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MINISTRY OF TRADE
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ANALYSIS OF VEGETABLE VALUE CHAIN IN VINH PHUC



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INDEX

I. Executive summary	4
I. Executive summary	4
II. Objectives of study	4
III. Study methodology	4
III.1. Method of data collection	4
III. 2. Method of study zones selection	4
III. 3. Steps of field trip study	5
IV. General information	5
IV.1 Overview on Vinh Phuc province	5
IV.2 The situation of vegetable production of Vinh phuc.....	6
<i>Classification of vegetable production areas</i>	7
V. Market of vegetable	8
V.1 Big trade center of vegetable	8
V.2. Vegetable commodity chain map	9
V.2.1 Inside area channels.....	9
V.2.2 Outside province channels	9
V.2.3 Channel of safe vegetable	10
VI. The characteristics of stakeholders of commodity chain	11
VI.1 Stakeholders of inside area channels	11
<i>Producer</i>	11
<i>Collector</i>	15
<i>Retailer</i>	16
<i>Consumer</i>	18
VI.2 Stakeholders of outside area channels.....	19
<i>Producer</i>	19
<i>Collector</i>	21
<i>Local wholesalers</i>	22
<i>Role of government agency in development vegetable</i>	24
VII. Value structure of vegetable chain	26
VII.1 Inside province vegetable chain system	26
VII.2 Outside province vegetable chain sytem	27
VIII. advantage and difficulty of vegetable production and Marketing	28
VIII.1 Advantage.....	28
VIII.2 Difficulty	28
IX. conclusion and proposed assistance for vegetable chain	29
IX.1 Conclusion	29
IX.2 Proposed assistance for vegetable chain.	30
Appendix	31

LIST OF TABLE

Table 1: The fluctuation of vegetable area of some provinces (peiod 1998-2004).....	7
Table 2: groups of vegetable production area	8
Table 3: land use in farm household in Vinh Yen (Unit: m ² /household).....	12
Table 4: labor structure of farm household in Vinh Yen.....	12
Table 5: income structure of households producing vegetable in Vinh Yen	12
Table 6: economic effect of defferent crops rotation (VND/sao/year).....	12
Table 7 : land use in farm household in Tam Duong (Unit: m ² /household)	13
Table 8: labor structure of farm household in Tam Duong	13
Table 9: income structure of farm household in Tam Duong.....	14
Table 10: economic effect of defferent crops rotation (VND/sao/year).....	14
Table 11: Some activity charactersitic of professional collectors.....	16
Table 12: operation cost of stakeholders in Vinh Yen and Tam Duong.....	17
Table 13 : quality criteria according to each stakeholders opinion	18
Tabel 14: land use in farm household in Me Linh (Unit: m ² /household)	19
Table 15: labor structure of farm household in Me Linh	19
Table 16: income structure of farm household in Me Linh.....	20
Table 17: economic effect of defferent crops rotation (VND/sao/year).....	20
Table 18: Some activity charactersitic of collectors in Tho Tang and Me Linh	22
Table 19: Some activity charactersitic of local wholesalers in Tho Tang and Me Linh.....	23
Table 20: operation cost of stakeholders in Tho Tang an Me Linh.....	24
Table 21: comparison between production of safe vegetable and ordinary vegetable on some issues.....	26
Table 22: value structure of inside province vegetable chain.....	26
Table 23: value structure of outside province vegetable channel (start from Tho Tang).....	27
Table 24: value structure of outside province vegetable channel (start from Me Linh)	28

LIST OF CHART

Chart 1: structure of land use of Vinh Phuc over three years	6
Chart 2: change of vegetable land area of districts (year 2003, 2004)	7
Chart 3: trade center of vegetable and cross relation.....	8
Chart 4: map of inside province channel system	9
Chart 5: map of outside province channels	10
Chart 6: channel of safe vegetable	10
Chart 7 : structure of collectors by regions	15
Chart 8 : management of project	24

I. EXECUTIVE SUMMARY

The growth and development of economy has made the increase of consumption in term of quantity and quality. Fresh vegetable is one of essential products for family demand. In the cities now, food quality, hygienic and safe issues are the challenge of producers and marketing system. In 2002, vegetable area of Vietnam was 514.6 thousand ha supplying 7 million tones of all kinds for domestic consumption demand. The appearance of oversea products showed the diversity of market demand.

Over past 5 years, Hanoi market has been supplied with vegetable from different sources in which consist of production areas of Vinh Phuc. Such Vinh Tuong and Me Linh are well known for vegetables in Hanoi and other provinces. In 2004, the vegetables yield of whole Vinh Phuc was 148,798.2 tones cultivated in 8,836 ha. For this reason, vegetable production of province has somewhat influence on vegetable commodity chain of the North. This operation meets the growing domestic and export demand in this side and is being solution to simulation of agricultural diversification, income increase, effect and sustainable change of crops as well as production conditions in other side. In order to reach those targets, it is necessary to understand overall farm system and marketing system of that area, then improve and enhance production and marketing of these products.

This paper aims to build database system of vegetable commodity chain over country in general and Vinh Phuc in particular, then give solutions and support to production and marketing system to warding to effect commodity chain.

II. OBJECTIVES OF STUDY

- Identifying and describing production, process, marketing of vegetable of province
- Defining structure of commodity chain, main flow channels and scale, characteristics of stakeholders.
- Analyzing characteristics of quality, price and value structure of commodity chain.
- Analyzing constraints of production and marketing of vegetable, thence proposing supports

III. STUDY METHODOLOGY

III.1. Method of data collection

Both primary and secondary data were used for study:

- *Secondary data*: collecting available reports, studies, documentations, information relating to vegetable commodity chain of Vinh Phuc.
- *Primary data*:
 - + Using study method of commodity chain to collect information by interviewing directly stakeholders
 - + Taking related expert advice to select study zones

III. 2. Method of study zones selection

Selecting zones based on secondary information of vegetable commodity chain, statistical data and experts, especially local ones. These include: Vinh Yen town, Tam Duong district, Me Linh district

These zones met best following items:

- + There are variety of stakeholders

- + Vegetable is the main crop of production system, has large area of cultivation and importantly contribute to local social- economic life.
- + Production system is variety
- + These zones have linkage with Hanoi market

III. 3. Steps of field trip study

This study was conducted through following steps:

Step 1: describe and characterize vegetable production of province basing on statistical data and quick diagnosis in order to assess and identify concentrated production areas, classify these areas by their characteristics of production and kinds of product.

Step 2: describe activities of processing and marketing vegetable: holding expert meeting in order to collect information about processing section of the whole province. Specify concentrated trade centers, theirs scale, characteristics and market structures. Then, estimate production scale and market structure of the whole province.

Step 3: collect information by interviewing stakeholders along the channels to describe their size, characteristics and features.

Analyze and assess the fluctuation of prices, the way of quality evaluation during transaction, forms of contracts between stakeholders

Describe value structure and profit share among stakeholders

Step 4: appreciate role of vegetable production regarding sites of household economic activities, employment, and regional economic development through farm household survey.

Step 5: synthesize, analyze information and write report.

IV. GENERAL INFORMATION

IV.1 Overview on Vinh Phuc province

Geographical location

Vinh phuc locates in the North pole of Red River Delta. The north of province is contiguous to Thai Nguyen and Tuyen Quang, the south is contiguous to Ha Tay, the west is contiguous to Phu Tho and the east is contiguous to Ha Noi. The township of Vinh Phuc is Vinh Yen where 50 km far from heart center of Ha Noi.

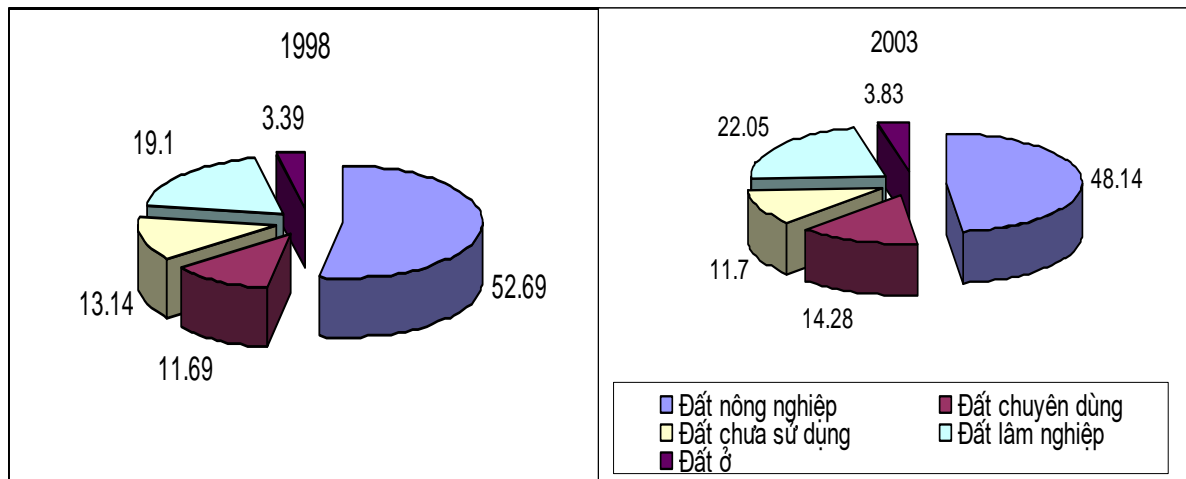
Natural conditions

- *Land characteristic*

The natural area of Vinh Phuc is 1,371.47 km². Vinh Phuc locates in midland; the north leans on Tam Dao mountain chain that its three main peaks are Thach Ban (1388m height), Phu Nghia (1400m height) and Thien Thi (1375m height). Lo and Hong rivers surround the west and south. Therefore, terrain of Vinh Phuc has down trend from north west to south west and divide clearly into three areas: plain, midland and mountain.

After re-establishing province, land use has changed much, especially after 1998.

Chart 1: structure of land use of Vinh Phuc over three years



Source: Vinh Phuc statistical office, 2004

After separation from Vinh Phu since 1997, Vinh phuc has been under infrastructure construction. It has a dynamic economy of the North's provinces (growth rate of economy in period 1997-2004 is 17%). Due to high attraction of foreign investment, land use will vary much.

As for structure of land use in 2003, agricultural land shared 48.14% in total area but has been slightly and regularly going down over recent 6 years (reduction of 100 ha per year)

- *Climate*

Vinh Phuc locates in monsoon tropical climate and has clearly two seasons: rainy season lasts from April to November; dry and cold season lasts from November to March next year. Average rainfall is around 1,500- 1,700 mm, highly on June to December. Yearly average temperature is 22.1⁰C. As for Tam Dao locating in 1000m above sea level, its average temperature is about 18.4⁰C, total sunshine is 1,400- 1,800 hours and average humidity is 84-85%

Such climate has made a diversified agricultural production system with different products, especially off-season vegetable from Tam Dao.

- *Rivers and streams*

Vinh phuc has numbers of rivers, streams, lakes. Red river across Vinh phuc is 41 km length, Lo river 34 km, Ca Lo 14.8 km and Day 22 km. Series of rivers, lakes and lagoons is not only potential power to develop irrigation, aquaculture, improve ecological environment but also conditions to build tourist areas, amusement parks and sport areas.

IV.2 The situation of vegetable production of Vinh phuc

Vegetable cultivation is the main force activities of agricultural production. In 2002, two new districts separated from Tam Duong and Me Linh are respectively Tam Dao and Phuc Yen town have strongly changed in vegetable area. In the period 1998-2004, there was fluctuation in vegetable area of province but showed up trend in most recent two years.

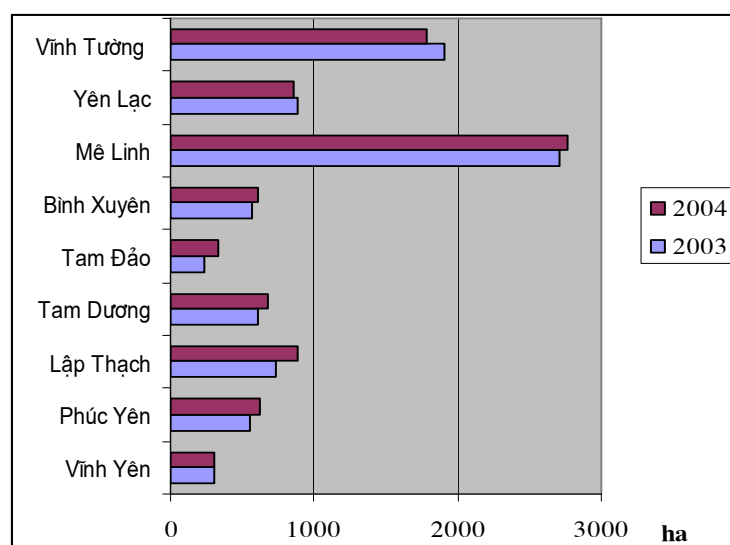
The development of specializing area in vegetable has created large vegetable production area such as Me Linh and Vinh Tuong supplying to big market Ha Noi and Vinh Yen. Agricultural land of these areas mainly use for intensive cultivation, crops increase and vegetable diversification with higher quality.

Table 1: The fluctuation of vegetable area of some provinces (peiod 1998-2004)

Districts, town	1998	1999	2000	2001	2002	2003	2004
1. Vinh Yen town	189.0	195.5	219.4	263.0	286.7	306.5	304.8
3. Tam Duong	520.0	589.7	562.4	828.8	752.0	610.0	676.7
4. Binh Xuyen	502.0	578.0	596.0	568.8	555.4	569.2	608.4
5. Vinh Tuong	1,278.0	1,332.7	1,620.5	1,600.2	1,794.0	1,906.0	1,788.2
6. Yen Lac	1,087.0	1,074.0	1,065.0	854.0	1,025.0	889.0	860.0
7. Me Linh	2,395.0	2,468.0	2,314.0	2,832.0	3,191.0	2,714.0	2,767.0
8. Phuc Yen town	-	-	-	-	-	553.0	620.0
9. Tam Dao	-	-	-	-	-	228.6	330.4

Source: Vinh Phuc statistical office, 2004

Chart 2: change of vegetable land area of districts (year 2003, 2004)



Source: Vinh Phuc statistical office, 2004

Classification of vegetable production areas

Production system of Vinh Phuc was classified basing on two major criteria area scale and vegetable yield and level of intensive cultivation also. According to this, vegetable production areas were divided into 3 groups:

- Group 1 has large area and high yield including Tam Duong and Me Linh that have diversified production system and high ability of cultivation with from 3 to 5 crops per year.
- Group 2 has medium area and is under process of changing from extensive to intensive cultivation.
- Group 3 has small scale of area but special characteristics. Vinh Yen town has high intensive cultivation. Production action is under impact of urbanization that has made instable area of production. Tam Dao, a particular area with different climatic micro-area, is one of the important sources supplying off-season vegetable.

Table 2: groups of vegetable production area

Group	District, town	Area (ha)	Productivity (quintal/ha)	Yield (tonnes)
1	Me Linh	2,767.0	188.23	52,082.0
	Vinh Tuong	1,788.2	217.21	38,840.6
2	Yen Lac	860.0	150.29	12,951.0
	Lap Thach	880.5	88.56	7,276.4
	Tam Duong	676.7	164.08	11,103.0
	Phuc Yen	620.0	158.69	9,839.0
	Binh Xuyen	608.4	110.32	6,712.0
3	Tam Dao	330.4	90.00	3,718.4
	Vinh Yen	304.8	205.90	6,275.8

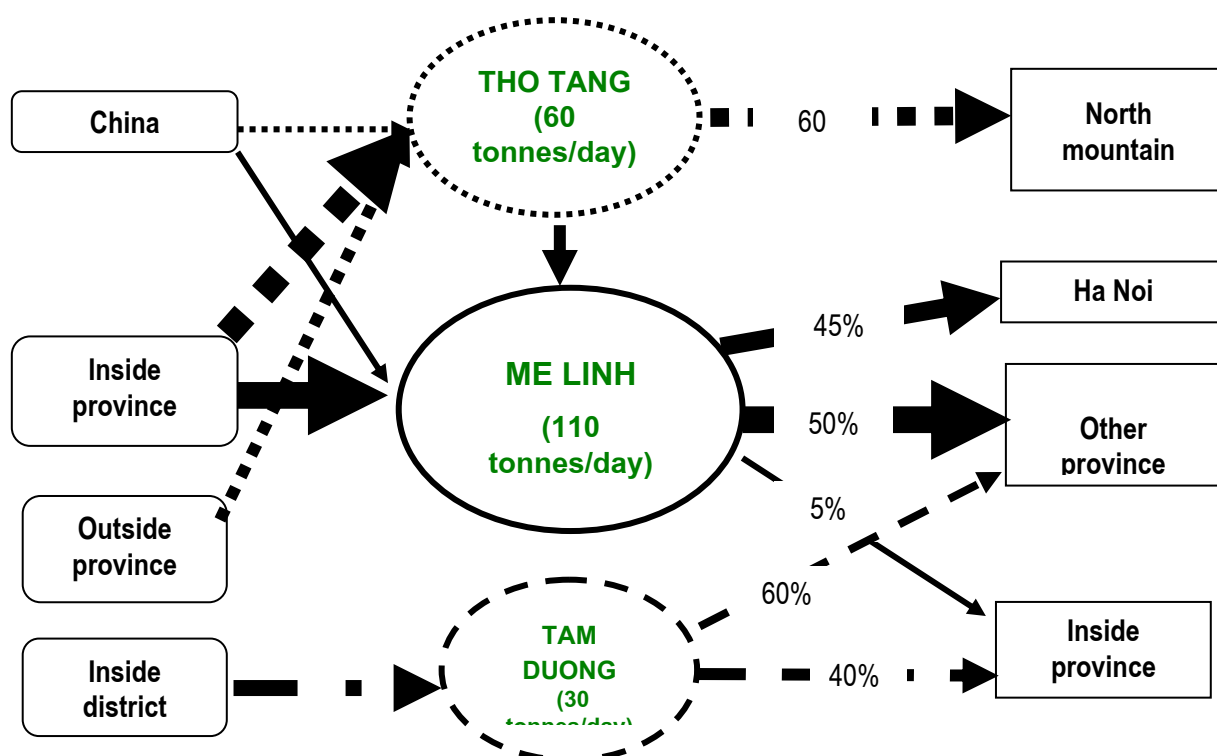
Source: Vinh Phuc statistical office, 2004

Me Linh, Tam Duong and Vinh Yen were selected for surveying. These areas have different characteristics of production, marketing and other which will be more detail described in following sections.

V. MARKET OF VEGETABLE

V.1 BIG TRADE CENTER OF VEGETABLE

Chart 3: trade center of vegetable and cross relation



Three big trade centers of vegetable are Me Linh, Tho Tang (Vinh Tuong district) and Tam Duong with quite different roles. Me Linh plays role as a center distributing vegetable to many provinces such as Ha Noi, North East region, North mountain and Central Coastal provinces such as Thanh Hoa, Ninh Binh...); Tho Tang collects vegetable and sells to North Mountainous provinces such as Lao Cai, Yen Bai, Tuyen Quang, Phu Tho...while Tam

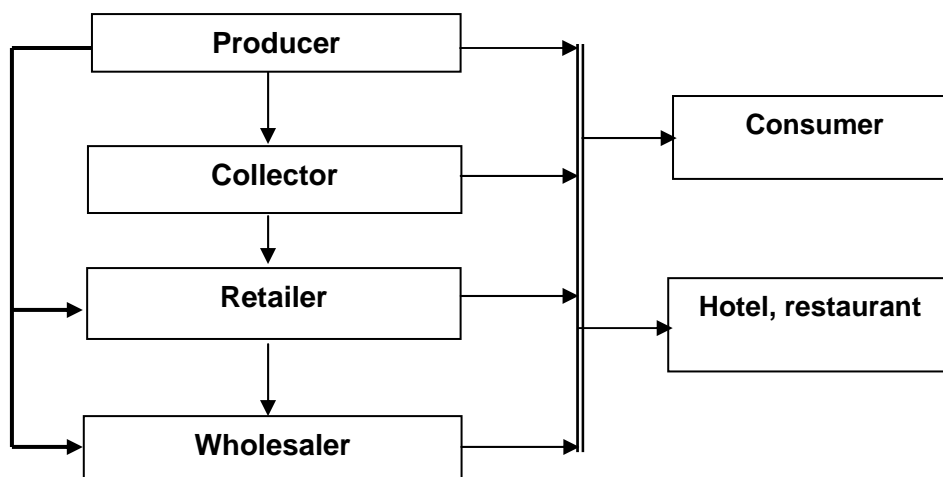
Duong has nearer markets such as Thai Nguyen, Hai Phong, Quang Ninh and inside district. Additionally, Vinh Yen is also a trade center distributing vegetable inside town.

V.2. VEGETABLE COMMODITY CHAIN MAP

V.2.1 Inside province channels

Vegetable is circulated within province. These channels include inside province stakeholders which are producer, collectors, retailers, wholesalers and consumers.

Chart 4: map of inside province channel system



Inside province channels have changed over time and can be described as below:

- Collectors play important role in system thanks to crowd number and dynamic activities of market seeking.
- For further market, collectors play role as connection between production area and market.
- Producers act as traders have taken major part in marketing system because of short distance between production area and market.

Characteristic of distribution products

- + Variety of distribution products in this commodity channels system mainly are products in short term utilization and difficult maintenance condition
- + This commodity channel is usually following seasons; operate strongly in winter season with diversified products
- + These commodity channels are not professional, stakeholders can do many other jobs, and when the season comes, they will become vegetable traders.
- + These commodity channels are unreal professional, stakeholders can do many other jobs, and when the season comes, they will become vegetable traders.

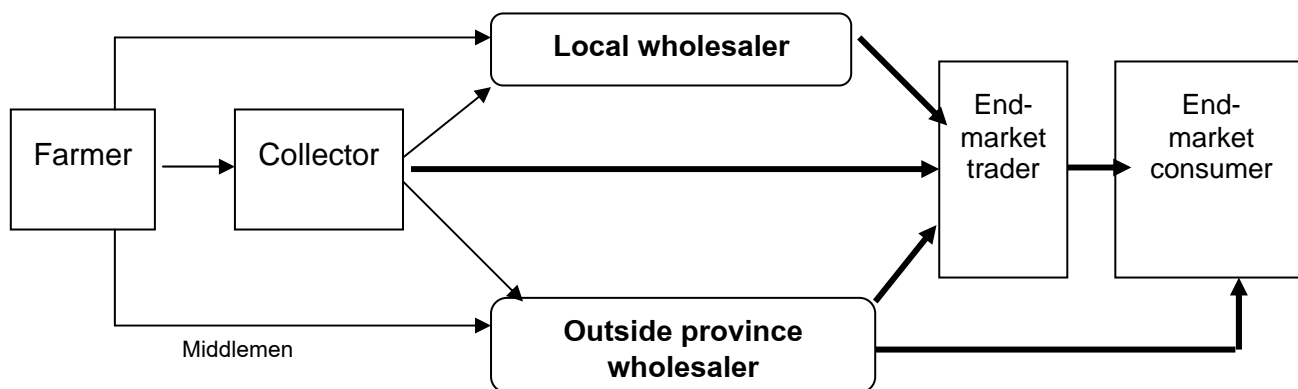
These channels have met well both development of production and demand of consumers. Moreover in some cases, inside province channels supported outside area channels actively.

V.2.2 Outside province channels

For great production area and high intensive cultivation, the yearly yield of vegetable is very big. Therefore, it is necessary to sell product not only inside province but also outside.

In fact, outside province channels appeared for years, especially when production expanded. All markets were found and penetrated by private traders.

Chart 5: map of outside province channels



Source: VASI survey, 2005

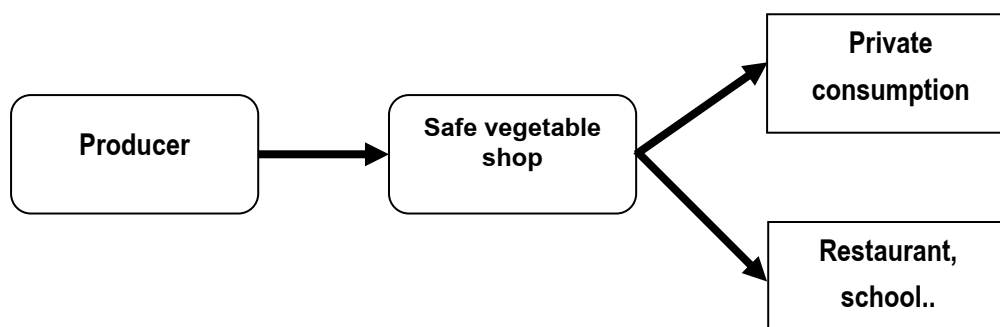
These channels have some following characteristics:

- + There is not as diversified products of this channel system as inside province channels due to restrictions of preservation and decay during transportation.
- + Due to less quantity and variety of vegetable in summer, trade affair is really crowded in winter.
- + The major means of transport is usually trucks that can be loaded big quantity and allow to ensure time and economic effect. These trucks often overload vegetable and other things.
- + Local and outside province wholesalers play an important role as linkage between production and market. However, as for near market (Hanoi for instant) local small-scale collectors take this role positively.
- + Business transaction of stakeholders commonly bases on long time and confident relation

V.2.3 Channel of safe vegetable

The generation and development of safe vegetable channel experienced two important landmarks. The first was the establishment of safe vegetable shop that was an effort of safe vegetable program of province in Vinh Yen and Tong market in 1998. Department of Plan Protection managed these shops directly. During their operation, however, they could not reach the initial targets because of the restrictions of quality control and lack of outstanding criteria to differentiate between ordinary and safe vegetables. The second landmark was restarting and continued developing of safe vegetable program that its goal was bringing safe vegetable to communication widely. In the framework of project, there will have safe vegetable shops covering most of districts and towns. Quality control system will also be improved. For new direction, the end goals of project seemed to be more real.

Chart 6: channel of safe vegetable



Source: VASI survey, 2005

Despite of above efforts, safe vegetable production has remained contradiction and influenced on quality guarantee. Aiming to maintain existence of channel, the contradiction should be resolved. It is not reliable that safe vegetable was continuously produced when project finishes.

VI. THE CHARACTERISTICS OF STAKEHOLDERS OF COMMODITY CHAIN

At present, Vinh phuc has only one processing factory (locates in Tam Duong district) that its material input is collected from other province. For this reason, we did not survey this factory. Outside province consumers did not involve in also because of some difficulties.

VI.1 Stakeholders of inside province channels

Producer

Vinh Yen town

Agricultural land has quickly transferred to other usages in recent years. Strategies of farm household have changed to land usage for vegetable. Regional plan and economic effect of vegetable were two main reasons of above turn. The reality also demonstrated higher effect of vegetable production in comparison with rice cultivation, especially specialized vegetable area which turnover was usual over 50 million VND per hectare and 3- 8 times higher than turnover of rice in the same area of cultivation. On the other hand, according to provincial plan, some precincts and communes plays role as “green belt” supplying vegetable and other products to meet demand.

Thanks to experience in cultivation and scientific and technical application, some production models that ensured economic effect, safety and contributed to soil improvement was generated. Model “two layers cultivation” has applied widely in cooperative Tich Son. The upper layer consists of chayote, loopah; lower layer consists of kohlrabi, onion, garlic, spice vegetables...This model cut down chemical fertilizers usage and increase organic ones (muck, green manure) to produce safe vegetable and guarantee stable cultivation. There were a lot of new vegetables planted such as green and white cauliflower, tall shoot of garlic, Chinese cabbage together with ordinary vegetables such as kohlrabi, cabbage, tomato...

Department of Plan Protection is guiding some farm household technique of safe vegetable production now in the framework. However, farmers have to sell products by themselves. For the same above reasons (outstanding criteria of safe vegetable) farmers in some cases cannot sell at higher price than ordinary vegetable. This is one of limitation that does not attract them.

Formerly, crops rotation was rice-rice-secondary crops in which secondary crops were mainly maize, batata and soybeans (account for 50% of total cultivating area). Two- crops vegetable land was small (occupy 10%). Production system depended much on rice. Today, crops rotation has changed following some tendencies:

- Number of crops increases from 3 to 4 crops per year. This change is supported by production techniques that include the use of short-day varieties, ability of intensive cultivation and good irrigation.
- Rice cultivation area is reducing because food security can be guaranteed through income from non-agricultural section and other crops. However, farm household who accepts risks and have high intensive cultivation ability follows this tendency.
- There was appearance of land cultivating 4 vegetable crops in year around. This area took full advantage of vegetable and revenue of this area also held first position in comparison with others.
- All of crops rotation involves vegetable. This reality showed the importance of vegetable

Table 3: land use in farm household in Vinh Yen (Unit: m²/household)

	Area
Agricultural land area	1,044
Land available for vegetable cultivation	972
Land area specializing on vegetable	792

Source: VASI survey, 2005

Many farmers can themselves bring vegetable to town's market, especially ones locate in suburban area thanks to short distance between their production area and market. Most of vegetable is also sold in Vinh yen town. Perhaps role of collectors is not as important as that of other region collectors.

Table 4: labor structure of farm household in Vinh Yen

	Unit	Quantity
Number of family's people	<i>People</i>	4.4
- <i>Agricultural section people</i>	<i>People</i>	3.6
Number of labor	<i>Labor</i>	2.3
- <i>Agricultural labor</i>	<i>Labor</i>	1.8

Source: VASI survey, 2005

At present trend, agricultural land loss causes difficulty for farmers. They have to choose either selling land to join in non-agricultural section or continuing to invest more in vegetable production. This process also helps to stimulate labor structure transfer in rural area.

To be a precinct of Vinh Yen town, income of agricultural section of households still occupies over a half of household's total income. Income of vegetable also makes up a big share in total cultivation sub-section. Breeding has not been developed in most surveyed areas.

Table 5: income structure of households producing vegetable in Vinh Yen

	Income structure (%)
Income of agricultural section	54.2
- <i>Cultivation</i>	70.5
+ Vegetable production	66.2
- <i>Breeding</i>	29.5
Income of non- agricultural section	45.8

Source: VASI survey, 2005

The two main crops rotation system are rice-rice- vegetable and 3-4 vegetable crops in a year that average gross output is about 51 million VND/year and value add around 2 million VND. Only households who have high technical cultivation can follow this system.

Table 6: economic effect of defferent crops rotation (VND/sao/year)

Crops rotation system	Gross output	Intermediate cost	Value add
1. Rice-rice- vegetable	1,695,940	1,085,000	610,940
2. Squash- kohlrabi- tomato	4,320,000	2,134,000	2,186,000

Source: VASI survey, 2005

(Note: *intermediate cost does not involve family labors*)

In general, vegetable plays an important role in household's economy, especially with respect to households specializing on vegetable production. However, their income has not been stable due to increase of input price and fluctuation of output price. Moreover, due to

lack of production information and orientation, farmers have to suffer from decreased price and unsold product...These problems should be resolved in order to improve household economy.

Tam Duong district

Average agricultural land is about 1990m² per household involving rice and secondary crop land. Most of the land can be cultivated vegetable. That land for vegetable cultivation accounts for 80% of total agricultural land showed important role of vegetable production.

Table 7 : land use in farm household in Tam Duong (Unit: m²/household)

	Area
Agricultural land area	1,990
Land available for vegetable cultivation	1,875
Land area specializing on vegetable	1,593

Source: VASI survey, 2005

Agricultural production is still the main income of households attracting more 70% of total labors. In recent years, some new industrial zones have contributed to process of agricultural labor reduction and industrial and service labor increase.

Table 8: labor structure of farm household in Tam Duong

	Unit	Quantity
Number of family's people	<i>People</i>	4.6
- <i>Agricultural section people</i>	<i>People</i>	3.9
Number of labor	<i>Labor</i>	2.6
- <i>Agricultural labor</i>	<i>Labor</i>	1.9

Source: VASI survey, 2005

Normally, farmers plant different kinds of vegetable on the same plot in a crop. These vegetables are squash, water morning glory, amaranth, potherbs, chili, cabbage, kohlrabi, cauliflower...There is almost no off-season and superior vegetables. Popular kinds of cultivation are crop association and overlapping crop help to make the best of land and time. There is more land area of 4 vegetable crops cultivation and more vegetable appearance. Popular crops rotations are rice-rice-secondary crops; vegetable- vegetable – secondary crops and 4 vegetable crops. Together with increasing land use turnover index, bringing new varieties in production, raising chemical fertilizers and pesticides usage is present trend that are the main obstacle to safe vegetable program.

At the present, the average productivity of households is about 6,1 quintal per ha. For average 4.42 sao/household, total yield of vegetable amounts to 5.1 tones. In the context of small-scale and scattered production, most of the households sell to collectors/wholesalers or directly to town/local markets that occupies about 15% of total yield. In the main crop, vegetable is usually sold at field but at home. Farmers choose to sell directly to market when they have free time, vegetable quality descends in crop-end or profit gain comes down compared to previous time. The business transaction between farmers and buyers is simple, mainly through informal contract rather than formal one. Buyers do not order vegetable in advance during main crop but do during other time, such as crop-end to assume his quantity and quality. This transaction bases on prestige and mutual belief. Selling price much depends on product quality. In common, farmers do not have power on bargaining because of lack of market information. This is also limited issue of commodity chain.

Table 9: income structure of farm household in Tam Duong

	Income structure (%)
Income of agricultural section	75.41
- <i>Cultivation</i>	58.52
+ Vegetable production	42.8
- <i>Breeding</i>	41.48
Income of non- agricultural section	24.59

Source: VASI survey, 2005

Fertilizer cost makes up major part in total production cost (from 55 to 77%) following are pesticide cost. Service cost only occupies little part of total cost. Cultivating soil is almost worked by man or by buffalo without machine.

These following crops rotation systems are popular in farm households. Value add of 3 crops per *sao* is higher than rice- rice- vegetable (from 2.5 to 3 times higher). Rice monoculture has lowest value add compared to others. Economic effect of specialized vegetable production is obvious.

Table 10: economic effect of defferent crops rotation (VND/sao/year)

Crops rotation system	Gross output	Intermediate cost	Value add
1. Rice-rice	880,000	450,000	430,000
2. Rice- rice- winter crop (field cabbage)	1,870,000	793,000	1,077,000
3. Squash- chili- field cabbge	5,090,000	2,010,000	3,080,000

Source: VASI survey, 2005

(Note: intermediate cost does not involve family labors)

Problems and proposed assistant for producers

Problem	Proposed assistant
<ul style="list-style-type: none"> - More and more agricultural land lost causes difficulty in production. - Irrigation canal system is weak - Lack of capital for investment in net house, glass house and machine - Lack of variety and experience in cultivation of off-season and superior vegetable. Production technical process for specific vegetable has not been popularized - Preservation and sale of vegetable remain limitations - Lack of market information - Fluctuation of selling price 	<ul style="list-style-type: none"> - Consolidate irrigation canal system in vegetable production area - Organize training class and field trips to transmit technical process of safe and superior vegetable production. - Plan and build area specializing on high quality vegetable - Establish organization that help farmer to sell products. - Assist to set up production associations and production groups.... - Set up network that provides high quality vegetable varieties starting from hamlets. - Train course on market demand and market approach - Release standard process for specific vegetable

Collector

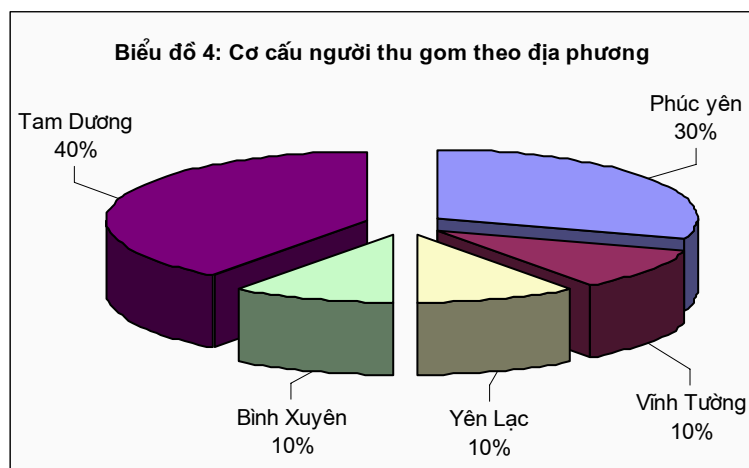
Local collectors: Local collectors who his essence is farmer operate seasonally. After selling out their products, they participate in collecting work to earn more money. Products are collected from farm households who have few labors, large-scale production, then retailing or wholesaling at town market or peddling to home. They commonly use bicycle attaching a pair of iron baskets to transport vegetable. Average quantity is about 50-80 kilograms per trips.

During survey, we see that before 1997, population density is few, vegetables, fruits demand of town population are un-high so most of these collectors only consume their products. After Vinh Phuc had been re-established in 1998, population density increases so the vegetable demand increases too.

Meanwhile, urbanization makes farmers in peri-urban loss land, to compensate for income, these households begins to participate in vegetable distribution activity and their income depend much on these jobs. For that reason, 80% of number of collectors was asked only does this business shorter than 5 years. The appearance of local collectors arises from effects of two factors: increasing demand and urbanization that lower agricultural land area.

Professional collectors: These are collectors that do this business year-round. Many of them do agricultural products for their life. However, collecting products don't depend on their production activities. Collectors in other areas as: Duy Phien, Van Hoi-Tam Duong district, Phuc Yen, Binh Xuyen district, Vi Thanh-Yen Lac, Me Linh...

Chart 7 : structure of collectors by regions



Source: VASI survey, 2005

Besides these collectors, some of collectors from other provinces as: Tam Dao, Me Linh...but this region is far from town and products which bring irregularly to town are season products with small quantities.

Operating time of these collectors usually from 4h to 8h a m. In the afternoon, they collect vegetable, bulb, fruits from farmer households and products distribution center in peri-urban to sell in town in the following day morning. In each time of collection, they buy vegetable of 1-2 farmers then distribute to 4-6 retailers in town markets.

The collectors' exchanging activity happened strongest in the beginning month of crop and vegetable scarce month. They usually buy products, which Vinh Yen has not got or got a few, because they think that, when this market has much vegetable in some kinds, the crop

of much vegetable comes. At that time, the producers usually sell vegetable directly to market, vegetable traders is difficult to compete and their profit will lower, this is the reason why in crop some of the short commodity channels collectors don't go to town.

Table 11: Some activity characteristics of professional collectors

	Unit	Quantity
Transportation quantity	Kg/time	111
Average quantity of activity year number	Year	2.5
Average capital	1000/day	132
Variety of collecting products	Kinds	2.5
Quantity of farmers-sellers	People/day	1.9
Quantity of retailers-buyers	People/day	5.9

Source: VASI survey, 2005

Professional vegetable traders is new stakeholders, the number of experienced year is average 2.5 years. The development of these stakeholders express that market demand about species and quantities has pushed up the establishment of relation between production regions and consume center. Hygienic quality is cared but has not become specific standard for exchanging process. At the moment, stakeholders only evaluate products based on 3 standards by sense organs: new, green, fresh.

Problems and proposed assistant for collectors

Problems	Proposed assistant
<ul style="list-style-type: none"> - More and more stakeholders participating in market is able to make reduction of market share of each. - There are few varieties of superior and off- season vegetable - Profit rate is not high now - Approach and catch up market demand has still limited because of lack experience - Capital for operation as well as investment in vehicle and other items - Lack of experience in preservation of vegetable - Loss rate and risk are still at high level 	<ul style="list-style-type: none"> - Widely popularize information about kinds of product, production areas, crops for collectors. - Give preferential long-term capital with low interest to collector for his investment - Assist collectors in signing contract with company, supermarket - Open training course about product preservation and market information approach

Retailer

Retailers play important role in connection between suppliers and consumers. The change of retailers are shown mainly in aspects:

- The increase of sale quantity and sale form (store's scale and equipment)
- The products diversification supplies for market and split demand in term of quality among trade areas.

At the moment there are about 380 people participating in retail activity, based on activity characteristic, we divide them into 3 kinds of retail household and safety vegetable stores:

- Large stores – stable retailers: Regular retailers who have stable stalls and counters. This kind has comparative high professional, long time trading, so their customers are many kinds of familiar customers: consumers, retailers in small markets, restaurants,

and hotels...

- Canvas retailers: They are retailers who have not got stand and counters in market; they choose one place to sit in the vegetable area. Their stalls are very simple, only a piece of nylon and some bags to put the vegetable and to be protected from rain and sunshine.
- Ambulant retailers: They usually go to sell vegetable in leisure after harvest time, about 9-10 months/year (excluding transplant season). Most of them originated from farmers. Having unstable sitting place so they often move the selling place. The remains are professional collectors who have joined market for recent years.

Mentioning to canvas retailers: they began participating in this commercial system earlier than the ambulant retailers. And most of them originated from farmers (about 65% out of canvas retailers). Because of the urbanization, they lost agricultural land so they must participate in the commercial system to increase their income.

The survey shows that the retail network has changed much through the increase of sellers' quantity, diversification of business forms. However, the professional development focuses on the stall-owned retailers. Thanks to the business experience, suitable and stable sitting places, they have large quantity of customers like: restaurants, hotels, companies, schools, and consumers... In the exchanging relation between them and input stakeholders, quality is not only daily criterion but also the stable requirements. As reported by this group, we know that in order to have stable and regular goods supplying sources, they must build relation with wholesalers, collectors, and producers. 90% out of this group purchase commodity regularly from 3-4 suppliers. That is why they always have stable and regular supplying sources, even in time of scare vegetable.

Large stores – stable retailers has changed in scale such as quantity of day- sold vegetable, variety, number of regular sellers, buyers, form of transaction and the way to keep consumers. In the context of higher and higher demand of consumers, the change of this stakeholders not only help them maintain operation but also extend scale.

Table 12: operation cost of stakeholders in Vinh Yen and Tam Duong

Cost	Collector	Large stores – stable retailers	Canvas retailers
Stall tax	-	45,000	-
Vehicle keeping fee	30,000	15,000	15,000
Market fee	60,000	60,000	30,000
Security fee	-	20,000	-
Bag	-	66,000	45,000
Fuel	150,000	-	-
“Police” cost	60,000	-	-
Total cost/month	300,000	206,000	90,000
Total/day	10,000	5,667	2,000

Source: VASI survey, 2005

Problems and proposed assistant for retailers

Problems	Proposed assistant
<ul style="list-style-type: none"> - More and more stakeholders participating in market is able to make reduction of market share of each. - High cost of business but low profit gain - Lack of capital for extending scale - Infrastructure of market is weak - Lack of information about preservation - High loss rate and risk - Product quality is not ensured (in term of pesticide left) make health harmful 	<ul style="list-style-type: none"> - Upgrade infrastructure and plan market. - Open training course about product preservation - Give long-term capital with low interest

Consumer

Commonly, consumers take much care about appearance of vegetable and less about hygiene aspect. Under scientific view, hygiene is much considered regarding excess chemical, harmful microorganism, and Nitrate content...

Table 13 : quality criteria according to each stakeholders opinion

Stakeholder	Kohlrabi	Basella alba	Tomato
Collector	Fresh, green peel Quantity: 0.4-0.5 kg Trunk with pollen covered	Non decay Large, non decay fresh, green leaf, small stem	A bit green, round, smooth skin, a bit pip, stem Quantity: 0.15kg
Retailer	Smooth and green skill Green and non-split and thick tuber Medium quantity 0.4-0.5 kg	A bit thick, no spot, non decay, fresh, green leaf, small stem Clean, big bundle	Medium ripe, stem, stretch skin, round, no trace segment Non-decay
Consumer	Round, green peel Clean, little vein tuber Quantity: 0.4-0.5 kg	Clean, big bundle A bit thick, no spot, non decay, fresh, green leaf, small stem	Stretch and smooth skin, red ripe, non- decay, medium quantity: 0.1-0.15kg

Source: VASI survey, 2005

Each stakeholder has their own quality criteria or in other words these criteria are also requirement in transaction. The items of quality criteria may be the same among stakeholders but difference in order.

The quality assessment is not only different among stakeholders but also different among markets. This actuality is due to separation of consumption that based on living standard of locality. It is obvious that resident having high living standard will require higher demand about hygiene, appearance, package..than lower living standard ones. This gap is also different among consumers in urban-areas and ones in sub-urban areas.

VI.2 Stakeholders of outside area channels

Producer

Me linh district

Average agricultural land in Me Linh is bigger than that in Tam Duong, amounting to 2,030 m² per household but land available for vegetable is similar. However, area of this land depends on production strategy of households, period and is not same in all of the households. Land specializing on vegetable is about 1,681 m² and average yield is about 3.25 tonnes per household

Tabel 14: land use in farm household in Me Linh (Unit: m²/household)

	Area
Agricultural land area	2,030
Land available for vegetable cultivation	1,922
Land area specializing on vegetable	1,681

Source: VASI survey, 2005

Proportion of agricultural labor in Me Linh households is lower than that in the others because labor force shift to work in industrial zones or immigrate into Ha noi to find job.

Table 15: labor structure of farm household in Me Linh

	Unit	Quantity
Number of family's people	People	4.7
- <i>Agricultural section people</i>	People	2.8
Number of labor	Labor	2.2
- <i>Agricultural labor</i>	Labor	1.4

Source: VASI survey, 2005

Some popular crop rotation are cabbage-bean-sweet cabbage, cabbage-bean-Hong Kong cabbage, cabbage-sweet cabbage-onion. There are also many kinds of vegetable cultivated at the same time on same plot. Especially, farmers here can plant vegetable year around. Today, net house and glass house have not been used for cultivation because of very high initial investment and a little demand in safe vegetable in locality.

Variety and technique are the two important factors for safe vegetable cultivation. Farmers often buy variety instead of plant by themselves. There are some households specializing on variety production to provide vegetable production households. Meanwhile, as regard to technique, use of chemical fertilizers, pesticides and biological products is more and more widespread. Using nylon to cover vegetable plot is not strange to farmers here. But this technique is not used frequently due to high costs.

Output markets are varied. Thanks to close location to Ha noi, households are of advantage to bring products to Ha noi instead of selling to intermediate man. Some farmers act as a collector who means that they sell their product together with products buying from other farmers. The survey shows that households sell 70% of total yield to collector, 20% to retailer and 10% by themselves.

In such high technical area, farmers have condition to approach innovative technical advances more quickly than other areas. In present trend, it is necessary to disseminate and support technique of safe vegetable production and then to build a planned area supplying to big markets such as Ha Noi and neighboring towns.

Income of agricultural and non-agricultural section of household is relatively equal. Income of cultivation that mostly from vegetable makes up 70.6% of total agricultural income. However, role of vegetable has been reducing because a large area of artemesia and rose was cultivated widely.

Table 16: income structure of farm household in Me Linh

	Income structure (%)
Income of agricultural section	50.8
- <i>Cultivation</i>	70.6
+ Vegetable production	80.1
- <i>Breeding</i>	29.4
Income of non- agricultural section	49.2

Source: VASI survey, 2005

The most economic effect crops rotation is cultivation of 5-6 crops of sweet cabbage in a year. This rotation is 8 times higher than rice-rice- vegetable system and 4 times higher than vegetable specializing system. The crop period of this vegetable is about 25-30 days and can be planted year around. However, farmers do not plant sweet cabbage year around but associate with other vegetable or vacate soil to be well again. Families having few labors do not follow this rotation because they have not got much time.

Table 17: economic effect of defferent crops rotation (VND/sao/year)

Crops rotation system	Gross output	Intermediate cost	Value add
1. Rice-rice- vegetable	1,854,700	890,000	964,700
2. Cabbage-bean- sweet cabbage	4,550,000	1,928,000	2,622,000
3. 6 crops sweet cabbage	10,800,000	2,760,000	8,040,000

Source: VASI survey, 2005

(Note: intermediate cost does not involve family labors)

Problems and proposed assistant for producer

Problem	Proposed assistant
<ul style="list-style-type: none"> - Agricultural land has been changed to resident land and industrial land - Artemesia and rose are the significant competitiveness with vegetable. A number of areas were changed to plant these crops - Me Linh has no special vegetable that can create difference and competitiveness in comparison with other areas. - Me Linh has not known how to take advantage of close location to Ha noi and traffic to produce safe vegetable despite of big demand from this market. 	<ul style="list-style-type: none"> - Plan vegetable area based on soil analysis and expectation of people - Diversify varieties and kinds of vegetable, focusing on new and valuable ones to meet demand, especially Ha Noi market - Safe and organic vegetable will be the popular trend of consumption in the future. This direction will be successful if being assisted in technique and market information - Help cooperatives to produce and build trademark of safe vegetables. Provincial People committee only assisted in technique dissemination and capital for small amount of producers. Quality control system that is the most critical factor has not been implemented yet.

Collector

Tho Tang commune

Collectors in Tho Tang come from quite a lot of different localities. Basing on characteristics, collectors can be classified 2 groups: small-scale collectors and big-scale ones. Besides, farmers also act as collectors when they have free time. Being a crowded, animated and attractive trade center, there are a lot of collectors rushing here everyday to do business. Reasons for attractive power of Tho Tang are the existence of big wholesalers and stable markets.

Small-scale collectors: they buy vegetable from farmers then sell to wholesalers or big-scale collectors. Average quantity is about 100-250 kilograms of vegetable per time. Value depends on kinds of vegetable, quantity and is about 400- 500 VND. In general, collectors do not associate with producers because they can easily seek vegetables. Contrary to winter, they are more concerning about the association with even wholesalers from outside Me Linh such as Tho Tang

Big- scale collectors: buy vegetable from farmers or small-scale collectors, and then sell stakeholders outside area. In fact, there is no obvious border between big-scale collectors and wholesalers. The norms for identification are scale and form of transportation although relatively. Average quantity per day is about 1 ton and value 2-4 million VND. Vegetable can be transported by two ways: collectors who have lorry often carry vegetable directly to markets with 5 tones per time; the remains send their goods through passenger cars or hired cars by 4-5 collectors. Difference between input and output price is from 200-300 VND per kilogram. Buyers will pay transportation cost. Relationship between collectors and their buyers is formed basing on long period business and belief. Payment can be done later, even to the end of the year.

Me Linh district

Collectors here have characteristics different to those in other localities. They can act as different parts in trade activity. They can be classified 2 groups:

Collecting and retailing: they buy vegetable from farmers and sell to wholesalers, retailers and consumers. They start his work at 4 or 5 o'clock depending on distance between buying area to market and time for purchasing. Goods then will be transported to Ha Noi markets for wholesaling or retailing. Commonly, rate of selling forms is relatively equal. This fluctuation of the rate depends on selling price and their own decision. Collectors often buy and sell some consistent and regular kinds of vegetable, but in some cases, they change or add other kinds of vegetable depending on previous day price of just vegetable, collectors' prediction of demand. Kinds of vegetable do not change day by day but subject to season (kinds of vegetable in winter are more diversified than those in summer). Most of these collectors come from communes such as Dai Thinh, Tien Phong, Van Khe that are big vegetable production area and of advantage to change information among stakeholders and trade centers.

Collecting for outside area wholesalers: this stakeholder act as regular counterpart of wholesaler outside area (such as Tho Tang) and outside province. They are regarded as collecting point of wholesalers. Transaction contents include quantity, quality, price, variety, delivery time, payment method and other agreements.

Collectors purchase vegetable at home or at field. The concomitant action is classification of products and elimination unsatisfied ones. Vegetable then will be conveyed to markets by two ways: collectors hire a truck or outside area wholesalers come to take away. Method of

payment will be either indirectly through truck- driver or directly. Income of collectors is about 30-50 thousands VND depending on kinds of product.

Collectors normally operate all year around, but not continuously. It depends on orders of outside area stakeholder. Therefore, the operation is not initiative compared to above collectors.

Table 18: Some activity charactersitic of collectors in Tho Tang and Me Linh

	Unit	Quantity, description	
		Tho Tang	Me Linh
Quantity of vegetable	Kg/time	100-250	100-300
Average number of year of operation	Years	10	13
Operating time during year	Month	12	12
Average value of vegetable	1000 VND/day	400-500	600-700
Average cost of operation	1000 VND/day	20	40
Kinds of vegetable marketed	Kind	4-6	10-12
The number of farmer selling to	People/day	4-5	4-5
Output number of stakeholders + Retailer + Wholesaler + Consumer	People/day	10-12 2-3 -	10-15 - Not define
Rate of quantity selling to + Retailer + Wholesaler	% %	10 90	50 50
Means of transport		Motorbike, bicycle, ox cart	Motorbike, bicycle

Source: VASI survey, 2005

Problems and proposed assistant for retailers

In general, collectors have not met significant difficulties in the operation. They stand between farmers and wholesaler in the chain, thus their business much depends on two these factors. Both input and output are not stable. The quantity of vegetable everyday is subsidiary to seasons. As for inside Me Linh wholesalers, the operation is not frequent but mainly concentrated on vegetable seasons. They spend rest of year for other operations. As for Tho Tang wholesalers, the difficulties are untimely arrival, battered and crushed vegetable or competitiveness of China vegetable in given time. The other risk is late or lost payment.

With present situation, output market is not main problem. They can find sources of vegetable easily. Here problem is raised that when consumption demands higher quantity, diversified kinds and production is extended, if collectors meet these change. In this case, assistant should focus on providing market information to stakeholders.

Local wholesalers

Local wholesalers buy vegetable from collectors and sell to outside area stakeholders. Their operation quite different according to localities

Tho Tang

As mention in previous part, wholesalers in Tho Tang are not clearly distinguished with big-scale collectors. They are different in scale and way of transportation. They are similar

characteristic of transaction with end-market stakeholders such wholesalers or even retailers.

The markets of north province were opened in 1990. At that time, the natural condition and farming habit is not convenient for vegetable cultivation. Wholesalers found demand here and started business to this day. Commonly, wholesalers not only sell vegetable but also fruit and consumer goods, but vegetable usually makes up more a half of total quantity (from 5- 6 tonnes). The average value of vegetable is about 10-12 million VND per day and the average cost lies between 1.2- 1.5 million VND

In order to keep input stable, wholesalers set up a network of collectors who are have long time business relation or relative. Similarly, they have network of 4-5 output stakeholders. The output market is consistent.

Most of transaction are carried out by telephone mentioning in quantity, quality, price, time, method of payment...Method of payment is quite flexible, normally by cash as soon as delivery or 1-2 days later. Wholesalers have to bear the value of battered and crushed vegetable.

Me Linh

Quantity of wholesalers that have truck is smaller than those in Tho Tang. The scale is also smaller and about 4- 5 tones per day...However, the average cost is higher because of further market such as Ninh Binh, Thanh Hoa, Nghe An...Quantity of vegetable which wholesalers transport to markets is smaller than which outside area wholesalers come and take away.

Difference with Tho Tang, Me Linh rate of vegetable sources from farmer and collectors is fairly equally but fluctuated. In plentiful vegetable time, wholesalers usually collect at fields or at their home. On the contrary in scare time, they have to need more assistance from collectors.

Table 19: Some activity charactersitic of local wholesalers in Tho Tang and Me Linh

	Unit	Quantity, description	
		Tho Tang	Me Linh
Quantity per time	Ton/time	5-6	4-5
Average number of year of operation	Years	11	15
Operating time during year	Month	12	12
Average value of vegetable	1000 VND/day	10,000-12,000	8,000-10,000
Average cost of operation	1000 VND/day	1,200-1,500	1,000-2,000
Rate of input source			
+ Farmer	%	30	50
+ Collectors	%	70	50
Output stakeholder		+ Outside province wholesalers + Outside province retailer	+ Outside province wholesalers

Source: VASI survey, 2005

These are following cost items of collectors and local wholesalers in Tho Tang and Me Linh. Telephone cost occupys big share in total cost. Transport cost includes fuel, truck depreciation, driver's wage, toll and "police cost"...

Table 20: operation cost of stakeholders in Tho Tang an Me Linh

	Unit	Tho Tang		Me Linh	
		Collectors	Wholesaler	Collectors	Wholesaler
Transport cost	1000 VND/quintal	-	20-30	-	15-30
Fuel	1000 VND/day	12	-	15	-
Package	VND/quintal	2,500	2,500	-	2,500
Nylon bag	1000 VND/day	-	-	15- 20	-
Stevedore	1000 VND/quintal	-	15	-	15
Market fee	VND/day	-	-	2,500	-
Vehicle keeping fee	VND/day	-	-	1,000	-
Telephone cost	1000 VND/month	200-250	250-300	100-120	200-300

Source: VASI survey, 2005

Problems and proposed assistant for retailers

Like collectors, wholesalers do not meet big problems except risks as battered and crushed vegetable, unstable price and input sources. Those problems do not avoid and determine in advance. In the future, if production scale is extended, new markets appear, especially far markets, wholesalers will play important role in linking between these markets and production areas. Therefore, market information is very important for stakeholders. At that time, it should be concerned about contract. If association and cooperative is powerful enough, it is necessary to unite these institutions with wholesalers who act as a marketing member

Role of government agency in development vegetable

Agency of Plant Protection serves as coordinator of project "Development assistant for community safe vegetable" by provincial people committee investment. Project assisted producers of 15 communes, precincts of 3 districts Me Linh, Vinh Tuong and Vinh Yen town safe vegetable technique of cultivation and care. Objectives of project are popularizing technique of safe vegetable in community and widely bring in daily consumption of people. This project was implemented during the period 2004-2006 with 1.6 billion VND. Total vegetable production area of project is 1000 ha and expected 1500 ha in the end. Vegetable specializing area will occupies 50% of total area, remain area is for rice-rice-vegetable in winter crops.

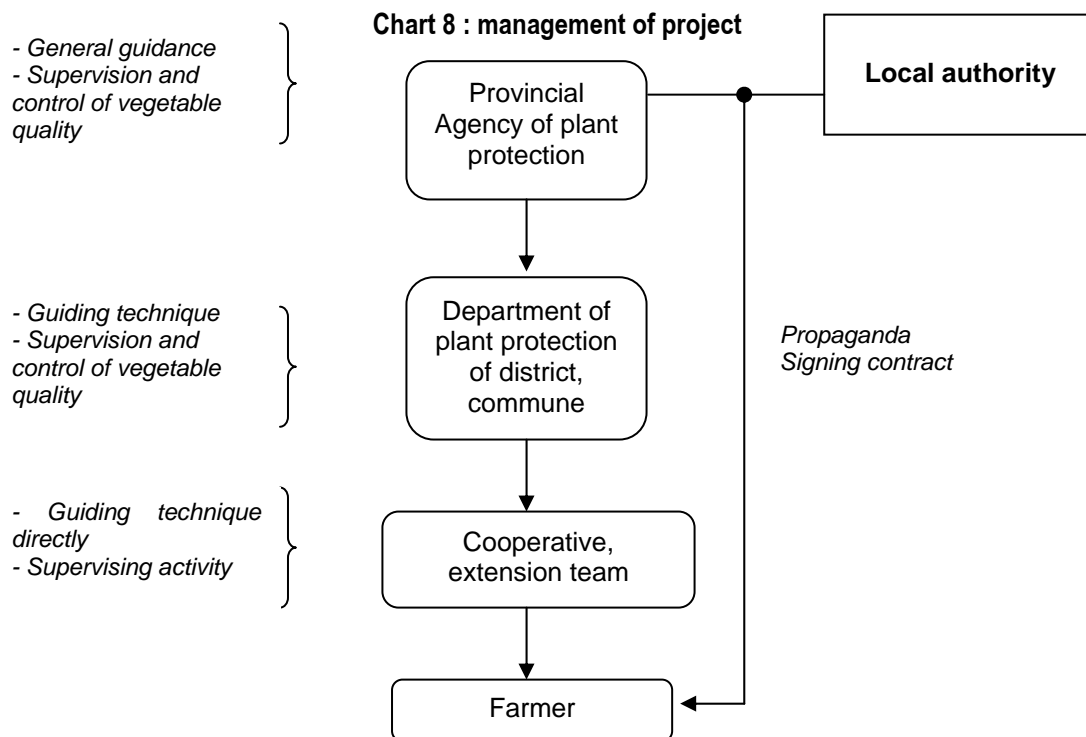
Management of project

Agency of plan protection has 4 members in management board that are responsible for general operation. Continuous level is department of plant protection of district and commune having 5 members which are two technicians, one staff of economic department, one of farmer's association and one head of cooperative. Extension team has one head of cooperative and one technical staff having function of teaching vegetable technique to farmers through training classes.

Agency combines with commune people committee and agricultural cooperative to propagandize the objectives of project to farmers. Households who want to participate in project will have to hand in a petition and sign contract with cooperative and Agency as a first obligatory condition. The clauses of contract regulate detail technical process of vegetable production and quality criteria that are:

- Not allowed to use fresh night-soil to manure
- Not allowed to use pesticide in forbidden list

- Not allowed to spray over 10 kg nitrogenous fertilizer per sao
- Not allowed to crop vegetable before 15 days since manure chemical fertilizer and spray pesticide



The most outstanding point of technical process of vegetable production is the least use of pesticide. For this reason,

Training classes on technical process was hold regularly with 95 spells in 2004 and 91 spells in 2005 for 15 communes and precincts directly conducted by technician of Agency and contract staff. Technicians also monitor the situation of vegetable growth, pestilent insect and other problems at field and directly instruct farmer techniques. The emerged problems will be reported to management board every week.

Quality control

Quality control is a very important stage of production. In fact, most of the farmers do not comply with farming technique strictly due to different reasons. It causes difficulty for management

In reality, quality control was only forced on 50 households of 3 cooperatives Noi Dong (Dai Think commune- Me Linh district), Tich Son (Tich Son commune- Vinh Yen town) and Vinh Son (Vinh Tuong district) with 51 ha. The remain households were managed by the same system but not so seriously. On average, one staff undertakes 20 ha with salary of 100 thousand VND per month. For such large area, the major monitoring method is from analysis of 1-2 vegetable samples a month about pesticide left, heavy metals, harmful microorganism, Nitrate content...If these samples do not meet standard, contract will be stopped. In 2004, project carried out 4 times of inspection with 5-6 samples per time. The result showed that a haft of samples has nitrate content higher than standard while other criteria were agreed. Besides, managers also used quick- checked sticks to inspect quality.

The current quality control system does not meet requirement because of not tight relation between farmers and project.

Product marketing

Today, project is only assisting in technique transfer. Vegetable output markets has not been concerned yet. In the framework, project established 3 safe vegetable shops in Vinh Yen, Phuc Yen town and Huong Canh. This number of shops will be 1-2 for each district. One shop markets average quantity of 2-2.5 quintal per day which is small and accounts for 1-2% of total production. The remain is sold in open markets.

Vegetable in these shops is packaged by nylon bag or nylon string. Products were attached label "Song Phan safe vegetable" and assigned bar code which contains information about kind of vegetable and producer. Project registered above name and bar code of 10 products (including chayote, loopah, cabbage, Dong Du cabbage, kohlrabi, some of spice vegetables at National Office of Intellectual Property and code households (belong to 3 above cooperatives). In the necessary situation, information from bar code will provide producers exactly.

Table 21: comparison between production of safe vegetable and ordinary vegetable on some issues

	Unit	Ordinary vegetable	Safe vegetable
Nitrogenous fertilizer cost	VND/ha	1,000,639.5	Decrease 26%
Pesticide cost	VND/ha	916,140	Decrease 39%
Cost price	VND/ha	11,486,000	Decrease 5%
Productivity	Quintal/ha	28,065.8	Decrease 2%
Profit/ha	VND/ha	12,248,856	Increase 7% (1 mil VND)

Source: Vinh Phuc Agency of Plant Protection

Other agencies such as Department of agricultural and rural development of province and district have role of orientation and making policy.

VII. VALUE STRUCTURE OF VEGETABLE CHAIN

VII.1 Inside province vegetable channels

These are two main chains of inside province which start from Tam Duong and Tich Son to Vinh Yen. Today, the decrease of land has influenced on vegetable production and thus on inside province vegetable channels

- Chain 1: Farmer -> collectors -> retailer -> consumer (*start from Van Hoi*)
- Chain 2: Farmer -> retailer -> consumer (*start from Tich Son*)

Intermediate stakeholders of a specific inside province channels are only collectors and retailers. Tich Son is urban production area and Van Hoi is peri-urban production area. Due to short distance to town, farmers of Tich Son precinct can directly carry vegetable to market, especially rural feature markets. Further production area Van Hoi, collectors have more important role in the chain.

Table 22: value structure of inside province vegetable chain

	Chain 1	Chain 2
Producer		
Selling price	1,970	1,980
Collector		
Buying price	1,970	-
Cost	67	-
Cost price	2,037	-
Selling price	2,219	-

Profit	182	-
Profit/cost	271.64	-
Profit/cost price	8.93	-
Retailer		
Buying price	2,219	1,980
Cost	53	50
Cost price	2,272	2,030
Selling price	2,576	2,515
Profit	304	485
Profit/cost	573.58	970
Profit/cost price	13.38	23.89
Consumer		
Buying price	2,576	2,515

Source: VASI survey, 2005

These are some comments:

- Price is not equal according to areas
- Operating cost is small but profitable percentage is very high
- Profit of retailers of chain 2 is higher than that of chain 1 (485 VND per kg beside 304 VND)
- Profit per unit of retailers is higher than collectors and daily profit depends on selling quantity

VII.2 Outside province vegetable channels

There are three specific channels of outside province

- Channel starts from Tho Tang (Vinh Tuong district) to the north province markets

Channel 1: Farmer -> collector -> local wholesaler -> end-market stakeholder

- Chains start from Me Linh to Ha Noi

Channel 2: Farmer -> collector -> Consumer

Channel 3: Farmer -> collector -> retailer -> Consumer

Table 23: value structure of outside province vegetable channel (start from Tho Tang)

	Channel 1
Farmer	
Selling price	1,900
Collector	
Buying price	1,900
Cost	70
Cost price	1,970
Selling price	2,210
Profit	240
Profit/cost price	12.2
Local wholesaler	
Buying price	2,210
Cost	300
Cost price	2,510
Selling price	2,720
Profit	210
Profit/cost price	8.4
End-market stakeholder	
Buying price	2,720

Source: VASI survey, 2005

In this channel, local wholesalers buy more vegetable from collectors than from farmers. Profit per kg of collectors is higher than that of local wholesalers but total profit is lesser (with 200 kg and 48,000 VND of profit per day of collectors compared to 4 tones and 840,000 VND per day of wholesalers)

Channel 2 and 3 are popular in Me Linh. Collectors can either wholesale or retail. The different price between two ways is about 200 VND per kg. Collectors can gain more profit if they directly sell vegetable to consumer but inversely they have to spend more time

Table 24: value structure of outside province vegetable channel (start from Me Linh)

	Channel 2	Channel 3
Farmer		
Selling price	1,940	1,940
Collector		
Buying price	1,940	1,940
Cost	160	160
Cost price	2,100	2,100
Selling price	2,640	2,440
Profit	540	340
Profit/cost price	30.95	13.93
Retailer		
Buying price	-	2,440
Consumer		
Buying price	2,640	-

Source: VASI survey, 2005

VIII. ADVANTAGE AND DIFFICULTY OF VEGETABLE PRODUCTION AND MARKETING

VIII.1 Advantage

- + Extending and developing vegetable production was stated in the economic orientation of province. Vinh Phuc strived for being a top vegetable production province and exporting 30% of total vegetable yield.
- + Provincial authority has very much interested in developing safe vegetable. A project has been investing till 2007. The targets of project are: teaching technique to producers and heightening awareness, then bringing safe vegetable in community. These targets not only reach the farmers of project but also others outside.
- + Vegetable cultivation has started since years. This brings favorable conditions: i) it is easier for farmer to acquire new techniques of cultivating new variety and ii) markets are quite stable. These advantages have made contribution to consolidation and development of vegetable production.
- + Vinh Phuc has created wide marketing network from North provinces to South ones in which private traders have important role. Producers seem not to concern where they sell output but what price they get. Besides, input supplying service also creates good condition for production
- + Economic effect of vegetable production is fair high and is proved in reality. While many areas have been anxious to found crops structure, vegetable was already a good selection. Therefore, it is more convenient for local authority to change new vegetable crops structure.

VIII.2 Difficulty

- + Vegetable areas are being reduced. This is one of impact of urbanization. The reduction of agricultural land in general and vegetable land in particular has threatened livelihood

of people and the development of economy (jobless origins from land loss). This process seems to be violently due to the development of industry and foreign investment.

- + People have high skillful of vegetable cultivation but it is not enough to build a popular trademark, especially for safe vegetable. People is needed to organize under institutional assistance of government. Project of safe vegetable production was not success because of inadequate quality control system. It is necessary to concern some following issues: assisting technique instead of marketing while producers prefer selling their products to learning technique; selling price of safe vegetable is often lower than that of ordinary vegetable in free market due to worse appearance (consequence of less use of pesticide); consumers have no criteria to distinguish safe vegetable and ordinary vegetable; package and bar- coded management will make cost higher while ordinary vegetable are still accepted by consumers at lower price.
- + Agricultural production and vegetable cultivation depend much on natural condition and are full of risk. Some areas have weak irrigational system. The impact of storm and drought is very clear. Glasshouse is able to reduce the restriction of nature but is not widely applied in production because of high cost.
- + The annual yield of vegetable is very high. Despite this total yield is selling quickly through private traders, it is necessary to build processing factories to heighten add value of vegetable and affect to some extent the market price
- + Providing market information to every stakeholder has not implemented yet. This is difficult because most of people do not familiar with receiving market information through mass media. Production orientation of local authority forcing on producer is not easy because production conforms to free market principle. They only follow orientation if they gain revenue
- + Beside above problems, the fluctuation of input material price and selling price have affected on production. The current series of varieties has not completely met real requirement

IX. CONCLUSION AND PROPOSED ASSISTANCE FOR VEGETABLE CHAIN

IX.1 Conclusion

Vinh Phuc is one of biggest vegetable production province over country with 8,826 ha and 148,798.2 tonnes per year (2004). All the districts can cultivate vegetable but in different scale. Provincial production areas can be classified into 3 groups according to scale of production. The big scale group includes Me Linh and Vinh Tuong; medium scale includes Yen Lac, Lap Thach, Tam Duong, Phuc Yen and Binh Xuyen; small scale includes Tam Dao and Vinh Yen town. The capacity of intensive cultivation is quite different. Vinh Tuong, Vinh Yen, Tam Duong and Me Linh are intensive production areas. Vegetable variety is quite diversified but lack of superior vegetable. Vegetable season is not much different among areas. Production is mainly carried at family scale. Processing factory has not fully established.

Vinh Phuc has some vegetable trade centers locating near production areas with specific characteristics with regard to supplying and marketing chains starting from the North to the Central. Tho Tang commune (Vinh Tuong district) collects outside and inside province sources then transports to North provinces. Me Linh has huge supplying source from inside district and many markets from the North Mountain, include Ha Noi to the Central. Van Hoi (Tam Duong district) has smaller scale compared to two above centers, mainly supplied from inside district and marketed in different provinces by local collectors and outside province wholesalers. Vinh Yen plays role as collecting center of province which attracts vegetable from many areas and distributes to markets of town and of other districts.

Besides, there are a lot of small stations inside district that function as collecting for wholesalers of bigger centers.

Marketing chain system is classified into 3 groups: inside province, outside province and safe vegetable channel systems. Collectors, especially farmers play important role inside province channels, while outside province channels are the role of local and wholesalers. Safe vegetable channel is short with only one intermediate stakeholder. Safe vegetable is produced under assistance of provincial People Committee.

Vegetable production is the selection of many households. Income of vegetable often makes up 50-70% of total cultivation income of surveyed households. Some crops rotation proved the economic effect of vegetable. Vegetable production allows to diversify farming system, increase income and contribute to transfer of agricultural and rural economy.

IX.2 Proposed assistance for vegetable chain.

- + Setting up a effectively system of safe vegetable quality control in the project. This is the key issue that decides if project is successful. This system is necessary to reach each household. However, it seems to be more effectively to heighten awareness of safe vegetable production for all the stakeholders through training course and mass media. Planned vegetable production area will help to monitor quality control more easily.
- + It is necessary to provide technique of vegetable production to not only farmers of project but also general farmers.
- + Financing price of input material in case of disadvantage conditions. It is able to impact on income of households, thus influence production strategy and vegetable yield.
- + Building vegetable processing factory in order to stabilize market, increase value add of products, decrease seasonal impact and create employment. There is not any factory that specializes on processing vegetable now in province. Investment in processing factory has met many difficulties that needed to be resolved.
- + Extending the number of safe vegetable shop and improving its operation. The project of safe vegetable production opened 3 shops and intended to increase the number. Selling price of vegetable in these shops is 20% higher than price of ordinary vegetable. however, the quality is not clear. Consumers have not awarded of interest of safe vegetable because ordinary vegetable rarely causes poisoning. Nevertheless, chemical contents left could harm the health slowly.
- + Selecting suitable varieties to area condition. This will not only make the best of natural condition but also increase economic effect and create specific products of area.
- + Assisting in marketing. This problem always makes producers and local authority worrying. A prospect solution is establish farmer's association in order to strengthen their capacity in production and market.
- + Setting up market information channels to farmers. Farmers usually decide themselves without referring orientation of management. The consequence is that they sometime have to suffer from depreciation of price. A timely and exact market information system will help farmers to make right decisions.

APPENDIX

1. List of surveyed people¹

	Address
Provincial level	
Agency of Plant Protection	Lien Bao precinct- Vinh Yen town
District, commune level	
Vinh Yen	
DARD	Lien Bao precinct- Vinh Yen town
Tich Son agricultural cooperative	Lien Bao precinct- Vinh Yen town
Me Linh	
Economic agency	Phuc Yen town
Noi Dong agricultural cooperative	Dai Thinh commune- Me Linh
Anh Kiên	Wholesaler
Anh Trường	Wholesaler
Chị Xuân (Hải)	Collector
Chị Hạ (Hào)	Collector
Chị Huệ (Sang)	Collector
Anh Năm	Collecting for outside area wholesalers
Anh Được	Collecting for outside area wholesalers
Anh Hiếu	Collecting for outside area wholesalers
Anh Kế (Sáu)	Farmer
Chị Cung (Thành)	Farmer
Anh Thạch	Farmer
Chị Sâm (Năm)	Farmer
Anh Sáu (Phượng)	Farmer
Tho Tang commune (Vinh Tuong)	
Chị Lan	Wholesaler (to Tuyen Quang market)
Chị Phượng (Tuấn)	Wholesaler (to Tuyen Quang market)
Chị Luyện (Bô)	Big scale collector (to Ha Giang market)
Chị Hoa (Thắng)	Big scale collector (to Tuyen Quang market)
Anh Mạnh (Khởi)	Big scale collector (to Yen Bai market)
Chị Lê (Dũng)	Big scale collector (to Tuyen Quang market)
Chị Lia (Phúc)	Small scale collector
Chị Lợi (Lượng)	Small scale collector
Chị Tiến (Hoà)	Small scale collector
Chị Chung (Đại)	Farmer
Chị Lan (Thắng)	Farmer
Chị Lai (Yên)	Farmer
Chị Nhàn (Thịnh)	Farmer
Chị Thứ (Phú)	Farmer
Tam Duong district	
DARD	Tam Duong town
Van Hoi agricultural cooperative	Van Hoi commune, Tam Duong

2. Input services

Vinh Yen

Variety service: there is some people specializing on producing vegetable variety and then supplying to members of cooperative and others. As for cooperative of safe vegetable project, Agency of Plant Protection will provide seed

¹ We did not interview stakeholders of channels in Tam Duong and Vinh Yen because we used the results of INCO project

Fertilizer, pesticide service: some cooperatives undertake this service. Besides, there are a lot of small dealers also providing this service

Me Linh, Tam Duong

Variety service: there is some people specializing on producing vegetable variety and then supplying to farmers

Fertilizer, pesticide service: A lot of small dealers provide this service

3. Seasonal calendar of some kinds of vegetable

Or.	Month Vegetable	1	2	3	4	5	6	7	8	9	10	11	12
		1	Domestic cabbage	xx	x	x	x						xx
2	China cabbage					x	x	x	xx	xx			
3	Domestic carrot	xx	x	x								x	xxx
4	China carrot				x	x	x	x	x	xx	xxx	xx	x
5	Bamboo sprout				x	x	xx	xxx	xx	x	x	x	
6	Sa Pa chayote						x	xx	xxx	xx	x		
7	Tam Dao chayote											xxx	xx
8	VinhYen chayote	xx	xxx	x	x								
9	China taro							x	xx	xx	x	x	
10	Vinh Yen taro	xx	xx	x	x								x
11	Beet								x	x	xx	xxx	xx
12	Indian taro	x	x	x	x								x
13	Yellow bean	x								x	xx	xxx	xx
14	Sauropus androgynus			x	xx	xxx	xx	xx	x	x	x	x	
15	Basella alba, pot-herbs				xx	xxx	xxx	xx	x	x	x	x	
16	Chrysanthemum	xx	x	x					x	x	xx	xxx	xxx
17	Green cabbage	xx	x	x				x	x	xx	xx	xxx	xx
18	Water morning glory	x	x	x	xx	xx	xxx	xx	xx	x	x	x	x
19	Green squash	xx	x						x	xx	xx	xxx	xx
20	Loopah			x	xx	xxx	xx	x					
21	Tomato	xxx	xx	xx	x	xx	xx	xx	x	x	xx	xxx	xxx
22	Potato	xx	x	x	x	x	x	x	x	xx	xx	xxx	xx
23	Small spring onion	x	x	x	x	x	x	x	x	x	x	x	x
24	Onion	x	x	x	x	x	x	x	x	x	x	x	x
25	Spice vegetable	x	x	x	x	x	x	x	x	x	x	x	x
26	Tall shoot of garlic	xx	xx	x	x	x	x	x	x	x	xxx	xxx	x
27	Celery	xx	xx	x	x	x	x	x	x	x	xxx	xxx	x
28	Leek	xx	xx	x	x	x	x	x	x	x	xxx	xx	x
29	Field cabbage	x	x	x	x	x	x	x	xx	xx	xxx	xx	x
30	Shanghai cabbage		x	x	x	x	x	x	xx	xx	xxx	xx	x
31	Violet cabbage	xx	xxx								x	xxx	x
32	Kohlrabi	xxx	xx	x						x	xx	xxx	xx

Source: VASI survey, 2005

Note: x - small volume of vegetable
xx - medium volume of vegetable

xxx - big volume of vegetable

4. Area of some kinds of vegetable

Table 2: Area of some kinds of vegetable in Me Linh (2004)

Vegetable	Spring crop (ha)	Winter crop (ha)	Summer crop (ha)
Water morning glory	73	31	74
All kinds of cabbage	38	166	158
Kohlrabi	110	259	8
Cabbage	85	232	43
Potato	0	13	0
Calabash, squash, loopah	118	32	144
Chili	8	20	6
Onion, garlic	51	364	40
Tomato	130	148	8
Others	74	128	55
Divers melons	61	8	87
Total	748	1401	623

Source: Me Linh statistical office

Table 3: Area, productivity and yield of vegetable in Tam Duong (2004)

	Area (ha)	Productivity (quintal/ha)	Yield (ton)
Total cultivation area	11,027.7		
1- Vegetable	677.7	163.83	1,103
Cucumber	200.7	255.89	5,125
Water morning glory	126.4	11.39	1,408
Cabbage	18.7	162.6	304
Other kind of cabbage	108.1	114.25	1,235
Kohlrabi	20.3	145.8	296
Tomato	24.4	175.41	428
Potato	4	65	26
Onion, garlic	11.5	77.39	89
Calabash, squash, loopah		185.52	1,204
Water melon	3	200	60
Chili	37	56.76	210
2- Other vegetable	58.2	123.37	718

Source: Tam Duong DARD

5. Some specific cases

Tich Son agricultural cooperative

Address: Tich Son precinct- Vinh Yen- Vinh Phuc. Tel: 0211 862003

Noi Dong agricultural cooperative

Address: Dai Thinh commune- Me Linh- Vinh Phuc

Tich Son and Noi Dong are two of three cooperatives of safe vegetable project. Noi Dong has 154.8 ha and 725 household members. Total vegetable area of a year is 153 ha of which winter crop area is 115 ha, spring crop 19.8 ha and summer crop 18 ha. The main crops rotations are vegetable (spring crop) -rice- vegetable (winter crop) and rice (spring crop)- vegetable - vegetable. Two cooperatives cultivate well diversified kinds of vegetable such as kohlrabi, cabbage, cauliflower, tomato, onion, bitter melon, carrot, cucumber, water morning glory, pot-herbs, bean family...The skill of farmers is quite high and gradually improved through training courses directed by the cooperatives combine with project management of province and district. However, superior vegetable has not been cultivated because of high cost and weak demand. The cooperatives mainly serve irrigation, field protection and general technical information. Farmers undertake the other services by themselves. At present, Tich Son has 15.6 ha and 100 households, Noi Dong has 18 ha and 97 households participating in Song Phan safe vegetable production project (total area of project is 100 ha and 530 households). In each cooperative, some households were selected as models of quality control (there are 50 households). The households were coded and their products were managed by bar code. They can find out the origin of any products if necessity. These coded products were sold in 3 safe vegetable shops. The other households did not under similarly managed. Their products were sold in free market. . Thank to head of cooperative is a member of project management, the situation of vegetable production can be caught in time and the contract can be surely performed. With present controlling mechanism, contract can be broke any time. For those reasons, it is necessary to build quality control and tight relation between farmers and project as well as operating mechanism of cooperatives.

Thai Lai agricultural cooperative

Address: Tien Thang commune- Me Linh- Vinh Phuc

Cooperative has 450 households and total area of 119.5 ha. Year vegetable area is around 77.8 ha in which winter vegetable crop 41.8 ha, summer crop 18 ha and spring crop 18 ha. The main kinds of vegetable of winter crop are kohlrabi, cabbage, perfume onion; summer crop are perfume onion and spring crop are cabbage and perfume onion. The strong point vegetable is perfume onion. Cooperative has 18 ha specializing in cabbage with 3 crops per year and crops rotation rice (spring)- rice (summer crop)- winter vegetable. Now, cooperative serves irrigation, field protection and technique information. Farmers have to help themselves the others, even marketing

Le Thi Mang- farmer**Address: Tiec hamlet- Tich Son precinct - Vinh Yen town- Vinh Phuc.**

Family has 5 people in which parent are two main agricultural labors and 3 children. Because of no sidelines, the main source of income is from agriculture. However, total cultivation area is only 4 sao (3 sao for vegetable and 1 sao for rice). Total income of cultivation is about 7 mil a year in which vegetable accounts for 70%. The change of crops rotation from rice -rice- winter crops or rice-rice-vegetable to 3 crops of vegetable and rice- vegetable -vegetable -maize (winter crop) showed the economic effect of vegetable which is the reason for this change. Another reason is that farmer was provided with technique of cultivation. However, with fear of land loss in future, household intends to shift new economic activity that is trade in vegetable to improve income

Nam- collecting for outside area wholesaler**Address: Dai Thinh- Me Linh- Vinh Phuc. Tel: 0211 865874**

His family has 4 people and also 4 labors. Trading vegetable carries year around. Volume and kind of vegetable depend on reason. In winter, the volume of vegetable can amount to 6-7 tones per day (including onion, tomato, carrot, white and green cauliflower, cucumber, sweet cabbage, kohlrabi...) while in summer, the biggest volume is about 2 tones and less kinds of vegetable. The source of vegetable is from neighboring communes such as Noi Dong, Dai Bai, Thuong Le, Ha Noi, Tien Phong...He can either buy vegetable at field or at home. He then resells vegetable to outside area wholesalers who ordered previously. They come from other areas of province or other provinces such as Ha Tay, Quang Ninh, Ha Noi...Order is not made regularly. These collectors and wholesaler exchange information mostly through telephone and have long time and prestigious relationship. His business is advantage due to profuse sources and stable profit.

Hoa- wholesaler**Address: Dai Bai hamlet- Dai Thinh- Me Linh- Vinh Phuc**

He started his business 15 years ago. Today, he employs 5-7 labors working 12 months. The average volume of vegetable is quite big (about 700-800 tones in winter and 400-420 tones in summer). He buys a lot of kinds of vegetable but mostly focuses on kohlrabi, cabbage and cauliflower. The regular sources of vegetable are Dai Thinh, Me Linh, Tien Phong, Van Khe...buying from farmers and collectors (constantly 20-30 farmers and 5-10 collectors). Transaction with farmers is direct and payable on delivery while transaction with collectors is mainly through telephone and payable on delivery or once every 2-3 times. Markets are Ha Noi and some north provinces. He sells to 5-7 wholesalers of end-market. These wholesalers ask about volume, quality, kinds, price, and time through telephone. Payment can be settled via driver and after some times.

The advantages of business are near and stable supplying sources, fairly good quality of products. The restriction is capital. Due to late payment and high volume of goods, he usually needs a big capital.

Mrs Lan- wholesaling to north province markets**Adress: Tho Tang commune- Vinh Tuong- Vinh Phuc. Tel: 0211 820474**

Her family has 4 people. She and her husband operate in non- agricultural section. She has done business for 10 years and her husband has traded wood furniture. She is one of many medium- scale wholesalers in Tho Tang now. She starts a day at 4 o'clock; collect vegetable from farmers or collectors coming from production regions. Activity lasts to 9 o'clock. Next, vegetable is loaded a truck and transported to markets. The kinds of vegetable depend on wholesaler's requirement. Volume of a day is about 2 tones in winter and 50 kg in summer. Therefore, she also trades fruits together with vegetable. Not having her own truck, she and other wholesalers have to rent a truck. Transport cost will be pay by buyers of end-markets. Payment and requirement are transmitted through truck owners.

Like other traders, her business risks may be big loss of vegetable, non-payment and market lost control. Previously, capital lost was problem but is lesser today.