorities’ and litchi growers’ ideas, there are three production regions giving different quality.

- **The production region 1:** including communes with special ecological conditions, giving the best litchi: Thanh Son, Thanh Thuy, Thanh Xa, Thanh Khe and Thanh Xuan with the total area of litchi of 16,000 ha (accounting for more than 25% the district’s litchi area). The annual output of fresh litchi is about 25,000 tons.

- **The production region 2:** including 6 communes in Ha Dong region: Hop Duc, Truong Thanh, Thanh Binh, Thanh Hong, Thanh Cuong, Vinh Lap with the total area of 1,381 ha (accounting for 21%) and 10 communes in the northwest of the region: Phuong Hoang, An Luong, Thanh Hai, Tien Tien, Thanh Ha town, Cam Che, Lien mac, Thanh An, Thanh Lang with the total area of 2,790 ha (accounting for 42%). Quality of litchi in this region is seen to be lower than that in the first class region: Less sweet, less nice-looking.

- **The production region3:** including 4 communes: Quyet Thang, Hong Lac, Tan Yen, Viet Hong has the total area of 794 ha (accounting for 12%). This region produces litchi of the lowest quality in Thanh ha: Small fruit, sharp thorn and a little bit sour and acrid like litchi in Chi Linh and other districts.

Table 4: Criteria to classify Thanh ha thieu litchi according to quality

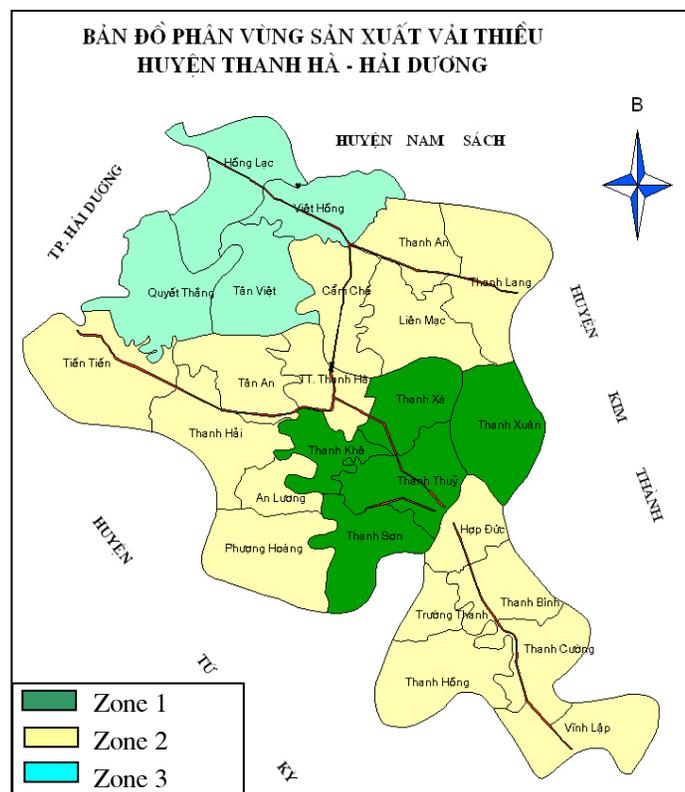
Criteria	First class litchi	Second class litchi	Third class litchi
Fruit weight	40 – 42 fruits/kg	40 – 45 fruits/kg	50 – 60 fruits/kg
Fruit shape	Round	Round	Round
The skin colour	Scarlet	Scarlet	Dark red
The skin thorn	Level thorn	Level thorn	Sharp thorn
The skin's thickness	Thin	Thin	Thin
Aromatic	Very sweet and aromatic	Less sweet	Less sweet and pretty sour and acrid
The pulp crispness	Crisp and detachable from the skin	Crisp and detachable from the skin	Not detachable from the skin

(Source: Data collected in 09/2005)

2. The classification of production region according to variety structure

- **The early ripening litchi variety:** this includes U tham, U hong varieties which are ready for harvesting from the beginning to the 20th of May. This early ripening variety is grown widely in 6 communes of Ha Dong (mainly in Thanh Cuong and Thanh Binh). Most of the litchi grown in habitants' gardens in these communes is in the early ripening variety group (accounting for 49%).

- **The late ripening variety:** This is the right season litchi which can be harvested from the late May to the late June. This litchi variety is popular in 5 communes of the production region 1. Thieu litchi in this region accounts for 90% of the total litchi grown here, the early ripening variety is 10%. Moreover, 5 communes of the Ha Bac region is Thanh An, Cam che, Lien Mac,



Thanh lang va Thanh ha town and 4 communes of Ha Tay region of the production region 3 (Hong Lac, Quyet Thang, Tan Viet, Viet Hong) are those which have a high percentage of right season litchi (80-95%).

- **The medium variety:** including Tau lai hoa trang, Tau lai hoa den, Tau lai Phu ho, Ma quan Tai. These varieties are grown in communes of the district with an insignificant area and can give fruit from the mid May to the late May.

3. The classification of production regions according to litchi's ages

At the moment, there are 3 kinds of gardens in Thanh Ha which give different litchi quality.

- Habitant gardens: Most of litchi trees in these gardens are very old, some of them are around 100 years old and they still give fruits regularly every year. Litchi grown in these gardens has very good quality and very tasty but the fruits are small so this kind of litchi is not popular to consumers, especially consumers in the Southern and Chinese markets.

- Gardens that are converted from rice fields: litchi trees grown in these gardens are about 10-15 years old and are in their developing period. Land in fields was once alluvium so it is now less fat than plain land and litchi fruits are small, seeds are big and are vulnerable to diseases, especially fungus *Phytophthora and Gloesporium*.

- Gardens converted from the plain: these gardens are covered by alluvium so land is fat, litchi trees here are easy to develop. Fruits in these gardens are big, rarely to catch a disease, the appearance is nice and it is popular to consumers even though quality is not as good as litchi grown in habitant gardens.

Table 5: Percentage of each kind of garden in Thanh Ha

Kind of garden	Area percentage (%)	Age
Habitant gardens	5	> 20 years old
Gardens converted from field land	55	< 20 years old
Gardens converted from plain land.	40	< 20 years old

(Source: Dialogs project, 2004 - VASI)

It is possible to classify according to litchi's age in Thanh ha as the followings:

- **The high year old litchi region:** That is also the production region 1 (mentioned above). Litchi trees grown in these habitant gardens are more than 50 years old and many of them are 100 years old. Moreover, the region had the earliest conversion from rice field to litchi gardens so gardens here are about 10 years old already.

- **The mid year old litchi region:** This is the production region 2 where there is early ripening litchi but quality of litchi here is not as good as litchi grown in the region 1. Litchi trees in habitant gardens are younger and about 30-40 years old. This region carried out the land conversion later, mostly in 1996 – 2000.

- **Newly developed region:** this region is in Ha Tay in the production region 3. Litchi trees here are the youngest due to recent development in the past few years. Quality is the worst among litchi from other districts.

Table 6: Classification production region according to litchi's age

Production region	Habitant gardens	Conversed gardens
Production region 1	> 50 years old	1995 - 1996
Production region 2	30 - 40 years old	1996 - 2000
Production region 3	10 - 20 years old	2000 - 2001

(Source: Data collected in 09/2005)

III. MARKET CHARACTERISTICS AND PRODUCT'S COMPETITIVENESS

III.1. Commercial centers' characteristics

Hai Duong's litchi is commercialized mainly in Thanh ha and Chi Linh districts. But due to the lack of conditions to implement an overall survey, in this report we concentrate on describing the operation in Thanh Ha. Characteristics in these Thanh ha's litchi centers are:

❖ Thanh Binh commune- the center collecting and commercializing early ripening Thieu litchi

This is the center where people collect and commercialize the earliest ripening litchi in the litchi season in Thanh ha because Thanh Binh is the center of the region 2 (the region has early ripening litchi accounting for 49% of the area). Early ripening litchi varieties can be harvested from the beginning of May to the end of May and can give good delicious litchi. At this time, traders from the South and other provinces come here (He market) to collect litchi from households. 20% of Thanh Ha litchi is estimated to be commercialized through this center.

❖ Thanh Xa and Thanh Thuy communes- the center collecting litchi sold to the South

This is the biggest collecting center in Thanh ha district where 50% of the fresh litchi is traded. Operation in this center is often from June to July every year when litchi is ready for being harvested. There are two collecting places which are Thanh ha litchi wholesale market located in Thanh Xa (has just come into operation since 2005) and Lai Xa market in Thanh Thuy commune.

Thieu litchi bought by collectors and transported to southern provinces or by traders from Lao Cai to sell to China.

❖ Cam Che commune – the center collecting litchi sold to Hai Phong

The collecting is implemented by traders in Chay market in Cam Che commune. They buy litchi from households and then transport to Ga market in Hai Phong.

❖ Tan An commune- the collecting center in the province

Due to being close to Hai Duong, traders often buy fresh litchi around Lua market and sell to fruit stores or directly to people in Hai Duong city.

III.2. The product's competitiveness

III.2.1. Area and quantity are increasing but the price is falling gradually

The increase in litchi cultivation area and annual output has made its price drop. Over the past few years, litchi price has fluctuated significantly: In the period of 1990-1997 the litchi price was rather high and stable at VND 11,000-13,000/kg, and this for Thieu litchi was VND 14,000-15,000/kg, however since 1998 litchi price has kept decreasing rapidly. In 2004, litchi price was at-all-time low of VND 2,500/kg. This drop in price has caused farmers many difficulties in deciding to invest and take care for litchi such as: pruning braches after harvesting, fertilizing, using pesticide ... which reduces litchi quality.

Table 7: Thieu litchi price over the years

Year	Other litchi price (VND/kg)	Thanh ha's litchi price (VND/kg)
1990 - 1997	11,000 – 13,000	14,000 – 15,000
1998	8,000 – 10,000	10,000 – 12,000
1999	8,000	10,000
2000	5,500	7,000
2001	4,500	5,500
2002	3,000	3,700
2003	2,700	3,500
2004	1,900	2,500
2005	4,000 – 5,000	5,000 – 6,000

(Source: Dialogs project – VASI)

The harvesting time of Thanh ha thieu litchi ranges from early May to the mid June every year. During this time, litchi price changes greatly: during the first 5-7 days or the last 7-10 days of the season, price was often very high but in the mid season when the output is high, the price is only a half of the early and late season litchi price. Because the harvesting period lasts only 3-4 weeks and storage and processing have not met demands so traders often push litchi price down.

We looked at Thanh Ha thieu litchi at different time in 2003 season with the following results.

Table 8: Thieu litchi price fluctuation in Thanh ha in the year 2003

Date/month	20/5	23/5	30/5	3/6	10/6	16/6	20/6	27/6
Litchi price (VND/kg)	6.000	4.500	3.700	3.200	3.400	4.500	5.400	6.000

(Source: Dialogs project 2003, VASI)

The litchi commercialization in 2004 season was not very good with a lot of changes. In the early season price was in the range of VND 6,000-8,000/kg for 5-8 days, then it went down gradually to VND 1,500/kg in the mid of May before reaching VND 3,000/kg in the late season. Due to bad season in 2005, litchi price was higher than that in 2004 even though it was still low: in the mid season the price was VND 4,500-5,000/kg; in the early and late season this was VND 7,000-8,000/kg.

III.2.2. Litchi characteristics and solutions to overcome

Because litchi ripens within a short period and litchi quantity is very huge so it is hard to store fresh litchi and producers face a lot of risk. In order to reduce risk in trading, customers' requirements are increasing. The fresh litchi must look nice, have high level of even size and be free of diseases.

However, many shortcomings are occurring in the production stage leading to low quality of litchi that can't meet the demand of the Southern and Hanoi markets. This is because producers don't use sufficient fertilizer, kali for litchi, do not often use method to encourage trees to bear fruits so litchi fruits are very small. Further more, farmers have bad control for fungus *Phytophthora* and *Gloesporium* and boring fruit insect. One more reason is that farmers' habit of picking litchi so late in order to wait for an increase in litchi price makes litchi fail to satisfy commercial standard and become hard to be transported in a long distance.

To overcome such shortcomings and to meet market demand, the "Thanh ha litchi production and commercialization association" was established and passed by the Thanh ha People's Committee on July 10th 2003 with the advice and consultancy of the Agrarian System Department, VASI and DIALOGS project funded by the EU. The association helps its members produce and take care of their litchi in accordance with a common and modern procedure from the caring to harvesting stage so as to ensure quality and litchi hygienic safety.

III.2.3. The outstanding characteristics of Thanh ha thieu litchi

Thanh Ha thieu litchi is seen the best in Vietnam. However, due to an increase in litchi grown in neighbouring regions such as Luc Ngan, Chi Linh, Dong Trieu..., consumers find it hard to distinguish the original Thanh Ha thieu litchi among other litchi so Thanh ha litchi can't compete with other litchi in price (often price of other litchi is VND 1,000-1,500/kg lower than that of Thanh Ha). Some main characteristics of Thanh ha thieu litchi:

- Litchi trees under 30 years old have round fruits and those over 30 have pretty long fruits. Fruits of under 30 year old trees are smaller than Luc Ngan litchi: 40-50 fruits/kg and that of over 30 year old trees is 50-60 fruits/kg. On average every 40-45 fruits of Luc Ngan litchi weighs 1 kg.

- The colour of ripe litchi skin is pink, and this colour can last longer than other litchi from 1 to 2 days.

- This litchi has thin skin, level thorn, litchi of under 30 year old trees has more level thorn than that of over 30 year old trees. Thieu litchi in Luc Ngan has level thorn and thicker skin; Chi Linh Thieu litchi has rough thorn and thicker skin.

- Thanh Ha Thieu litchi has small, supple and tough pedicle, whereas Luc Ngan Thieu litchi and Chi Linh Thieu litchi have bigger and crisper pedicles.

- Pulp proportion: Thanh ha Thieu litchi has small seeds which means it has higher proportion of pulp. The high year old trees have very small seeds and higher percentage pulp, accounting for 78-83% of the fruit weight. This percentage of Luc Ngan litchi and other region's is lower.

- Thanh Ha Thieu litchi is very sweet and not acrid like other litchi.

- The pulp crispness: Thanh Ha Thieu fruit pulp is detachable from the skin, and the pulp is very crisp. These attributes make Thanh Ha Thieu litchi different from other region's litchi.

III.2.4. Local support for the development

- Thanh Ha district People's Committee often has policy for infrastructure investment to facilitate litchi production and commercialization in the district such as: building and renovating roads, establishing wholesale market,... especially the Thanh Xa wholesale market came into operation in 2005.

- Litchi cultivation land is not subject to agricultural tax, Hai Duong province People's Committee decided to reduce irrigation fee for converted gardens from 20kg of paddy/sao/year to 10 kg of paddy/sao/year.

- The district agricultural department, agricultural extension station often provide the whole communes in the district with training sessions in caring and preventing diseases for litchi (twice per year).

- Create favourable conditions for households to buy litchi for processing, to transport easily and conveniently inside the local: prepare parking places, no parking fee for any vehicle coming to buy litchi.

IV. THE DESCRIPTION OF THIEU LITCHI VALUE CHAIN IN THANH HA

IV.1. Fresh litchi value chain

In the crop 2005 the total output of litchi in Thanh Ha was about 10,000 tons of fresh litchi of which 40% was sold directly (4,000 tons) and the rest was processed. Not only fresh litchi (500 tons, accounting for 10%) produced in Thanh Ha was sold in commercial centers but litchi from other regions like Chi Linh, Luc Ngan, Dong Trieu and other Hai Duong's districts as well. In Thanh ha, there are three main Thieu litchi value chains:

✓ *The value chain sold to the South and Cambodia:* this is the main fresh litchi value chain in Thanh Ha, accounting for 80% of the district's output. Traders from the southern provinces come to Thanh Ha to collect litchi and have this litchi transported to wholesale

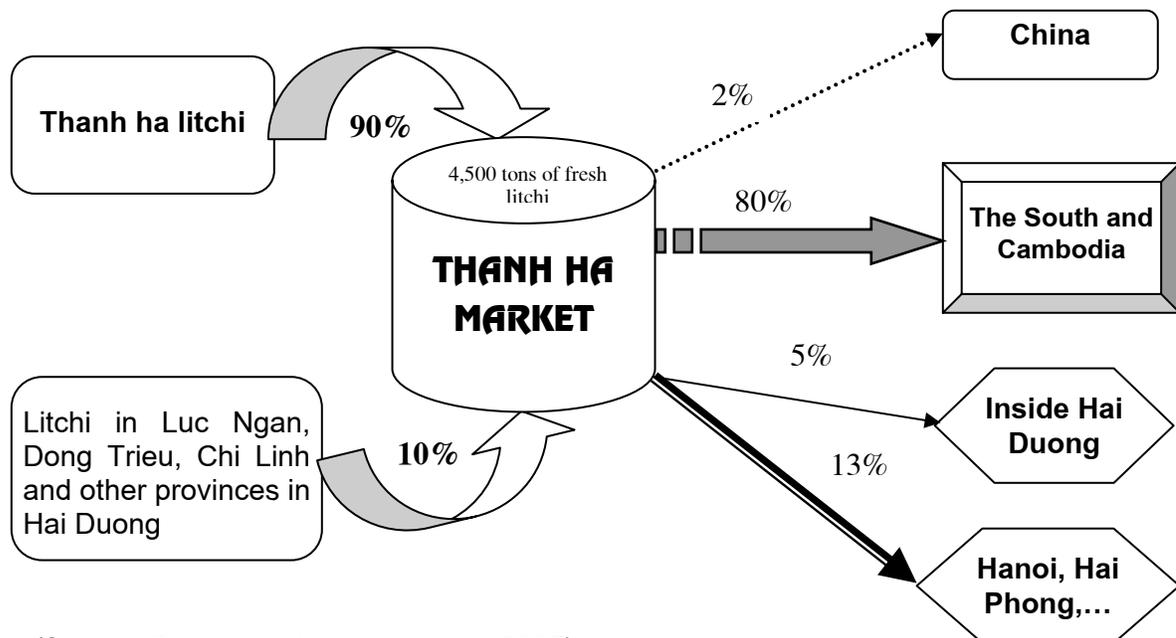
market in the south. These traders have litchi transported to the Tay Ninh border gate to sell to Cambodia, however this method is not very popular and there are not many traders operating like this so we can't estimate which proportion of Thanh ha Thieu litchi is traded to Cambodia by this method. According to some local collectors buying litchi and then selling to the South, about 10% of litchi bought by the southern traders is sold to China.

Moreover, local traders collect litchi from households and transport to the South for sale but litchi commercialized by this method is not much. Presently, there are about 10 groups (each group has 2-3 households) contributing their capital and collectively trading litchi in Tien Tien.

✓ *Value chain sold to China:* This chain commercializes about 2-3% of Thanh Ha Thieu litchi because traders from Lao Cai buy litchi from Thanh Ha and resell to Chinese traders through Lao Cai border gate. This commercialization channel is not very popular due to collecting price is lower than market price in the southern.

✓ *Commodity channel sold to Hai Duong city, Hai Phong, Hanoi and other northern provinces:* this channel accounts for 18-20% of litchi. This channel attracts local small traders (3-5 quintals per day) or collectors from other provinces to buy fresh litchi and then resell for fruit shops and stores in Hanoi, Hai Phong or even in Hai Duong city. As for 2 channels to Hai Phong and Hai Duong city, local small traders often sell directly to final consumers.

Graph 1: Supplies chain and markets for Thanh ha fresh litchi



(Source: Data collected in the local, 2005)

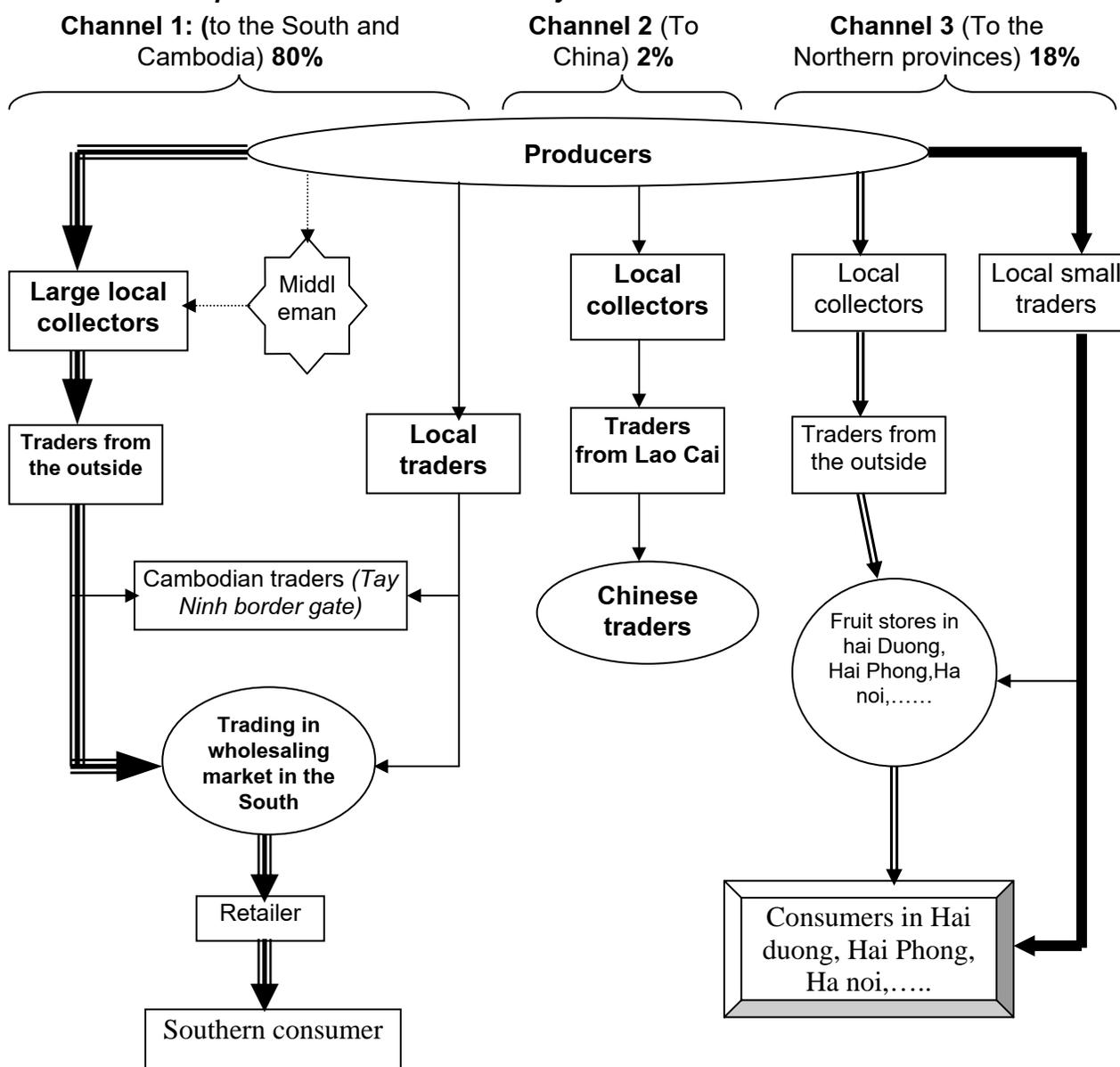
Number of stakeholders participating in commercializing fresh litchi in commercial centers is different between these centers but mostly in Thanh Xa and Thanh Thuy communes.

Table 9: Number of main stakeholders in the fresh litchi value chain in centers

Stakeholders	Thanh Xa and Thanh Thuy		Thanh Binh		Tan An and Cam Che	
	Number of people	Quantity (ton/season)	Number of people	Quantity (ton/season)	Number of people	Quantity (ton/season)
Collectors and local small traders	80- 100	10- 15	20- 30	5- 10	40- 50	9- 10
Local large collectors	20- 25	500- 600	10- 15	400- 500	8- 10	100- 200
Traders from other provinces	25- 30	400- 500	15- 20	400- 500	5- 10	100- 200

(Source: local survey, 09/2005)

Graph 2: Fresh litchi commodity channels in Thanh ha district



IV.2. Dried litchi value chain

The drying process is popular in Thanh ha and dried litchi is bought by traders. Traders operate mainly in 3 communes of the production region 1: Thanh Son, Thanh Xa, Thanh Thuy and in Thanh Binh commune of the production region 2. It is estimated that 10-15 households collect and sell 100-200 tons of dried litchi to China every year.

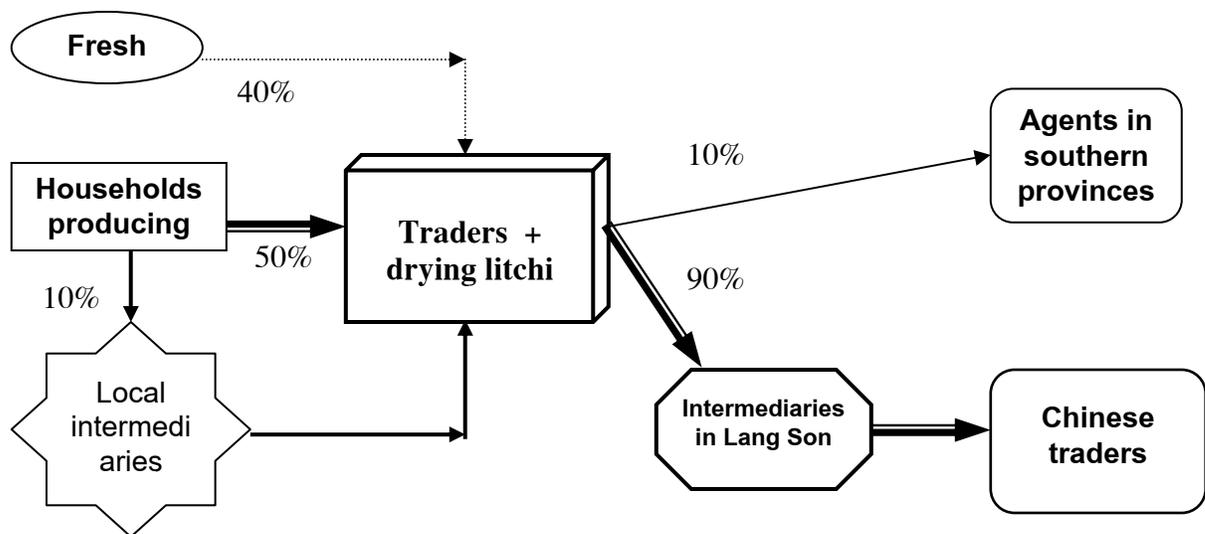
There are 2 sources of dried litchi to Thanh ha market: dried litchi produced locally (1,500 tons, equal to 60%) and dried litchi from Luc Ngan, Chi Linh and other provinces in Hai Duong accounts for 40% (1,000 tons).

From Thanh ha, most of dried litchi is sold to China through Tan Thanh border gate (Lang Son province) and the minority is sold to the southern provinces and Hanoi market... This channel often starts from July and August to the end of the year. Characteristics of this channel are:

- Traders in the local buy dried litchi directly from households and then packaging and selling. This is the main method of commercializing dried litchi in Thanh ha (70%). Traders can pay for intermediaires for their recommendation if they are from far away, however this method is not very popular. The other 30% of the litchi is bought by traders from households inside and outside the local (Chi Linh, Luc Ngan, Dong Trieu,...) and then it is dried and commercialized.

- Local traders play an important part in the commodity channel of this litchi. They are the ones to decide the cost of goods sold, purchase period and quantity bought, then have this litchi transported to Tan Thanh border gate (Lang Son) and negotiate price with Chinese traders.

Graph 3: The dried litchi commodity channels in Thanh ha



V. STAKEHOLDERS' CHARACTERISTICS AND RELATIONSHIP BETWEEN THEM

V.1. Consumers

Consumers' awareness of and attitude are the decisive factors to the development of the value chain. However, due to the lack of conditions to carry out the survey of different litchi consumer groups in different markets, so in this report we represent some assessments of consumers in the decision making process to buy Thanh ha thieu litchi through collectors and traders in the local.

- Export markets to China require first class litchi and collecting price is often VND 500-1,000/kg higher than other litchi.
- Close markets such as Hanoi, Hai Phong, Hai Duong require litchi to be evenly ripe so that it has the highest level of sugar content.
- Distant markets: In order to meet the requirements for transporting, litchi needs to be picked when only 2/3 of the fruit is ripe.
- Ho Chi Minh city is the main market for Thanh ha thieu litchi. Requirements for litchi in this market are strict, the weight of fruit is 40-45 fruits/kg, fruit is bright, fresh and free of diseases; and the fruit is picked when 2/3 of the fruit is ripe

Table 10: Requirements for litchi quality in different markets.

Criteria	In the South	Cambodia	China	Hanoi, Hai Phong		Hai Duong city
				retailers	Selling on the streets	
Kind of litchi	Kind 1	Kind 1	Kind 2, 3	Kind 1	Kind 2, 3	Kind 2
The fruit weight (fruits/kg)	Evenly big (40 - 45)	Evenly big (40 - 45)	Not very strict	Evenly big (40 - 45)	Not very strict	evenly (45 - 50)
Appearance	Fresh and bright, free of diseases	No strict requirements	Fresh and bright, free of diseases			
Ripening level	2/3 of the fruit is ripe	2/3 of the fruit is ripe	2/3 of the fruit is ripe	100%	100%	100%

(Source: Dialogs project 2004: VASI)

Consumers in Hanoi normally have high income and they pay more attention to price. With the same appearance, the litchi of lower price will attract consumers. Quality is not the decisive factor. This is the reason why Thanh ha litchi is not very popular in Hanoi market in comparison with litchi from Luc Ngan, Chi Linh and other regions.

As for consumers in supermarkets: The high incomers which includes litchi consumers often buy fresh fruit in supermarkets even though price in supermarkets is always 1.5 -2.5 times as high as that of the outside.

Table 11: Quantity of litchi consumers bought in the year 2003

Criteria	Results
Number of households interviewed	63
Number of people/household	4
Average quantity of litchi consumed in one year of a person (kg)	5.4

(Source: Dialogs project 2004: VASI)

The interview carried out by Dialogs project in 2004 about criteria classifying Thanh Ha thieu litchi shows that consumers had difficulties in identifying litchi's origin they bought, especially to recognize Thanh Ha thieu litchi from other regions' litchi. So, Thanh Ha litchi has a disadvantage because although consumers want to buy Thanh Ha litchi, they don't know how to identify authentic Thanh ha litchi.

Thanh ha litchi sold in Hanoi markets is acceptably VND 500-1,000/kg higher than litchi from other regions. This means that Thanh ha litchi has a competitiveness in quality. So, in order to ensure the good quality litchi to reach final consumers, it is necessary to have support in organizing a commodity chain as well as distribution channel's operation effectiveness.

V.2. Producers

V.2.1. General characteristics

Thanh ha is the agricultural production district, so most of the households in the district participate in agriculture production and they mainly grow litchi, especially in the communes that there has already a shift from growing rice to growing litchi such as in Thanh Son, Thanh Xa, Thanh Thuy.

Table 12: Labour in households interviewed

Criteria	Zone 1			Zone 2	Zone 3
	Thanh Thuy	Thanh Son	Thanh xa	Thanh Binh	Cam Che
Average age of the household's head	47	43	48	50	47
Number of people/household	4.7	3.9	4.5	3.8	4.5
Number of labour/household	2.5	2.3	3.0	2.0	2.8
Number of agriculture labour/household	2	1.8	2.2	2.0	2.3

(Source: Investigation of farmers: 9/2005)

As for Thanh ha residents, litchi has an important part in their income (accounting for more than 60% of their income). At present, there are many communes in Thanh ha district shifting from growing rice to litchi such as Thanh Son, Thanh Thuy and Thanh Xa and their income is mainly from litchi.

Table 13: Income structure of households in Thanh Ha

Criteria	Income structure (100%)
<i>I. Income from agriculture production</i>	80,0
1. Culture	70,0
<i>In which growing litchi</i>	60,0
2. Breeding	10,0
<i>II. Non-agriculture production</i>	20,0

(Source: Data collected in 09/2005)

V.2.2. Production scale and economic effectiveness

Different region has different level of concentration in growing litchi. The zone 1 has the highest concentration. The litchi area in this zone is 98% of the agricultural land. The next is the zone 2 (communes in Ha Dong region) where litchi area is 67% of the agricultural area. Communes in zone 3 have a lower concentration than those two zones and litchi area in this zone 3 is 54% of the agricultural area and the rest is for rice and other fruit trees.

Table 14: Average litchi area of studied households in Thanh ha

Criteria	Zone 1			Zone 2	Zone 3
	<i>Thanh Thuy</i>	<i>Thanh Son</i>	<i>Thanh xa</i>	<i>Thanh Bính</i>	<i>Cam Che</i>
Average litchi area per households (sào)	12.7	13.2	12.4	10.6	10.2
The litchi area percentage out of cultivation area of the household (%)	100.0	100.0	100.0	85.0	80.0

(Source: Dialogs project 2004: VASI)

The economic effectiveness of litchi is 3 times as high as that of rice calculated on the same unit base (the Agrarian System Department – VASI, 2004) so litchi in Thanh Ha in particular and in Hai Duong in general keeps developing and contributing to the economic transition in agriculture and in rural. Presently, some households growing litchi in Thanh ha have higher productivity than other households due to their application of new procedure of the association, litchi appearance has been improved considerably so price for their litchi is often higher.

Table 15: The economic effectiveness of those households which apply new procedure

Criteria	The 2004 litchi season		The 2005 litchi season	
	Households in the association	Households outside the association	Households in the association	Households outside the association
Fertiliser cost (VND 1,000 /sào)	208,4	130,8	200	108,8
Cost of preventing diseases(VND 1,000/sao)	82,0	46,0	82,0	46,0
Total cost (VND 1,000/sao)	290,4	176,8	282	154,8
Productivity (kg/sao)	700	550	500	200
Selling price (VND 1,000/kg)	2,5	2,2	5,5	4,5
Revenues (VND 1,000/sào)	1750	1210	2750	900
Profit (VND 1,000/sao)	1459,6	1033,2	2468	745,2

(Source: Dialogs project 2004: VASI)

* Note: The case of 10 year old litchi tree and 1 sao = 360 m²

V.2.3. Shortcomings in the cultivation and harvesting process

The branch pruning technique: Most of households don't know this technique and they have no experience in caring litchi so they often prune branches late (1-2 months after harvesting). This is not good for litchi trees because branches not only consume a lot of nutrition but are places for diseases to develop as well. Households usually prune branches once after harvesting so unnecessary branches have conditions to grow later which create favourable conditions for diseases to develop on litchi trees.

- **Fertilizing technique:**

+ In general, households have habit of fertilizing after harvesting (encouraging autumn buds) so it is often 2-3 months late which discourages autumn buds to develop but encourages spring buds and this has a negative impact on the bloom in the following crop.

+ Improper use of fertilizer in different litchi development period. For example, in the period of encouraging fruits, households often use fertilizers N:P205:K20 by a ratio of 1:2:0.25. This ratio is not good due to an abundance of protein and phosphorus and an insufficiency of kali which can lead to brokerage of litchi while harvesting, low possibility of keeping sugar content and litchi's vulnerability to diseases.

+ They fertilize to encourage fruits very little, only once after fruits being born which leads to the insufficiency of protetin for the development of fruits to its best and has a negative impact on litchi quality and autumn buds development.

- **Disease prevention technique:** Farmers are unable to fight fungus *Phytophthora* and *Gloesporium* and boring fruit insect. These diseases have negative impacts on litchi quality and litchi's look. According to survey result carried out by Plant protection Institute, in 2001 in Thanh Ha the percentage of litchi being attacked by these kinds of diseases was 15-25% in the peak time of the harvesting period and this percentage was 85-87% in late season.

- ***Inproper harvesting time***: the beginning of the season is too early, the mid- and late season can reduce sugar contain in litchi and make its appearance less attractive. In the mid- and late season, households often wait for higher price so they pick litchi late when fruits change into dark red and there is a high rate of litchi dropping (sometimes 50% of litchi). This is difficult for storing and transporting in a long distance, especially to the South and China.

V.2.4. The storage, processing and commercialization of products

❖ ***The litchi storage and processing of households***:

Litchi harvesting time in Thanh Ha is often from the beginning of May to the mid of June and the booming period is within 20 days from the mid to the end of May. Households often pick fruits and their stems with an average capacity of 2-3 quintal fresh litchi per day and then put them in baskets to deliver to collectors to commercial centers by bikes or motorbikes. Some households don't have enough labour and a lot of litchi so they often pay local collectors and small traders for their picking and buying at the farm gate. A part from selling straight away, households use some storage methods after picking litchi.

- The traditional close storage

This is the method of storing fresh litchi in the normal conditions within 4-5 days, post-storage loss is about 8-10% due to water evaporation and rotten fruits. 10% of litchi picked changes its colour to brown.

- Keeping litchi on the trees

Some households growing litchi use Thien nong biological product to keep litchi on trees. They use this medicine 6 times from the period of female flowers blooming to 10-15 day prior to harvesting time. This method can last harvesting period for another 20-25 days (Thien Nong medicine is concentration of 0.5%, and is sprayed on flowers or fruits), increase the weight of fruit (25-30 fruits/kg) and the output.

- Storing at low temperature

The process of storing fresh litchi in 5 degree frozen rooms has been applied by Hong Kim Phuong (working in the post-harvest technology Institute) since 2003 in Thanh Xa commune with an average capacity of 10-15 tons. The storage period can last for 40 days, total loss is less than 10%.

Moreover, the company processing agricultural and forestry products for export (in Cam Che commune, Thanh Ha district) also built a VND 150 million frozen warehouse and this has come into operation since 2004 with the capacity of 154 m³.

- Storing by ozon liquid

This method was carried out in 2002 with the help of Dr. Nguyen Van Khai (working in the National Science and Technology Center) but the results are limited.

As for processing (drying) litchi: at the moment, people in Thanh Ha in particular and in Hai Duong in general often dry litchi with traditional method. This is the popular method and most of households in Thanh Ha has ovens to implement this method. In an estimation, Thanh

Ha has about 10,000 ovens and process approximately 2,500 tons per year. The oven capacity is in the range of 500-3,500 kg. Drying duration is from 7 to 10 days.

❖ ***The way of commercializing litchi of households***

Households often sell their litchi directly to collectors without any obligation. The sale is carried out after verbal negotiation about price, quality and quantity between sellers and buyers. Almost 100% of the interviewees said they brought their litchi to collecting places in their commune.

Means of transport: two popular means of transport are motorbike and bicycle which is respectively 30% and 70%.

V.2.5. Some difficulties faced by producers

- + Lack of investment capital so they have difficulties in using fertilizer and pesticide which have negative impacts on tree development and quality of fruits.
- + Limited knowledge in caring technique and intensive farming: People sometimes don't prune branches after harvesting or do this very late, litchi trees are dead without clear reasons and farmers haven't known how to cope with these so that litchi is small and its appearance is less attractive.
- + Litchi price is decreasing and changes within a day. Farmers often lose their bargain power .
- + Lack of scientific and market information: Bio-technological and scientific information such as how to use fertilizer for leaves, medicines to increase bearing fruits, early ripening litchi varieties can be brought into production. The collecting place and the way to care litchi, market information, price fluctuation within harvest season, commercialization channels.

It is clear that the Thanh Ha litchi production and commercialization Association has dealt partly with shortcomings existing in the litchi production and commercialization in accordance with market demands. The question here is how to popularize this procedure with farmers in Thanh Ha in particular and in Hai Duong in general so as to improve production effectiveness and the technology application efficiency in order to increase product value for households.

Some members of the Association which have applied this procedure still have difficulties in commercializing their products due to lack of access to market. They incur higher production cost but they can't sell for higher price (in 2005 only 10 tons of litchi were sold above VND 500-1,000/kg by the Association, the rest was sold at the same price with litchi of households that were outside the Association). In general, producers have some following desires:

- Stable output markets: defining output markets is the basis for producers to seek for methods to meet market demands.

- Actually households want to participate in the Association so that their litchi has brand name. However that brand needs to be protected and to show its effectiveness: higher price and more stable markets.

- To popularize advanced production procedure through training courses, technique practices, visiting models and information published via public media, especially the way to prevent and deal with diseases.

- To be able to approach and help with modern and advanced technology and services: new varieties, methods to last the ripening period on trees, storage methods.

V.3. Collectors and traders

V.3.1. Fresh litchi collectors and traders

❖ Stakeholders to participate in commodity chain selling litchi to the South and Cambodia

- **Local collectors:** There are about 10 collectors in each commercial center. Annually about 400-500 tons of litchi is sold to the South through this commodity chain.

+ Farmers and local small collectors sell litchi directly to these stakeholders. These large collectors test the quality in accordance with requirements of external traders and offer the collecting price. If small collectors agree with this price they will sell and have cash without any obligation.

+ Normally, each local large collectors buy litchi and resell it to 1-2 Southern traders. They negotiate through telephone about: daily quantity bought, kind of litchi, quality, price (average collecting price in 2005 is VND 4,500-5,500/kg), and all of these will be decided by external traders.

+ The collectors are paid about VND 50 million in advance to collect litchi and they pay every two or three days. Collectors are responsible for quality and quantity required, for packaging and preparing litchi on vehicles. These collectors can pay 3-4 labours to do all of those things at a price of VND 70,000/ton. However, they are paid VND 150,000-200,000/ton by Southern traders.

- **Traders from other provinces** (most of them are from the South): These traders operate in the big markets in the South. After negotiating with local collectors on phones, they have fresh litchi transported (15 tons per vehicle). Expenses for boxes, ice, nylon bags to store litchi and for packaging done by local collectors will be paid by these traders.

- **Local traders:** These people are mainly from Tien Tien commune, Thanh Ha district. There are about 10-12 groups, each group has 2-3 households which contribute capital to buy litchi and resell this. Their operation is similar to that of the Southern traders but there are some differences:

+ Buying litchi: Their operation is varied, they buy litchi both from collectors as the Southern traders do (40%) and directly from farmers like collectors (60%). Each group can trade 600-700 kg of fresh litchi per year.

+ Commercializing litchi: After transporting litchi to wholesale markets in the South, these traders often pay rent for location and for a person to sell litchi to other traders, to fruit stores for VND 300,000/ton. Selling price is decided by local traders by considering local market price.

Table 16: Main expenses that traders incur when selling litchi to the South

Expenses	Unit	Traders selling litchi to the South
Transportation expenses	VND 1,000/ton	1,000
Spongy boxes	VND 1,000/ton	570
Ice	VND 1,000/ton	120
Packaging and carrying	VND 1,000/ton	70
Paying for place and local collectors	VND 1,000/ton	150
Location rent expenses and paying for sellers in big markets in the South	VND 1,000/ton	300
Transportation losses	VND 1,000/ton	55
Total expenses	VND 1,000/ton	2,265

(Source: Data collected in 09/2005)

* Loss due to damage during the transportation is 1% of the quantity

- ❖ *Stakeholders participating in domestic commodity chain (Hai Phong, Hanoi, Hai Duong)*
- ❖ **Local small traders:** these are the most important stakeholders in this commodity chain, commercializing about 70% of litchi sold in Hai Phong, Hanoi, Hai Duong provinces. In the communes of Cam Che, Tan An, there are about 20-30 households participating in trading litchi with a daily capacity of 2-2.5 quintals

They are in groups of 2-3 people to operate (2 people collecting, 1 person selling in provinces). These people ride bikes to households to collect litchi and put this litchi in cylindrical crates (without any care) and transport to fruit markets in other provinces in the following morning. They often sell directly to final consumers and some of them sell to fruit stores in a large quantity.

Because these people buy in the gardens and sell to final consumers, they have high profit. In 2005, they bought at an average price of VND 4,500-5,000/kg and sold directly to final consumers for VND 7,000-8,000/kg. After taking all expenses into account such as transportation expenses of VND 30,000/quintal; rent for trading location of VND 10,000/day.

➔ Every 2 quintals of litchi sold each day could bring a profit of VND 300,000-400,000 (for 3-4 people).

- **Local collectors:** These stakeholders are different from local big collectors operating in long value chain selling litchi to the South. These collectors are local residents and they participate in commercializing litchi to Hanoi, Hai Phong, Hai duong... rather than to the South. In each commune, there are about 3-4 people like that commercializing an average of 100-200 tons of fresh litchi per year. These collectors also buy litchi from farmers and resell to traders to get commission (VND 150,000/ton).

- Traders from other provinces: there are some traders coming from other regions to buy fresh litchi from collectors and then have litchi delivered to fruit stores in Hanoi, Hai Phong ... but the number of stakeholders operating like this is not much and we didn't have chance to get to know their operation during our study.

* Loss due to transportation in this short value chain is also calculated on 1% of total quantity due to short distance and short transportation time in comparison with the value chain to the South. However litchi sold in this short value chain often has lower quality.

V.3.2. As for dried litchi value chain

- **Traders + drying litchi:**

+ These stakeholders play an important part in dried litchi value chain in Thanh Ha. They operate from July to December every year but strongly in July and August with annual capacity of 100-120 ton dried litchi on average (at the peak of 10 tons per day).

+ Their operation is very various: They collect, transport and trade to China, some households participate in drying litchi as well.

+ They collect dried litchi from households, then classify and pack in boxes before transporting to Tan Thanh border gate to sell to Chinese traders. Each vehicle can transport 2-3 ton dried litchi. They only sell litchi when Chinese traders offer a profitable price to them.

+ The transaction between these stakeholders with Chinese traders is verbal contract with the help of a broker in border gate. Payment method is Chinese currency but through the broker here.

+ The transaction between collectors and households is very simple: They go to villages, communes on their own to buy through the introduction from local intermediaries and then paying for vehicle to transport litchi home to classify and pack in boxes (16-18 kg of dried litchi per box).

Table 17: Expenses incurred by dried litchi collectors

Expenses	Unit	Expenses incurred
Transportation fees to Tan Thanh border gate	VND 1,000/ton	300
Transportation expenses from households to homes	VND 1,000/ton	80
Paper boxes + sticky tape + nylon	VND 1,000/ton	355
Carriage expenses	VND 1,000/ton	30
Paying for labour classifying litchi and packaging	VND 1,000/ton	10
Commission for local intermediaries	VND 1,000/ton	70
Commission for Lang Son intermediaries	VND 1,000/ton	720
Total expenses	VND 1,000/ton	1,565

(Source: Data collected in 09/2005)

- **Intermediaries in Lang Son:**

+ They operate in Tan Thanh (Lang Son) border gate and has commercial relationship with Chinese traders. These people play an important role in helping collectors meet, negotiate with Chinese traders.

+ Commission that these intermediaries have is paid for all services above: Collector has to pay VND 50,000 – 60,000 for every 1,000 Chinese “Te” and converted into Vietnamese dong equal to 1,960,000

It can be seen that there are many collectors and traders participating in Thanh Ha Thieu litchi commercial commodity chain in Hai duong and their operation method is various. However they operate independently without any organization or network and that's why they have many difficulties in doing their business. Is it possible that each market collaborates collectors, traders of Thieu litchi to improve strength and minimize risk. According to our survey, collectors and traders said that there exist several shortcomings in commercializing the Association's litchi due to capacity of and experience in organizing despite many advantages such as its own brand name, legal status... In fact these people are willing to participate in trading Thieu litchi and share risk with producers. In general, their desires are as followings:

- *Brand name should be applied widely soon to introduce and marketing product, especially to the world markets. A trader said due to lack of brand name, his litchi couldn't be sold to Chinese traders in spite of his success in establishing relationship with Chinese traders in 2005.*

- *Input litchi must be ensured to have comprehensive quality and size.*

- *They are supported with market information, price fluctuation: Some households buy litchi in Thanh Ha for VND 6,000/kg but after 2-3 days of transporting to the south, litchi price drops, they have loss and can only sell for VND 7,000-8,000/kg.*

V.4. Retailers and supermarkets

V.4.1. Retailers

Due to limited time for studying, we conducted only some preliminary surveys with retailers and supermarkets participating in commercializing litchi in Hanoi market. This includes: fruit stores and shops, retailers in markets and people selling on streets.

◆ *As for fruit stores and shops:*

- Owners of fruit stores and shops often go to wholesale markets (Long Bien market for example) to buy litchi. However, stores selling Thanh Ha Thieu litchi prefer the method of delivering litchi directly to fruit stores and shops as the Thanh Ha litchi Association does and they want to buy both packed and unpacked litchi so that they can sell litchi to more kinds of customers.

- Quantity of litchi sold by each store is not much with an average of 10-30 kg/day.

- The difference between buying and selling price is from VND 1,000 to VND 3,000 for every kg of litchi which depends on each store and each customer.

Table 18: Stakeholders participating in commercializing fresh litchi in Hanoi market

Stakeholders	Quantity	Percentage of commercialization (%)
1. Shops and stores (location)	2,500	24,0
2. Retailers in markets (People)	1,172	16,0
3. Sellers on the streets (people)	6,198	60,0

(Source: Fruit and vegetable institute, 2004)

◆ *As for retailers in markets*

- These people often buy litchi from Long Bien wholesale market.
- Each day they can sell 20-350kg of litchi on average. As for permanent retailers, they can have profit of VND 700,000-2,500,000 for each ton of fresh litchi. Profit for casual retailers is from VND 400,000 to VND 1,200,000 per ton of fresh litchi.

◆ *As for those selling on streets*

- They are farmers from Ha Tay, Hung Yen, Ha Nam, Bac Giang ...provinces. They sell litchi on Hanoi streets for 1 month every litchi season and when the season is over they go back to their villages to do agricultural work.
- Quantity sold per day is in the range of 50-100 kg and profit that these people get from selling fresh litchi is from VND 500,000 to VND 1,000,000 for every ton of fresh litchi.

V.4.2. Supermarket's role in litchi channel in Hanoi

- ◆ Number of supermarkets participating in commercializing fresh litchi is limited. In 2004 there were only Intimex Hoan Kiem Lake and Metro supermarkets, in 2005 Big C, Unimart and Fivimart was in list of supermarket selling fresh litchi produced by the Association. The reasons why supermarkets don't want to trade in fresh litchi are:

- On Hanoi market, it is easy and convenient for consumers to buy fresh litchi at cheap price so they don't often come to supermarkets for buying litchi.
- It is hard to store fresh litchi so if the condition is too hot or too cold, fresh litchi easily changes its colour after 1 day which increases risk for supermarkets.
- Litchi is the kind of fruit that requires consumers to take off its skin before eating so consumers can't see sanitation risk and they find it not necessary to buy from supermarkets.

◆ *Method of purchasing and selling:*

- Supermarkets often buy litchi from Thanh Ha litchi production and commercialization. (1) Litchi is transported from production region to Hanoi by vehicles and (2) then from warehouse

in Hanoi of the Association to supermarkets by motorbikes. The delivery is carried out by people of the Association.

- As for normal litchi: Supermarkets often buy litchi from wholesalers from Thanh Ha district. Litchi is delivered to supermarkets by motorbikes.

- The relationship between the Association and supermarkets is through written contract in which there are terms about quality, litchi price which is subject to market price due to variable price in the market and quantity which is negotiable between 2 parties. Moreover, they have an agreement to share risks by that if supermarkets can't sell out litchi, litchi will be returned to the Association to dry. Both two supermarkets apply cash payment method after 15 days from the date of delivery.

- Difficulty often met incurs in storage stage due to change in litchi colour within day of sale, so if litchi is left over until the following day, the price will be reduced a lot. In order to overcome this, supermarkets require traders to pack litchi in PE bags which have holes rather than net bags. However the bag cost is high (up to VND 862) for 2kg of litchi.

- Litchi delivery times: Metro supermarket takes input once per day and quantity is in the range of 30-50 kg/day. Intimex supermarket has two suppliers so each supplier delivers once per day. Total litchi sold is 50-70 kg/day.

V.5. The processing

V.5.1. The drying method

Presently, People in Thanh Ha in particular and in Hai Duong in general have 2 methods of drying litchi.

◆ **The traditional drying method:** this is the popular method in Thanh Ha and most of the households in Thanh Ha has oven to implement this method. In an estimation, Thanh Ha now has about 10,000 ovens with the annual capacity of 2,500 tons. Each household's capacity is from 500kg to 3,500 kg, and drying duration is from 7 to 10 days.

◆ **The advanced drying technology:** The traditional drying method gives out a high percentage of burned and distorted litchi (30%), litchi after being dried often has smell and smoke dust, loses its sugar content. In order to overcome this disadvantage, the Association has built a new kind of drying technique by applying indirect drying technology which uses a fan to pressure heat. The advantage of this new method is: to reduce drying time, fuel costs, percentage of distorted litchi. Total drying cost decreases to VND 1,468 for every kg of dried litchi and increase quality and look.

After drying litchi, households rarely classify before packing litchi in bags and sell directly to collectors (50-70kg/bag). Collectors often come to households to buy and transport litchi, and this is done from July to December, but mainly in July and August.

Table 19: The economic effectiveness of advanced dried oven

Expenses	Traditional oven		Advanced oven	
	Quantity	Cash (VND)	Quantity	Cash (VND)
Quantity of fresh litchi kg/time/oven	2,000 kg	5,000,000	2,000 kg	5,000,000
Coal expense	450 kg	450.000	240kg	240,000
Electricity	0 KW	0	60 KW	48,000
Drying duration	144 hours		80 hours	
Labour cost	10 labours	200,000	5 labours	100,000
Total costs		5,650,000		5,388,000
Finished goods of dried litchi/ time/oven	500 kg		548 kg	
Total costs of dried litchi (đ/kg)	11,300		9,832	

(Source: Dialogs project 2004: VASI)

V.5.2. other processing model

Some enterprises and privates in Thanh Ha process and package litchi for export but no optimistic results have been gained. My Thai Ltd. Compay (Thanh Ha district) in 2005 has tried 10 boxes and Nam Tien Company (in Nam Sach district).

Moreover, there is 1 household making wine from litchi but the result is limited (Mr. Mao in Hong Lac commune, Thanh Ha district).

V.6. Roles of organization in developing litchi product

V.6.1. Thanh Ha's Association producing and commercializing high quality litchi.

On 10 July 2003, the Thanh ha's People's Committee decided to establish Thanh Ha's Association producing and commercializing high quality litchi with consultancy from the Agrarian System Department, Vietnam Agriculture Science Institute in a cooperation with DIALOGS project funded by the EU. The association includes producer groups in communes with special ecological conditions, bringing about the best litchi quality: Thanh Son, Thanh Thuy, Thanh Xa, Thanh Khe and Thanh Xuan with the total litchi area of 2,500 ha and an annual output of 25,000 tons. In 2005, the Association's membership was 148 and produced approximately 200 tons of first class thieu litchi under clean procedure (on 49 ha areas).

▪ **Main operations of the Association:**

- *Production:* Guides members to produce in accordance with common technical process so as to have high and comprehensive quality, to ensure stable productivity through seasons and to minimize risk in production.
- *Services for preventing diseases:* the Association is in charge of forecasting and identifying time for spraying chemicals to improve the effectiveness of using chemicals, to reduce diseases and to improve quality.

- *Quality control*: The Association assesses the quality, controls product quality and labels brand name to advertise its litchi.
- *Processing*: Applying advanced litchi drying technology
- *Establishing brand name*: Finish procedures to register brand name so that its litchi is protected by the State.
- *Market approach*: Collaborate with stakeholders who have demand for high quality, especially the supermarket network in order to sell both fresh and dried litchi.
- *Education service*: Organizing educational programs, training sessions to improve caring and disease preventing techniques for litchi trees.
 - ***Difficulties that the Association faces in its operation***
 - As for farmers
 - + The production scale is small and scattered, different economic and educational standard so the attitude to common procedure is incomprehensive.
 - + Farmers' ability and capacity of organizing collective action are low.
 - + They lack market information. Farmers are only used to collect litchi.
 - As for local authorities and specialized departments:
 - + There is a lack of human resource and professional knowledge in running and organizing an association so local authorities have faced a lot of difficulties in technical advice, establishing the organization and managing its operation.
 - As for partner:
 - + There has not been any big clientele for Thanh Ha Thieu litchi. Most of traders can buy litchi from many different regions, according to price in each region. The cooperation with partners in order to establish Thanh Ha Thieu litchi commodity chain has several disadvantages. On the other hand, the association has just been established with poor equipment and small scale which made it impossible to attract confidence from partners.
 - Market factor:
 - + Stakeholders in the market lack proper organization, explicit institution which results in instable market.
 - + Market is instable, price changes all the time. Thanh Ha Thieu litchi has many competitors from other regions in price even though Thanh Ha litchi has better quality.
 - + Thieu litchi ripens in short period, the advertising and marketing face a lot of difficulties. As soon as advertising and marketing campaign has its effect, the season is over.
 - + Because litchi ripens in a very short period, there is an imbalance between supply and demand at the peak time, so litchi price drops dramatically in the right season.

V.6.2. Roles of agencies and organization in the local

✓ **At the central level:**

- *The institutes and universities are the places to provide advanced technology services: caring techniques, preventing and coping with diseases, post-harvest technology. However,*

these agencies concentrate on only specific fields, for example: Study how to slower litchi ripening, advanced drying ovens or study some main diseases. Some current requirements from the production have not been met by Institutes and universities, for example: the conditions to control flower blooming, storage technology for fresh litchi, colour change of dried litchi during drying process.

- *The intellectual property department* – the environment, technology and science ministry: This is the only organ in Vietnam which has the right to certify product brand name. Thanh Ha Thieu litchi brand name was given certification by the intellectual property department and its logo is protected.

✓ **At the provincial level**

- *The internal affair*: Helps the Association finalize procedure to establish the Association and advise the provincial People's Committee in recognizing the existence of the Association.

- *The rural and agricultural development department and the agricultural extension center* support with and supervise the production technique.

- *The science, technology and environment department* provides financial support to carry out some research of the Association: procedure to register brand name, litchi quality analysis, and land analysis...

✓ **At the district level**

- *The district People's Committee* directly controls and deals with problems occurring with production technique and issues supporting policies to foster Thieu litchi commercialization in the district. Forbit vehicles from other regions bringing litchi into Thanh Ha, levies no transportation tax on those vehicles participating in commercializing Thanh Ha Thieu litchi during the harvest time, provide financial aid for enhancing commercial operation.

✓ **At the commune level**: The People's committee helps the Association with infrastructure to operate.

VI. THE PRICE FORMATION PROCESS AND THE DISTRIBUTION OF PROFIT AMONG STAKEHOLDERS

In the sphere of study, we were only able to select some presentative commodity chains of litchi commercialization to study and have a detailed assessment. The study of price formation in each commodity chain based on the following principles: (1) The selected products must have specific characteristics of that commodity; (2) the price studied was the average price of 2005; (3) price was calculated on 1 kg of product.

- **Channel 1** (*Litchi sold to the South*): households --> small collector → main collectors in the local → Traders in the South → wholesalers in the South → retailers → consumers
- **Channel 2** (*The fresh litchi of class 2 sold to China*): households --> small collector → main collectors in the local → Traders in Lao Cai → Chinese traders.

To compare these two chains, it can be seen that: fresh litchi sold in the South is required to have higher quality and is paid higher price for than litchi sold to China. On the other hand, Chinese traders collect for a very low price¹ so local traders and Lao Cai's traders don't have much profit in comparison with traders in the South. That's is also the main reason for why Thanh Ha litchi can't be sold to China.

Table 20: The price formation of fresh litchi sold to the South and China (Unit: VND/kg)

Stakeholder	Channel 1 (fresh litchi)				Channel 2 (fresh litchi)			
	Costs of good sold	Expenses	Selling price	profit	Costs of good sold	Expenses	Selling price	profit
Households			5500				5000	
Small collectors	5500	0	6000	500	5000	0	5500	500
Big collectors	6000	70	6150	80	5500	70	5650	80
Traders outside the province	6150	2265	9000	585	5650	1550	7500	300
Traders in the South	9000		9500	500				
Retailers in the South	9500		10000	500				
Consumers in the South	10000							
Traders in China					7500			

Source : Data collected, 09/2005)

Profit for stakeholders in the commodity chain varies differently, collectors have less profit per kg than retailers. However, because they collect a huge amount of litchi and they don't incur any expenses so their total net profit is the highest.

- **Channel 3** (litchi of class 1 sold to Hai Phong, Hanoi, Hai Duong) Households → small local traders → Consumers.

This is the main fresh litchi commodity chain sold to Hai Phong, Hanoi, Hai Duong (70%) and there are very few stakeholders to participate in. Small retailers have important parts and are the bridge to connect producers and consumers.

- **Dried litchi channel** (dried litchi of first class sold to China): Producers → Local intermediary → Local traders → Intermediary in Lang Son → Chinese traders

¹ Different from Chinese traders collecting litchi in Luc Ngan, Thanh Ha litchi sold to China through Lao Cai border gate is not required to have high quality, the transport is not ensured by any means so the litchi has low quality and Chinese traders often bargain to buy for low prices.

Table 21: The price formation process for fresh litchi sold to Hai Phong and for dried litchi sold to China (Unit: VND/kg)

Stakeholders	Channel 3 (fresh litchi)				Dried litchi channel			
	Cost of goods sold	expenses	Selling price	Profit	Cost of goods sold	expenses	Selling price	Profit
Producers			5500				19000	
Local small sellers	5500	405	8500	2095				
Local intermediaries					19000	0	19070	70
Local traders					19070	1495	23000	2435
Intermediaries in Lang Son					23000	0	2300	720
Chinese traders					23000			
consumers	8000							

(Source : Data collected : 09/2005)

VII. DISCUSSION

VII.1. The matter of technology and product development

Thanh Ha Thieu litchi has been long known for its special quality, however farmers presently are facing a lot of technical difficulties in commercializing and meeting demands of customers, especially those in the South, Hanoi and export markets. The insufficient fertilizer and kali can have a negative impact on the sweet and appearance of litchi. Farmers have not succeeded in preventing fruit deceases; and the habit of harvesting late makes litchi less nice and this will lead to the loss of customers.

The existence of the Thanh Ha litchi production and commercialization association has connected farmers and helped them produce and look after litchi in accordance with common technical procedure in order to cope with those shortcomings. Consequently, this intervention makes decrease the *fungus Phytophthora and Gloesporium* and boring fruit insect. The KIVIVA growth regulator product applying can reduce the rate of fruit falling 5,5%, increase the fruit yield 6,7%, reduce the rate of dark skin 3,8%; prolong the time of maturity 5-7 days and increase the litchi yield 11%.

So, the dissemination of technical procedure is very important and it is necessary to advise and supervise households in applying procedure from production stage to harvest stage, to ensure high quality, safety and sanitary of litchi. The procedure of looking after Thanh Ha litchi is established on the basis of natural, socio-economic conditions of each region and market demand for litchi quality. The method of establishing procedure needs to be applied generally with the participation of farmers and experts and using study achievements inside and outside the country.

VII.2. Market access

In general, the access to market of producers has a lot of shortcomings. They are only good at collecting litchi. The commercialization depends heavily on traders so they often lose bargain power. Especially, producers lack of market information, especially the price fluctuation.

The Thanh ha litchi association is a new trend to access market and disseminate the product. Although this has not brought about explicit results, this is really the change to improve the product's competitiveness in the market-based economy. In the near future, besides the wider application of technical procedure, the association needs to attract more collectors, traders inside and outside the local to participate in. This is an important factor in the development of trade mark and commercialization of products.

VII.3. Matters about policy, organization and product management

The rapid development of litchi in Hai Duong, especially in Thanh ha has been paid consideration and given favorable conditions to develop the production and commercialization by the local authorities: Conducting the plan to convert agricultural land, investing in infrastructure, supporting the production and commercialization. Some important policies resulting in the development and success of Thanh Ha litchi such as:

- The Government Decree No 88 has created an open corridor for the establishment of Thanh Ha litchi production and commercialization association.
- The idea of establishing Thanh Ha litchi production and commercialization association was approved by the district People's Committee on July 10th 2003 and the Decision 2496/2004/QĐ-UB of the provincial People's Committee to establish this association was passed on June 25th 2004. On March 7th 2005, the Vietnam Intellectual property protection Department issued the certification to protect the trade mark "Thanh Ha Thieu litchi" and this trademark has come into existence since then.

In order to make this Thanh Ha litchi production and commercialization association become a production organization and provide collective service for farmers and be able to control quality, it is necessary to separate the State's management role of the local authorities' with the organization of participatory farmers. This means the local authority's role is to supervise and provide support for the operation.

Moreover, the litchi garden scheme, delineation of highest quality litchi gardens needs to be done soon. This factor is very important to ensure the product quality and to improve the competitiveness of products on the market.

VII.4. Input service

The input supplies service that producers, collectors and traders pay most attention to is the latest market and technical and scientific information. The information on bio-technology such as the use of some fertilizer for leaves, medicines to improve the success in bearing fruit, early

litchi varieties can be brought into use. Where to buy and how to look after; information on litchi market; the price performance during the harvest period, commercialization channels.

A part from helping stakeholders access latest information such as providing training sessions and disseminating on public media, it is necessary to expand input service model of the association. Members of the association organize collective services such as collective purchase of fertilizer, pesticides to reduce costs.

VII.5. The matter of finance and infrastructure construction

The matter of finance and infrastructure construction has attracted attention of local authorities at all level and been given favorable conditions for development: Building roads, establishing commercial markets, building plan and support for the conversion of gardens. However, there needs more consideration and investment from local authorities, socio-economic organizations in the development of litchi production and commercialization association: The support with new varieties, technology and science, especially the equipment to store fresh litchi, processing and diversifying processed products: Dried, making wine, and can litchi flesh.

VIII. Conclusion and recommendations

Presently, litchi is grown widely in every district of Hai Duong province with the total area of 14,250 ha but this area is mainly in Thanh Ha (47%) and Chi Linh (43%). As for Thanh ha, litchi is the key crop and accounts for two third of the cultivation area. The whole miscellaneous gardens here have been improved for growing litchi. The litchi's area in Thanh Ha has expanded rapidly for the last 10 years with the current area of 6,745 ha and the current output of 25,000 tons.

A rise in both cultivation area and output has made litchi price gradually decrease. Litchi price in Thanh ha was VND 15,000/kg, VND 3,500/kg, VND 2,500/kg in 1995, 2003 and 2004 respectively. In 2005, the price has increased to VND 5,500/kg but the output was only 40% of the previous year. Producers have met a lot of risks.

Due to short harvest time (within one month) with great quantity, it is hard to store fresh litchi and this in turns makes it difficult to commercialize litchi, causing risks for traders. In order to reduce risks occurring in trading process, demands for good litchi are getting stricter and stricter. The litchi must have nice-looking, high level of even size and be decay free.

However, there exists several shortcomings in the production, cultivation techniques are poor leading to incomprehensive quality and low ratio of satisfactory fresh litchi. Customers' demand has not been met. Moreover, the commercialization of litchi has faced several difficulties due to market instability, loss in bargain power, severe competition with litchi from other regions and limited export markets.

In order to boost the development of Thanh ha Thieu litchi commodity chain, to improve the operation effectiveness of stakeholders in the chain, we have some following proposals:

- ☞ Local authorities, the People's Committee at all levels need to carry out projects and conduct the region distribution as early as possible, classify and select high quality litchi gardens as the basis for establishing the "original name"
- ☞ Enhance the advertising campaigns (open a website on internet), build trade mark for both fresh and dried litchi. Open commercialization markets both domestically and internationally.
- ☞ Support farmers and enterprises with equipment to store fresh litchi (frozen storage) and to process litchi with technically advanced ovens.
- ☞ The provincial agricultural sub-department and extension center collaborate with scientists from universities and science institutes to establish a standard production procedure which can be certified by the Agriculture and rural development Ministry.
- ☞ Local specialized agencies such as the agriculture sub-department, agriculture bureau, agriculture extension center need to have a close cooperation with scientists to organize research and selection of good breeding tree, especially the early- and late-harvest litchi to expand the harvest time. It is important to apply and transfer technical and scientific advance such as the modern care technique which uses Kiviva substance to slower the ripening process of litchi.

☞ ***As for Metro project and MPI program-GTZ SMED, there is a need to concentrate on interfering:***

- Select the region for interference: that's is Thanh Ha district, in which the region No 1 includes 5 communes with special ecological conditions: Thanh Son, Thanh Thuy, Thanh Xa, Thanh Khe and Thanh Xuan with the total litchi area of more than 16,000 ha (accounting for 25% of the district's litchi area). The annual fresh litchi output is approximately 25,000 tons. This region has the longest history of growing litchi with the best litchi quality, and the producers have the best cultivation techniques.

Moreover, there are other 6 communes in the production region 2: Hop Duc, Truong Thanh, Thanh Binh, Thanh Hong, Thanh Cuong, Vinh Lap with the total area of 1,381 ha (accounting for 21% of the total district's litchi area). Litchi grown in this region has high quality and most of them are early ripen.

- Recommendations for stakeholders and an enhancement of operation.

+ The Thanh Ha litchi production and commercialization association: Because the association was just established in 2004, it needs financial support and equipment provision for its operation: equipment to store fresh litchi, storage house for materials and equipment, especially the establishment of the "Original name" for Thanh Ha thieu litchi. The association needs to be provided management and technical training programs and be advised how to access market in order to expand its operation in the region.

+ As for producer households: They are facilitated to access new cultivation, storage and process techniques through technical training sessions. They are also financially supported

partly with fees for this new service: fees to buy Kivia substance, storage and package equipment.

+ Collectors and traders: these people are very active due to good experience in trading. Their primary objective is profit without concern of sharing risk with other stakeholders, especially with households. So, it is necessary to organize stakeholders in different commodity chains to operate and provide service. Take the channel to go to the south for example: this includes local collectors, the traders in the south, then improve their skill in commercializing and storing Thanh Ha litchi so that high quality litchi can reach final consumers: storage techniques, classification and package, transportation, advertisement, signing contracts with partners

+ Processing stakeholders: These people are financially supported to buy equipment and machines and are provided with storage techniques and modern processing techniques. Moreover, it is necessary to build a quality and food safety control system. Encourage and diversify processed products because there is limited processed products a part from dried litchi. Some processing stakeholders in consideration are:

- The household dry litchi with modern method like Mr. Hoi, Mr. Tam in Thanh Xa commune.
- Hai Duong processing and exporting fruit and vegetable company.
- Thanh Ha processing company (Cam Che commune): It has a frozen storage house and it processes dried canned litchi.
- Nam Tien company (Nam Sach district): canned processing.