

THE VALUE CHAIN OF POMELOS OF VINH LONG PROVINCE.

I. GENERAL INTRODUCTION

Vĩnh Long pomelos with tree species like Nam Roi, Da xanh ... that have been long famous as specialty fruits not only in the province and the Mekong Delta but also over Vietnam.

Vĩnh Long pomelos are delicious and easy to plant; with support from the regional authorities, and with special participation from scientists (Cần Thơ University, The Institute of Southern Fruit Trees Studies) and from private enterprises as well, the position of pomelos of Vĩnh Long has been firmly established in markets.

However, the surface and productivity of specialty pomelos are now still small, even in Bình Minh district, the largest concentration area growing Nam Roi pomelos of Vĩnh Long, there's about 2,087 ha and only over half of this area produces. Therefore its product supply to market is still limited, not be able to meet the demand of the country and for export.

In recent years, the trademark of Nam Roi pomelos of Hoàng Gia Company - Vĩnh Long has been known to a number of countries even its export quantity is still not big, this is an encourageable result. In order to upgrade the quality and productivity of the pomelos of Vĩnh Long, the province has drawn its attention to a project of establishing and developing a model of operational system from selecting species, cultivation, cropping to consumption.

With approval from the Ministry of Commerce, the Organization GTZ and Metro Cash & Carry Việt Nam, Axis Research, a market study & research company had conducted a project studying the value chain for the pomelos of Vĩnh Long from 12/2005-2/2006. This is an important project that not only helps the province of Vĩnh Long to have a general systematic look at the products and consuming markets, but also helps international organizations to have suitable supporting plans for the pomelos of Vĩnh Long to develop in the future, based on the analysis of this value chain, including its structure, relationship, reciprocal influence, weak points to be changed, supporting direction and necessary approaches.

The report composes of 3 main sections, 1- Analysis of economic and agricultural situation of Vĩnh Long in the development and cultivation of pomelo fruits, 2- Analysis of the value chain of pomelos of Vĩnh Long, 3- Conclusion and proposal for support for the pomelos of Vĩnh Long.

II. GENERAL INFORMATION ABOUT THE PROVINCE & POMELOS OF VĨNH LONG

1. The province of Vĩnh Long

The province of Vĩnh Long locates in the center of the Mekong Delta, 135km away from HCMC. At north and northeast are the provinces of Tiền Giang and Bến Tre. At northwest is the province of Đồng Tháp. Its southeast links with Trà Vinh and at southwest is Cần Thơ.

MAP OF VINH LONG PROVINCE



Its natural land surface is 147,519 ha, total agricultural surface is 117.061 ha, of which 75.929 ha is for yearly cultivation and 39.534 ha for year to year cultivation. (Annual statistics, Vĩnh Long 2004)

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Vĩnh Long is a delta province with comparatively even terrain (average high from 0,75 - 1m above sealevel). Its location is in tropical zone with monsoon, it has two seasons: rainy and dry seasons. Annual rain quantity is 1300 – 1500 mm that occurs from April to November, its peak time is August-October, average temperature is 27°C – 28°C, atmospheric moisture is 81-82%, with sunny hours from 2200 – 2700 hrs/year. (source 3, appdx 2)

Each year, a big quantity of alluvium from RiversTiền and Hậu builds up certain fertile soil that's good for trees and plants. The alluvial soil covers 30,29% the natural land, mostly at the districts of Trà Ôn, Vũng Liêm, Bình Minh and a part of the districts of Long Hồ and Tam Bình. This is a land zone favourable for plantation of fruit trees of high economic value including pomeelos. (source 3, appdx 2)

According to the statistics report of Vĩnh Long 2004, its population was 1,044,898 persons with density of 671 persons/ km². Provincial population raise in 2004 was rather high - 11.26%. in provincial territory live three main races, most are Kinh (about 97%). Khmer cover nearly 2% the population of the province, the rest are Chinese and some of other ethnic minorities.

Although there had been some difficulties, during the years 2004 – 2005 Vinh Long economic scope and growth rose significantly. Annual income per capita in 2005 attained 7.63 million dong/year (equal to 492 USD); GDP growth of 8.6%/ year. (Source 6, appdx 2)

Table 1: Proportion of various economic branches in Vĩnh Long & GDP from 2003-2005

	2003	2004	2005	Growth speed of GDP 2005

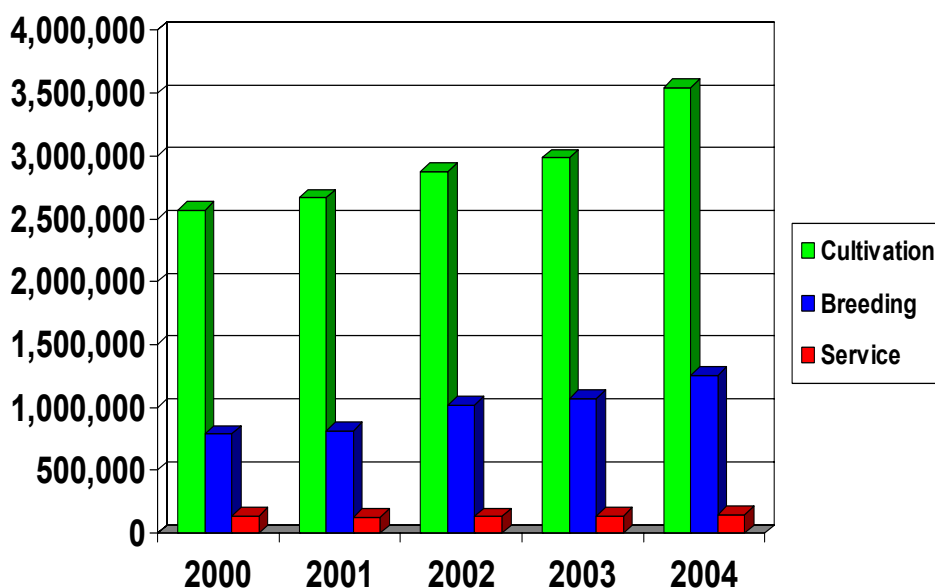
Agro-Forestry-Fishery products (%)	54.84	54.76	53.38	5.52
Construction Industry (%)	14.00	14.62	15.49	23.09
Services (%)	31.16	30.62	31.13	12.35

(Source: Annual statistics report of Vĩnh Long 2004 & Source 6, appdx 2)

Proportion of agriculture is biggest, about 50% of provincial economy. However, if compared to GDP speed growth, in 2005, the provincial agriculture has lower growth than those of construction industry and services (table 1).

The agriculture of Vĩnh Long in recent years had consistent growth, 3 consecutive years attained an average of 5.34% to 6.74%/years, abruptly higher than previous years. In 2004, the province of Vĩnh Long had nearly 33.400 ha of agricultural land that attained production value of 50 million/ha and over, equal 29% the provincial agricultural land. Its agricultural production value raised significantly, specially cultivation, in 2003-2004 attained a growth of about 17% (see chart 1)

Chart 1: Value of agricultural production of Vĩnh Long in 2000 - 2004



(Source: Annual statistics of Vĩnh Long 2004)

2. About pomelos of Vĩnh Long

2.1 Species & characteristics of Vĩnh Long pomelos

Pomelo trees that have scientific name of *Citrus maxima* of Citrus group in rutaceace family, that have been long planted over the country from the North to the South of Vietnam with various species. (source 18, 2)

Vĩnh Long is a region famous for its delicious pomelos like Nam Roi, Da xanh (red inside), Lông pomelo, Hương Đồng and Thanh Trà, (See pictures 1, 2, 3, 4 ,5, appdx 3). Of them Năm

Roi pomelo has been long famous in the Mekong Delta and in the country, it's the first fruit of Việt Nam that has its trademark registered through the vegetable and fruit processing export company Hoàng Gia, in the province of Vĩnh Long. The green skin (Da xanh) pomelo (with red inside) has been favoured for its high economic value, now planting in the province.

Herebelow are some characteristics of two pomelo species being planted mostly in the province of Vĩnh Long:

Table 2: Characteristics comparison of Năm roi & Da xanh. pomelos

	Pomelo Năm Roi	Pomelo Da xanh
Origins	With origin from Long Xuyên- Cần Thơ being planted in Bình Minh, Vĩnh Long. Now these pomelos are being planted in the provinces of Bến Tre, Tiền Giang, Cần Thơ and Vĩnh Long	With origin from Bến Tre, being planted in the village of Mỹ Thạch An, chieftown Bến Tre and over the provinces of Bến Tre, Tiền Giang, Vĩnh Long...
Characteristics (see pictures 1, 2, appdx 3)	<p>Its fruit looks like a nice pear shape</p> <p>Average weight: 0,9 - 1,45 kg/fruit</p> <p>When ripe its skin looks green yellow to bright yellow, easy to pill and is thick about (15-18 mm)</p> <p>Fleshy pulp's light yellow, closely wrapped, easy to separate from segment.</p> <p>Juicy rich with sweetly sour (Brix degree: 9-11%)</p> <p>Sweet smelling</p> <p>Some to no seeds (0-10 seeds/ fruit), small seeds</p> <p>Flesh ratio >50%.</p>	<p>Globular shape</p> <p>Weight : 1.500 g/ fruit</p> <p>Green to yellow green skin when ripe, easy to peel.</p> <p>Fleshy pulp looks rosy red, closely wrapped, and easy to separate from segment.</p> <p>Juicy rich, sweet flavour, not sour (brix 9,5-12 %)</p> <p>Sweet smelling</p> <p>Many seeds (10-30 seeds/ fruit, big seeds)</p> <p>Flesh ratio over 55%</p>

So, we can see the difference between two pomelos from shape to colour and taste. These two pomelos have been now favoured and wanted in markets.

2.2 Pomelo growing process.

Polemo trees are easy to plant due to less care effort, easy to prevent deseases (rosy fungus, insects) and require not many equipment, the growing process is simple. (see pictures 6 to 11 regarding pomelo cultivation and care, appdx 3). After selection of species and trimming, cultivation shall be made at the beginning of rainy season to save watering works or at the end of rainy season. (source 18, appdx 2)

Pomelo growing process consists of follwing steps:

- Prepare garden (soil, tree fences, holes, distance between trees)
- Select tree species, trimming
- planting
- Watering and fertilizing
- Treat blossoming
- Securing fruits

Spray insecticide when:

- Sprouting, shooting
- Deseases
- changing-seasons

- trim branches
- Make branch shade
- cropping

2.3 Harvest

The life of a pomelo tree is about 10 – 20 years, in good soil trees could live longer. Trees that have been planted for 3 years could give fruits around the year.

According to farmers, main pomelos harvest is in August and September and inverse harvest is in February and April. In addition, there's also Tet harvest (20 -25 Tết – twelfth month of lunar year), pomelos shall be maintained on trees waiting for high prices (source 18, appdx 2).

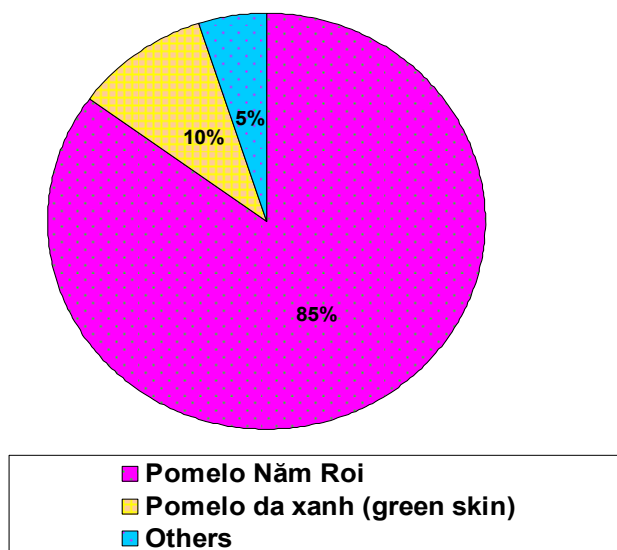
2.4 Area – Productivity – Output

2.4.1 Area

The area for planting fruit trees of the province has increased in recent years, in 2001 the province had 31,800 ha and at the end of 2004 it had 35.670 ha. In 2005, the province of Vĩnh Long had 42,752 ha of fruit trees garden, 600 ha higher than in 2004, the area that produced was 35,248 ha, and covered 82.43 % on area for long year trees (Source 10, appdx 2).

Average of Pomelo planting area is from 0,5 – 2 ha/1 farmer. Total pomelo area of the province composes of 5,332.2 ha of grouping cultivation and some parts of scattering cultivation. Of which, Pomelo Năm Roi (from river Hậu) controls about 85% ; Pomelo Da xanh (from river Tiền) controls about 10% ; Other pomelos (Thanh Trà, bưởi Lông from river Tiền) controls about 5%. (Source 8, appdx 2)

Chart 2 : Ratio of pomelo species now in Vĩnh Long.



Particularly the area of Năm Roi has been developed strongly, from the district of Bình Minh, Pomelos Năm Roi have expanded to the districts of Tam Bình, Vũng Liêm, Long Hồ, Trà Ôn, to form certain specializing cultivation zones of pomelos Năm Roi.

The growth of pomelo planting area attains an average of 24.75%/year (Source 11, appdx 2). According to the People’s Committee of Vĩnh Long until 2010 the area for pomelos Nam Roi shall be 8.000 ha mostly at the districts of Bình Minh, Tam Bình and it could be enlarged to the district of Trà Ôn including the villages of Tân Mỹ, Thiện Mỹ, Tích Thiện. (Source 9, appdx 2)

Chart 3:

Grouping pomelo cultivation area in 2004

Plan-Pomelo cultivation area in VL, 2005

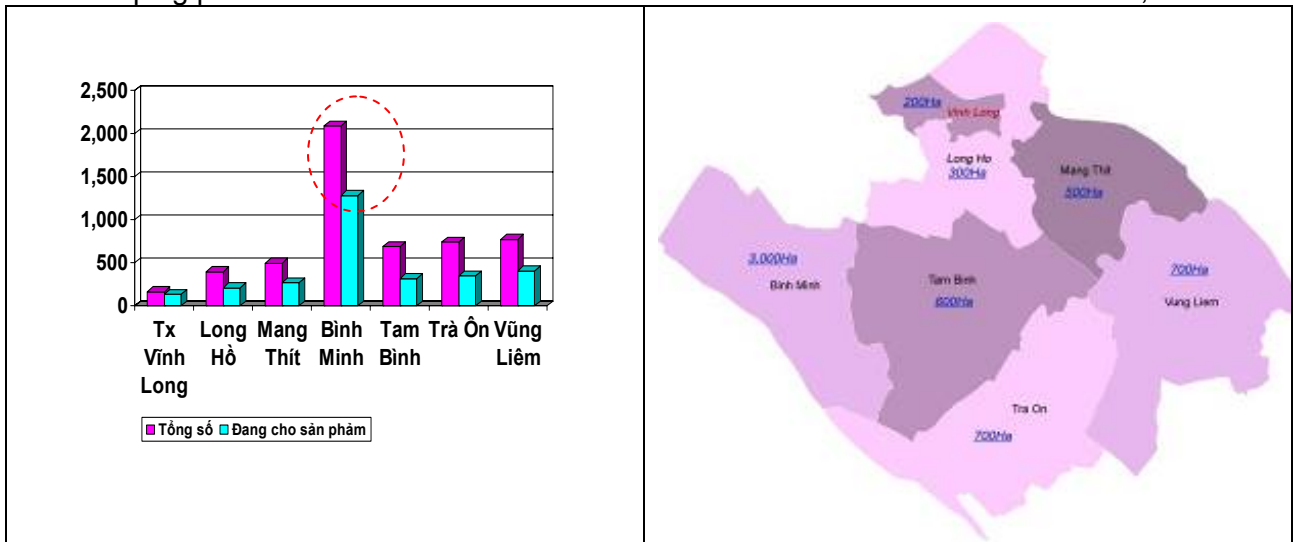


Chart 3 shows pomelos area of Bình Minh village controlling nearly 50% the total grouping pomelos cultivation of the province, a pomelos village that has large scope and most grouping area. None of other villages has yet attained 1,000 ha grouping cultivation. Planted scattering area is rather high but not yet statisticed exactly due to scattering characteristic. This could explain the reason why the quality of fruits are not the same even they all come from the same origin in the province of Vĩnh Long, it’s because most produces have now been planted at different places with no synchronous methods.

2.4.2 Productivity

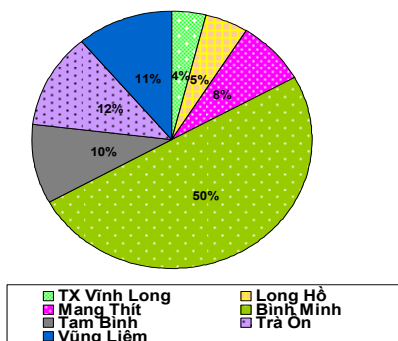
The productivity of pomelos depends mostly on either grouping cultivation or scattering cultivation. For grouping cultivation area, the productivity is rather high, about 20-30 tons/ha, the number of households attaining over 15 tons/ha cover 75%, highest could reach 80 tons/ha (source: group interview). For scattering cultivation, average productivity is lower, about 10,028 tons/ha. (Source 8, appdx 2). This is also the reason the province is trying to surround more area for grouping cultivation in order to increase productivity and quality for pomelos of Vĩnh Long.

2.4.3 Output

Accordint the the Department of Agriculture and Rural Development of Vĩnh Long, in 2005, the output of fruits of all kinds in Vĩnh Long attained 380.000 tons, raised 8.5 % compared to 2004, specialty pomelos of Vĩnh Long attained 54,000 tons, covered 14 % the total output of fruits of the province.

Compared to total output of pomelos of 2005 (48,000 tons (see chart 5), the real output of 2005 was 12.5% higher, as for pomelos Năm Roi, the speed growth of output was 46.55%/ year (source 11, appdx 2)

Chart 4: Marketshare of Vĩnh Long pomelos output in the planning of 2005.



2.5. Export & Export Value.

After the vegetable and fruit processing export company Hoàng Gia officially opened its webpage www.5roi.com, in 2003 about 10 thousand pomelos had been exported to American markets.* Until now, this company leads the province in exporting pomelos, not only to America but also to Europe markets (France, Germany), and Asia (Hồng Kông, Singapore). (Source 17, appdx 2).

In 2004,2005, the pomelo export quantity of company Hoàng Gia attained about 2.000 tons/year (about 4% pomelo output of the province). Now Hoàng Gia could guarantee consumption for about 240 ha (equal 80%) of area planting pomelos in the district of Bình Minh. (Source 14, appdx). From 2004, this company has invested in a production chain of canned pomelo juice from Năm Roi with output of 4,5 million products/ year. These canned pomelo juice products have been mainly exported to Germany, Spain and France (Source 17, appdx 2)

Beside main export channel, the pomelos of Vĩnh Long have also been exported through irregular channels to China, Campuchia with much lesser quantity (about 1 - 2%). (Source 15, appdx...)

2.5 Local consumption

Although 95% of pomelos of Vĩnh Long have been locally consumed (they have been sold in supermarkets in HCMC, Hà Nội and dealers in the provinces of Mekong Delta, Nha Trang, Bà Rịa VũngTàu, Đà Nẵng), the present output of specialty pomelos of the province has not met the demand for consumption in local market. Therefore, the Vegetable and fruit processing export company Hoàng gia has planned to develop nationwide consumption network in 2006. (Source 16, appdx 2).

2.6 Quality & Certification

With results attained in the production and export of pomelos of Vĩnh Long, specially the specialty pomelos Năm Roi, the province is concerning the establishment of quality standard for pomelos.**

*According to documents from People's Committee of Vĩnh Long marketprice of segmental fruits is about 250 - 300 USD/ tons.

**See appdx 4: Some standards for pomelo species announced.

Recently, the People's Committee of Vĩnh Long has ordered the Department of Agriculture and Rural Development to establish documental source and origin of pomelos Binh Minh - Vĩnh Long in an attempt to build up quality standard system, production process and its special characteristics attached with product source of pomelos Năm Roi Binh Minh - Vĩnh Long. Consequently, regional agricultural branches shall cooperate with the Institute of Southern fruit trees studies to set up product quality standard for pomelos Năm Roi. Gardeners Association shall be granted the entities to register their products and the Southern branch of Industry ownership company shall do consulting services.

However, the execution of this is not simple because the perception of farmers are still weak as the standard announcement has been made but the producers still don't follow the technical standard that they have registered. * So, the provincial People's Committee has vested the responsibility with the People's Committees of districts and the Department of Agriculture & Rural Development of the district of Binh Minh to coordinate for investigation of production situation and for solicitation of necessary procedure to register quality standard and also upgrading perception of people in carrying out necessary technical steps. (Source 13, appdx...). The province also wants to study and set up quality system for fruits according to the standard of ISO 9001, and to perfect the system from tree species steps, cultivation techniques to cropping, preservation and consumption.

2.7 Trademark, label.

2.8.1 Trademark

Now, Năm Roi has become a famous pomelo trademark in and out of the country and has been evaluated by scientists a delicious pomelo of Việt Nam and of the world as well. (Only stands second to Israel's) (Source 26, appdx 2)

Export company Hoàng Gia is a particular unit that has successfully established the trademark of Năm Roi Hoàng Gia with its registration of exclusive trademark Năm Roi Hoàng Gia and its web www.5roi.com, that have advertised publicly this fruit over the world. However, the announcement of this Năm Roi is still simply restricted. When interviewed, pomelos farmers at the village of Mỹ Hòa, district Binh Minh – the famous district for pomelos Năm Roi of the province of Vĩnh Long – disclosed that they really want to get official registration for Năm Roi Mỹ Hòa/Binh Minh for their cooperative in the village, but they encounter with difficulties in procedural works and fees as well in doing so. (source FGD). Similar to them, other farmers from other villages also want to do the same for Năm Roi Tam Bình or King orange (Cam Sành) Tam Bình, Trà Ôn.. etc., but they have the same problem, they don't know well legal procedure. **They would like to have some organizations to help them not only to build a trademark, but also to announce and convey this business trademark and make it most successful in market.**

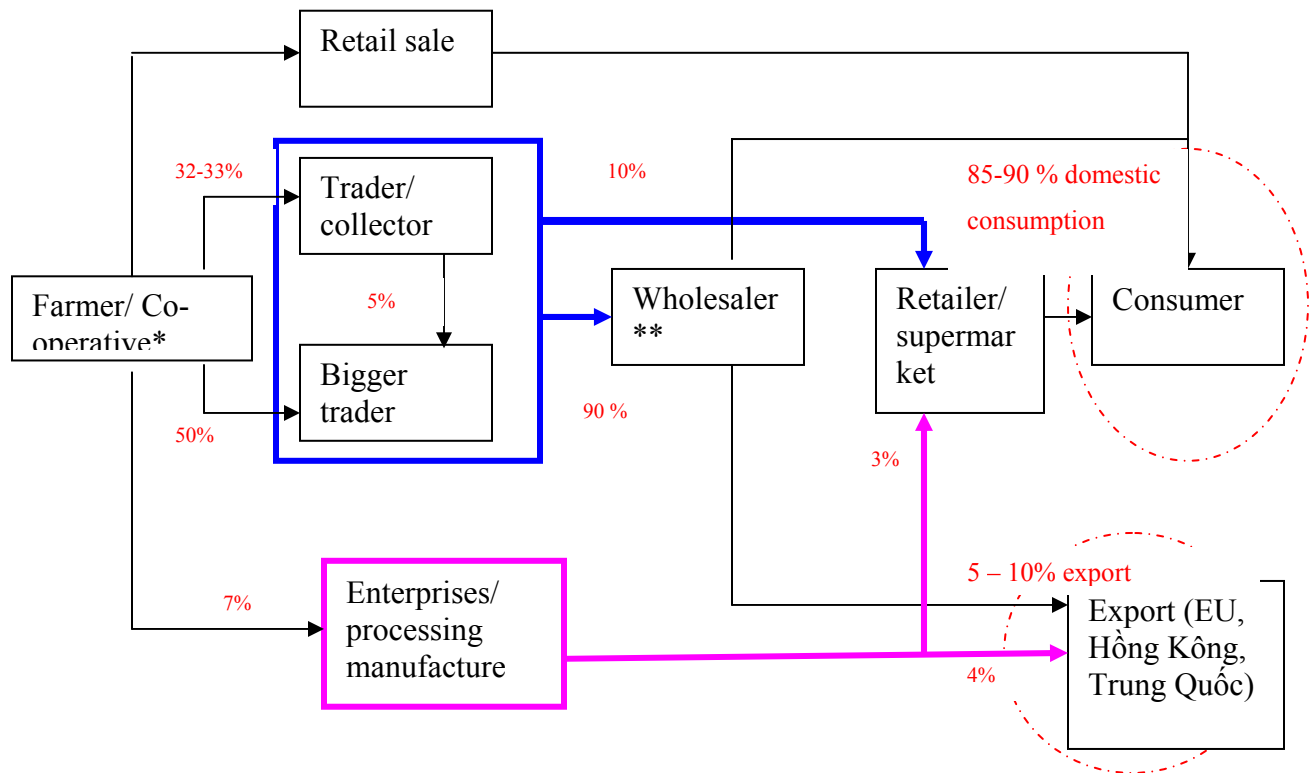
2.8.2 Label

All export products of company Hoàng Gia have been until now all labeled with trademark 'Năm Roi Hoàng Gia'. But none (or very few) of products for local consumption have this label. This is a general situation of pomelo products of Vĩnh Long and all pomelos being sold domestically. This means that consumers perceive the products from their outside**. They don't know the exact origin of the products and that causes loss to farmers in pomelo grouping cultivation area and their quality products as in Binh Minh, Vĩnh Long.

* *Sometimes due to very simple reasons that they have to go to a gathering, as a funeral, anniversary, wedding of neighbors and forget to spray insecticide on time... (Source: group seminar)*

***they mainly distinguish them from shapes (round, long, pear shape...), colours (yellow, green..)and volume (size/ kg) (source: group seminar)*

III. ANALYSIS OF VALUE CHAIN OF POMELOS VĨNH LONG.



(Source 6, appdx 2 & farmers seminars)

General characteristics:

The value chain of pomelos Vĩnh Long composes of 3 channels, the most important is the middle one (see chart 1):

Farmers → Traders → Wholesalers → Retailers → Consumers

This is the main channel that controls 80% quantity consumed of pomelos in Vĩnh Long. Beside this channel, the two remaining channels consume much less quantity, to include:

Farmers → Enterprises → Dealers, supermarkets or export (controls 7%)

And, Farmers → Consumers (10%)

In Vĩnh Long, and other provinces as well, traders play a very important role in cropping stage, they decide the prices for pomelos and do the collection, sell to wholesalers for distribution to other links of the chain.

But compared to grapes of Ninh Thuận, or Green Dragons of Bình Thuận, Mangos of Đồng Tháp etc, farmers of pomelos of Vĩnh Long are in a 'better position' to make decision on time and price to sell, because they could keep fruits on trees, or they can do the harvesting because it's easy to preserve fruits without influence to loss or prices.

* Farmer also sell retail to raitailer but this output is not considerable. Therefore we didn't present this pouput in this value chain.

. ** Due to wholesaler's output consist of big and smaller wholesaler's, we decide to present this result later (in the wholesaler section).

This is the most favorable point for farmers who could pay their attention to the phase before cropping, in order to increase output and keep good quality for products, and don't have to worry much about post cropping phase. .

In the province, there are some enterprises that have signed agreement to guarantee consumption of products right at the beginning of season and to purchase products with standard set forth by enterprises. But, this business through enterprises only controls 7% of output and has not been welcomed by farmers because they could not sell most of their lower quality products (a rather big quantity due to scattering cultivation and quality not the same.).

The model of production cooperatives have been proceeded rather well that have partially helped farmers in production and consumption. But as the people of Vinh Long and other provinces in the South are accustomed to their natural life style and don't feel obliged to conditions and provisions set forth, such as to maintain stable quality for pomelos by following strict cultivation techniques and proper fertilizing. That's the reason why lots of farmers are still standing outside cooperatives.

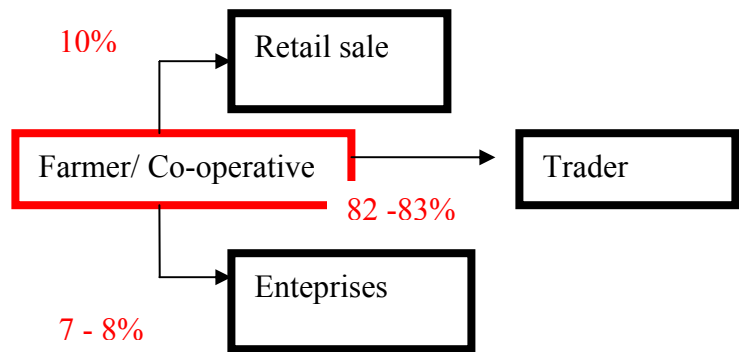
Below is detail analysis of main stages of the value chain of pomelos of Vinh Long.

1. FARMERS

1.1 General characteristics.

Chart 2: Farmers and direct relationship.

The majority of farmers planting pomelos in Vinh Long are working on personal and scattering basis with household economic scope. Each household owns an average of 0.5- 2 ha. In the village of Mỹ Hoà – the vicinity of specialty pomelos Năm roi, there are 3200 households with 2/3 of them that have switched 75% of their land to growing Năm Roi only. (Source 19, appdx 2)



1.2. Cropping

Pomelos are usually harvested in fresh weather time (7 – 8 hours in the morning and not at bright sun that could make oil bulbs easy to crack), farmers avoid harvesting fruits after a rain or under fog, because many fruits shall then get wet and rotten when in storage.

Now harvesting pomelos are being done manually. They use scissors to cut stems and fruits (no stems less prices). Then clean them and put in baskets for handling (see harvesting process at pictures 12, 13, 14, appdx 3)

Near harvest time, traders make deal with farmers to buy the whole garden. This is a deal pomelos farmers most like because they don't have to get involved in cropping preserving works, and all kinds of pomelos could sold at once (even low quality ones). Beside, method of securing fruits on trees is very important, fruits could be kept on trees for another period of time from 15 – 30 days waiting for higher prices (source 18, appdx 2)*

*Pomelos Năm Roi when ripe could be hung on trees longer, good for harvesting and selling at one time, and favorable for gardens technical treatment for coming season (source: farmers interview)

However, thanks to this advantage of pomelos that traders want to keep fruits on trees for a rather longer time waiting for best price. This is one of main causes of disputes between farmers and traders because maintaining fruits too long on trees may prevent trees blossoming for the coming season and consequently reduce trees life. (source: farmers groups seminars).

So, if they sell to traders they don't have to do the harvesting. Otherwise, the process of post cropping from farmers shall be very simple as below:

Chart 3: Process of pomelos harvesting

1. Cut → 2. Put in bamboo basket → 3. Keep in fresh place → 4. Classification → 5. Clean → 6. Packing → 7. Hauling to market for sale.

Usually steps 2, 5, 6 left over and the process becomes simpler. Hauling to market also very simple, depending on what means of transportation they have, hauling cart, bicycle (see picture 21, appdx 3)

1.3. Methods of transaction and payment.

1.3.1 Method of business transaction:

Now, farmers sell their pomelos in three ways:

Method 1: Farmers sell at kg or at quantity of ten (or dozen = 14 fruits), most of them are lower quality (category 3). This way covers about 10% of output. This way is rather popular, specially in reverse season or at Tét season.

=> With this way pomelos farmers can sell at competitive prices in market but they shall meet with difficulties to consume remaining fruits with lower quality, therefore the second method prevails.

Method 2: Bulk sale, sale at a thousand (cover about 80 – 82% output). Before fruits ripe or even when trees still blossoming, farmers would have already agreed to sell the products to traders. At times market is in need of products, this method shall be most favoured by traders. Sale at a thousand (pay on fruits count), this is also a form of wholesale like bulk sale.

At these two ways traders pay in advance. (pay a deposit when bulk sale) or pay at once (when sale at thousands). In wholesale, pomelos shall be classified as follow:

Table 3: Classification of pomelos per wholesale price

Classification	Average sale price at garden*	% on total output
Category 1: 1.4 – 2 kg	3,000 VND/1kg	About 95%
Category 2: >= 700g – 1.4 kg	2,000 VND/1kg	
Category 3 (Lower quality, small fruits, bad skin or scratched etc.)	700-1,000 VND/1kg	About 5 %

*When selling at a bulk or thousand, farmers don't classify but sell all to traders with the same price. This classification applicable when sale at Kg.

In general, the business relationship of farmers and traders is comparatively good at other regions. It's simple because as mentioned above, offer is not enough for high demand, so traders must do their business in a competitive market. Most traders go to farmers' to buy products.

According to farmers in a group discussion, traders here are rather creditable, they rarely cancel agreement, always pay at once, do the cropping and hauling by themselves. However, sometimes traders delay the contracts, or want to do early cropping, or keep fruits on trees longer, that make pomelos quality not good as required, prices cheaper. When pomelos price is cheap, farmers must keep fruits on trees waiting for higher prices. Farmers then shall be kept busy with additional care works.

Method 3: Farmers sell to private enterprises.

When they sell to enterprises farmers have to sign contracts with them and obey their strict conditions (like enterprises Hoàng Gia, Thế Vinh, Thế Nghiệp). These companies shall coordinate with the Southern Fruit Tree Study Institute and the Department of Agriculture and Rural Development of Vĩnh Long to select tree species, train farmers the methods of planting, caring, cropping and preserving pomelos Năm Roi according to technical standard. Accordingly, enterprises shall regularly do the controls from caring stage. At harvest time, a sample test of fruits must be conducted before proceeding the cropping. (Source 16, appdx 2)

It's a matter of fact that in Vĩnh Long the majority of farmers don't want to sell pomelos to enterprises because their conditions are much more severe than those of traders, although enterprises pay a little higher price. It's because enterprises require products classification for sizes and shapes and quality that the bad quality products shall be rejected and farmers have to find way for consumption. In addition, when they sell to traders, farmers don't have to do the cropping and handling, while to enterprises farmers have to pay for fees of loading and handling to enterprises => As farmers don't get more benefits when selling products to enterprises, so farmers prefer traders for safety matter and less worries. They don't think of a'long planning' due to poor perception => this is an obstacle for development of a close production model and what acts upon their perception is a matter of importance

1.3.2 Payment

If sale to be made at forms of tens, bulk, thousands, farmers shall get their money at once. In bulk sale, farmers could also get an advance payment as required. This advance payment sometimes amounts to 30% as agreed upon by both parties.

In bulk sale, very few traders do the whole payment in one time, but in 2, 3 times as an overlapping way. .

Enterprises apply the method of product consumption guarantee and act their influence on from cultivation stage, so they pay a certain amount as production fees in advance to farmers and when they receive the products they shall pay the balance.

1.4 Contracts.

Contract with traders:

Just like business in other provinces, the pomelos in Vĩnh Long have now been dealing verbally (about 95%). Writing contract only 5%.

Table 4: Different characteristics of these two kinds of contract:

Written contract	Verbal agreement
<ul style="list-style-type: none"> - Applicable when consumption guarantee around the year or when market's short of products. - This form covers only 5 % - Content of contract is simple: it shall be hand written by buyers, no formal model, including a guarantee of quantity, price, deposit and time for payment. 	<ul style="list-style-type: none"> - Buy at the tens, thousands, categories. - covers about 95% - depending on confidence and relationship.

Particularly, contracts with enterprises are mostly in writing, dictating standard and quality of products as mentioned above, including products deliveries and time of delivery (Source 16, appdx 2)

1.5 Loss

Pomelos are the kind of fruits that suffer minimum loss due to their thick skin, less damaged than other fruits when handling.

When they do the consumption by themselves, farmers suffer a very small loss, less than 1%, mainly because of handling.

When they sell to traders, farmers don't have to suffer a loss, because traders take care of everything after cropping stage.

When they sell to enterprises who shall have their workers to do the cropping then the loss is not much <1% (mainly because they don't do the cropping correctly, they are awkwardly cutting or hurting fruits or leave out those fruits of lower quality). If farmers do the cropping themselves and do the handling to enterprises, they have to suffer a loss mainly from hauling and loading (about 1-2%). In both cases farmers all get a loss.

1.6 Fees & incomes.

At the village of Mĩ Hoà, each year with 3 harvests of pomelos farmers could get over 137 million đồng/ ha, minus 10% of production cost, farmers could still have income of over 24 million đồng/ha. (Source 21, appdx 2). So we can say that **pomelos are the fruits that require low production fees, low labor costs and give high income.** However, prices of pomelos depend on quality of products that in turn depend on care process (soil, water, insecticide spray etc.) so not all farmers shall receive the same high income. it's depending on perception, disciplinary obedience and harkwork that the farmers of Vĩnh Long could become rich from pomelos, their income shall be higher than when working on paddyfield or cultivation of other fruits in the province.

1.7 Difficulties & the ways to overcome.

Although the pomelos of Vĩnh Long have already had geographical favours from rivers and lands, good policies from the province that encourage investment in the cultivation of pomelos at large area, and also supports from study institutes (of the south, foreign organisations), the university of Cần Thơ, farmers of pomelos still encounter with some difficulties that could be overcome, as mentioned below::

	Main difficulties	Ways to overcome
Objective	<p><u>1. Tree species</u></p> <ul style="list-style-type: none"> - Prices of good tree species at Sadec center are higher than in markets about 30% (source: farmers groups discussion) - Good species have not been announced publicly, farmers have to buy at random, and these species being planted not of the same kind, some species from poor raising outfit. - Some tree species still have diseases that could not be treated like rose fungus, insects. ... 	<ul style="list-style-type: none"> - Agencies that supply tree species, specially the Institute of Sourthern fruit Trees should <u>multiply tree species and reduce cost prices.</u> - The province of Vĩnh Long should have policy <u>to assist with prices for certain grouping cultivation areas,</u> and encourage model of cooperative. - Effort should be exercised in <u>investigation, administration, evaluation and collection of better tree species.</u> - The Department of Agriculture coordinate with the University of Cần Thơ, the Institute of Southern Fruit Tree, ...to encourage farmers to apply <u>measures for diseases prevention.</u> And study possible ways to fight rose fungus, insects etc.. ...
	<p><u>2. Cultivation area</u></p> <ul style="list-style-type: none"> - the province has not yet do the planning for certain area for trees cultivation, specially tree species free of diseases. Area for specialized cultivation is still small, production therefore depends on household scope. - Now in the district of Binh Minh there have been claims of certain industrial project to be developed here so that many pomelos trees have been cut down. (Source 26, appdx 2) 	<ul style="list-style-type: none"> - Continue to develop <u>model for cooperative production</u> instead of household scope. - Enlarging, <u>planning areas for grouping cultivation</u> for pomelos as in Binh Minh now, study what land vicinity that suits for which type of pomelo species. - The regional authorities should evaluate the advantage and <u>restrict the development of industrial projects</u> at the areas planting pomelos.
	<p><u>3.others</u></p> <ul style="list-style-type: none"> - The capacity for transfer of advanced technology of Plants protection office and farming encouragement Center ... is still weak. Supervising cadres don't have practical experience. (Source: farmers group discussion). - Lack of garden model for reference. 	<ul style="list-style-type: none"> - Cadres of the ministerial branches should be trained professionally before assigned to do technical supervision, instead of new graduates without practical experience that farmers shall not admire. - The Center of farming Encouragement and the Office of Plants protection should build some sample models for demonstration, so that farmers could learn and see the benefits of scientific process of cultivation. -Organise farmers clubs for exchanging pomelo planting experiences. - Encourage and support farmers to promote modernizing watering and caring application.

Subjective	<p><u>Habit</u></p> <ul style="list-style-type: none"> - The habit of planting various fruit trees (different fruits with segments) makes some pomelos areas to be interbreded, quality not guranteed, although there have been lots of pomelo species that are easy to plant and developed by the Southern fruit tree Institute and Sadec fruit species center. - The habit of using inorganic fertilizer and chemical fertilizer that influences the quality of fruits and causes risks to environment and health. 	<ul style="list-style-type: none"> - Habit could not be easily changed, it's necessary to have assistance from the Center of Farming Encouragement, Office of Plants Protection, Gardeners Association and Agricultural Department and Offices...specially programs should be specific, clear and easy understanding under different forms (seminars, leaflets, sample models, close instruction and supervision of results etc.) - Farmers should change their habit of spraying insecticide, not to hurt the health of consumers, so, it's needed the support from all, consumers, retailers and traders as well. In order to do this, clear and strict participaton is required from press, TV and foreign organizations. . - Bad habit could only be changed when there's change in perception, and a positive upgrade of knowledge from the part of farmers. This perception shall multiply when farmers regconize their benefits being maintained and their important responsibility toward community => this is the most hard and difficult problem of agricultural administration.
	<p><u>Perception</u></p> <ul style="list-style-type: none"> - Perception of farmers is low, not high enough to understand the requirement for care and insecticide spray that causes product quality not high. - Those trees that have been treated from deseases, now planted again among other trees shall get deseases again. - Farmers don't initiate in looking for consuming markets, most of their products have been consumed by traders. - Perception of contracts is also weak, farmers follow the same contractual habit that causes loss to themselves. -No market information also limits the perception of farmers. 	
	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> - Understanding and application of farming techniques of farmers is limited because they have not been educated well, could not understand and apply easily modern technologies, specially species, farming techniques (making shades, trimming branches, fertilizing), preserving fruits against deseases, insects.. => as productivity of many gardens is low that influences the quality and outlook of fruits. 	

2. TRADERS/ ENTERPRISES.

2.1 General characteristics.

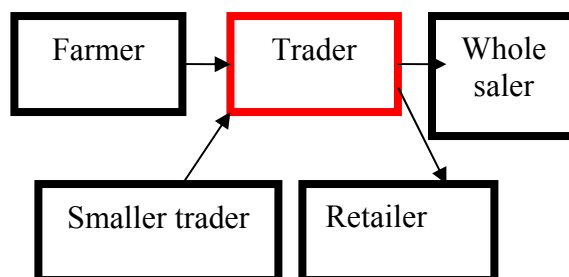
In Vĩnh Long small traders and big traders (long way traders) form a business network in and out of the province. In recent years the group of traders have become bigger and competition harder, they equip themselves with boats and sampans in order to go into every garden to look for fruits.

Long way traders not only collect products in the province of Vĩnh Long but also purchase at nearby provinces such as Bến Tre, Trà Vinh, Cần Thơ and sell to retailers, to markets or faraway provinces.

Chart 4: Traders and direct relationship.

Traders collect pomelos around the year. Usually in a business trip, traders have to invest a rather big capital, from about 12 – 15 million/1 trip (for medium and small traders), 20 – 30 million/ 1 trip for big traders.

During one month, traders make 2 – 3 business trips with products of 30 – 50 tons/1 month.



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During one month, traders make 2 – 3 business trips with products of 30 – 50 tons/1 month. As the form of purchasing is mainly in bulk and traders have to take care of all works after cropping. Most traders pay least attention to investing in infrastructure for their business, so their capacity of application of post cropping technology is mainly manually exercise .

2.2 Post cropping process of traders.

2.2.1 *Cropping process* of traders composes of all steps mentioned in chart 3, the section of farmer's harvest, pages 11-12

2.2.2 *Early Process* is rather simple, after hauling from gardens, pomelos shall be placed at fresh open area. Traders just clean the outside before packing and handling. (picture...appdx 2)

2.2.3 *Classification* (pictures 15, 16, 17, appdx 3)

Traders base on weight to classify pomelos and pricing. But as they mostly do the wholesale with big quantity so classification shall not be very important. Herebelow are two main methods traders use to do the classification of pomelos.

Table 5: Two main methods for pomelos classification:

Categories of pomelos	According to kg (weight)	At the tens
Special category (> 1.4 kg)	Prices changing	60,000 – 70,000/1 ten (12 – 14 fruits), prices could be higher from Tết to the fifth month of lunar year.
Category 1 > 1 – 1.4 kg	4,500 – 5,500 VND/ kg	

Category 2 (700g – 1kg)	2,700 –2,800 VND/kg	
Category 3 (<700g, small, bad)	700 - 1,000 VND/kg	

Beside these two methods, traders also classify pomelos according to the roundness of pomelos, neglecting sizes. They sell small and big fruits at the same price, from 3,000 – 4,000 VND/kg with the same roundness (Source: indepth interview with traders).

At the pomelos classification stage, private enterprises do more strictly than traders. Their category 1, each fruit weigh from 1.4 – 2kg or over, yellow, nice, even sizes, those fruits of standard shall be used for export or for supermarkets.... and for small ones (category 3) their segments shall be squeezed for juice and canned for local consumption. In order to execute this idea, in 2004 DN invested in building factory with 2 manufacturing chains: one pomelo juice squeezing chain for canning, another for cleaning and classifying pomelos...the cost was then 6 billion đồng. This system helps enterprise to reduce labor costs, reduce time for preserving, and the enterprise could meet the export standard of pomelos. (source 14, appdx 2)

From the above methods of classification that shows that enterprises and traders have different ways of classification depending on target customers. Products of traders are mainly for local consumption and their selection for classification shall not be very strict, at the same time pomelos have been classified according to different prices as required by markets. While clients of Hoàng Gia are importing countries, they ask for products of high quality and rejecting low quality products is necessary..

2.2.4 Preservation (pictures 24, 25, appdx 3)

Most traders don't apply any preserving methods. They leave pomelos at fresh and open places or handling them away.

However, some traders and enterprises have applied certain methods (chemical method) to make withered pomelos become fresh, or change colours of fruits*. According to scientific testers, the method of wrapping pomelos with PE plastic could keep them for 3 months but the colours shall not stay the same and look like rotten skin. (source 23, appdx 2)

Recently there has been study of 'Using chitosan film' in preserving pomelos. Compared to PE bag, chitosan film produces better quality during 3 months of preservation. The film of chitosan prevent dehydration, fight virus and cause no harm to environment and human being. With the film of chitosan, the colour of pomelos changes a little bit compared to newly cut ones, skin still looks the same and pomelos could still be edible after 3 months. (source 23, appdx 2).

2.2.5 Packing, labeling (pictures 18, 19, 20, appdx 3)

After classification, pomelos shall be loaded horizontally, and put into bags, baskets or carton (very few). (Source: traders indepth interview). Packing by bags or baskets causes significant loss, specially in handling and loading.

Enterprise Hoàng Gia is now using net for packing. On each pomelo of Hoàng Gia printed with trademark and label of source. Pomelos then loaded into cartons for long handling (source: enterprise indepth interview)

*After 5 minutes being soaked in chemical solution (like ethephon 500 ppm) and wrapped with PE bags, skin colour of pomelos shall be refreshed, becoming brighter yellow (source 27, appdx 2)

2.2.6 Transportation

Transportation depends on the destination: to stall, or from stall to wholesale markets, or to retailers in province. Below is a summarize of methods of handling, loading and unloading of pomelos.

Table 6: Methods of handling, loading and unloading of products

Destination	Handling from garden to stall	From stall to wholesale market or collecting point.	To retailers' (ft)
Means of transportation (pictures 21, 22, 23, appdx 3)	- <u>Boat</u> being used for special features of rivers and water areas - trucks, motorbicycles (ft)	- Boat (in case of short distance and time, about 10 – 15 hours)* - Trucks - Three-wheel cart (to collecting point only)	Motorcycle, three-wheel cart.
Methods of loading and unloading	Piling or loading in big bags, baskets, then one on another.	- Boat: load pomelos into each compartment of boat (4 compartments) or just loading on . - Trucks, three-wheel cart, same as above. .	Pile in baskets or three-wheel cart.

Although pomelos are easier to handle than some other fruits because skins are thicker (mangos, mandarins, grapes etc.), but means of transportation is old (cheap) and the way of loading and unloading are casual** therefore it influences the quality of fruits when they come to consumers and increases unnecessary loss => This is the point worth mentioned in training programs of Metro for traders, retailers and farmers..

2.2.7 Loss.

Traders are those who suffer biggest loss in the whole chain of value of pomelos of Vinh Long, to include:

- Loss from waiting time for collecting enough quantity => results in loss of weight or rotten when pomelos in storage. But this loss is not much, about 0.5 -1% depending on how long pomelos have to waite in storage (source: traders indepth interview}

- Loss from handling, loading: this loss is rather high about 5% (source: traders indepth interview)

Beside above losses, sometimes traders also have to suffer additional loss, because some customers dont do the settlement as agreed upon. As there's no legal contract, traders could not get their money => this is a point to be overcome to protect the benefits of traders. (source: traders indepth interview conducted by Axis 2/2006)

*Handling fees shall be paid by traders.

**some boats owners want to load as many as possible, disregarding possible influence to products.

2.3 Customers

As mentioned above, customers of traders are wholesalers (90%), the rest is retailers (about 10%).

For retailers, as they live in the region they come to traders' stall to buy products.

For wholesale, traders have to work harder. Except some instances that some wholesalers come to traders to buy, but most traders have to bring products to faraway cities like HCMC, provinces in the Mekong Delta, Nha Trang, Bà Rịa Vũng Tàu, Đà Nẵng... when selling to faraway customers, prices should be agreed upon by both parties.

In case of short of products in markets or on occasion of Tết, traders could not collect enough products for customers, even they have had guarantee for products consumption and made advance payment of 30% to farmers.

2.4 Contract.

Business contract with farmers (reference to farmers contract section)

In retailing and selling to smaller traders, traders only do the business on verbal agreement, without any official contracts.

Most traders also don't want to sign contracts with wholesalers for fear that they shall become the persons who break the contracts. This worry could be explained as following: means of transportation of traders mainly depends on waterways, this way is cheap but late and sometimes unexpected difficulties occur, so traders do the delivery without exact time as provisioned.

So they don't want to sign contracts with customers. Moreover, traders and wholesalers are not used to do business on contract. They just do business as verbally agreed. That's why some traders have got betrayed and not paid by wholesalers.

2.5 Methods of payment.

When doing business with farmers, retailers, wholesalers, the methods of payment of traders are settling in cash (popular) or overlapping settlement. As mentioned above, when doing business with farmers, method of payment is little different, traders pay in advance of 30% to farmers as a deposit, after receiving all products they shall pay the balance.

2.6 Income

Income of traders is generally about 20-25% mainly due to selling products of categories 1, and 2.

As for category 1, after being sold and minus fees, traders enjoy an income of about 35%.

As for category 2, after being sold and minus fees, traders enjoy a rather high income of about 30%

As for low quality category, they don't get much, they even sell at buy prices from farmers. Anyway they have to sell the lower quality products because their method of buying is in bulk, in thousands, so they have to take all good and bad products.

In short, traders in Vĩnh Long get a rather high and stable income, although the market of fruits is changing because supply could not meet demand. However, as mentioned above, traders now also meet with some difficulties that could be summarized as below:

2.7 Main difficulties and how to support.

As farmers, traders also have difficulties, subjectively and objectively. On subjective aspect, difficulties of traders are mostly the same as farmers in the habit of doing business without

signing a contract, individual business is conducting casual without a scope, knowledge/information of local business and export as well. This problem should become a priority in training programs of Metro and GTZ. The following section mainly talk about objective difficulties of traders and how to overcome them:

Difficulties	How to overcome
<p><u>Output & quality</u></p> <ul style="list-style-type: none"> - Due to the fact that there's been no grouping material zone, so there are not many good quality pomelos and it's difficult to collect a big quantity. - When it's short of products in market, (Tét and festivities...) traders could not get enough products to supply. - Purchasing products from different gardens, quality is generally not the same. - Due to competition when purchasing, traders could not control the output and quality of pomelos. 	<ul style="list-style-type: none"> - See more on farmers section. - In addition, it's necessary to have cooperation from traders through a business association (<u>Pomelo traders association...</u>) in order to supervise the purchasing and assist in doing better classification and selling pomelos.
<p><u>Post cropping technology</u></p> <ul style="list-style-type: none"> - Very few traders could have chance to get in touch with the advance of post cropping technology, at garden, the cropping work is still very simple. - Means of transportation is mainly by boats, cheap but late * - Loading of products is not skillfully exercised that causes loss significantly. - There's no cool preserving system because of high investment cost. 	<ul style="list-style-type: none"> - Training courses for traders should <u>be an introduction and application</u> of methods (of modern technologies) in collecting fruits, loading and unloading, handling and preserving. - For traders who have export requirement, GTZ should help and <u>assist with necessary information</u> and procedure to get export certificate. . - Also, the functioning agencies should adjust procedure to provide <u>fast and easy registration</u> for traders.
<p><u>Contract & payment</u></p> <p>Risks from doing business without a contract could result in neglecting of payment or payment not on time.</p>	<ul style="list-style-type: none"> - Both farmers and traders have to understand the benefits of payment method through written contracts. This requires <u>participation from third party</u> (banks, chamber of commerce etc.) in order to carry out contracts easily and rapidly.
<p><u>Capital</u></p> <p>Traders always need more capital to expand their business and to buy more equipment for harvesting, means of transportation, modern facilities.</p>	<ul style="list-style-type: none"> - Same resolution for farmers, but depending on capacity of each trader that <u>proper policy and practice</u> could be applied.

<p><u>Information and relating problems</u></p> <ul style="list-style-type: none"> - Market information has mainly been obtained by traders themselves. Regular and update information from official channel has not been conveyed to traders, specially information of export markets. - Wholesale markets for fruits are very few, mainly for agricultural products, they are small and not proper for their role. - Stimulation of business from functioning agencies has been proceeded slowly, not systematically, this only aims at some outstanding individuals. 	<ul style="list-style-type: none"> - GTZ should coordinate with Information Center (The Ministry of Agriculture and Rural Development) to assist Vĩnh Long establish a <u>supervision system for income, information announcement and market study.</u> - Through traders association, to encourage individuals and groups to participate into <u>various forms of cooperation</u> (Cooperatives, private enterprises, companies...) this shall make easy for transmission of information and avoid risks in business. - GTZ and Metro can consider whether or not to build a <u>collecting center</u> of pomelos in Vĩnh Long (including nearby vicinities) /or a large wholesale market, in order to help with fast classification, stable outlets through distribution network of Metro over the country and other consumption outlets. - Support for <u>the establishment of trademark</u> for pomelos of Mĩ Hoà, Bình Minh, or other pomelos trademarks should be proceeded executively, this helps to introduce and find new markets for the products.
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3. WHOSALERS

3.1 General characteristics: the majority of wholesalers of pomelos are in the cities of HCM, HN and other large cities and provinces of the country. The business outfits of big wholesalers are located in big wholesale markets, while small wholesalers in small markets.

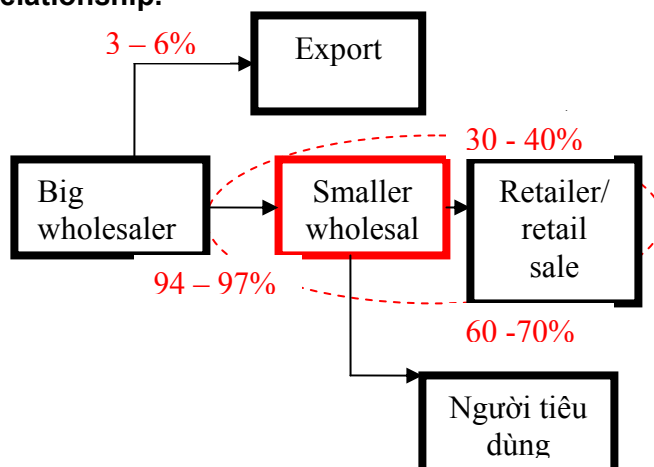
Products of traders shall be collected at wholesale markets or at wharf (mostly at the wharf Tôn Thất Thuyết, market of Ông Lành..). If collecting at wharf, traders must transport products to wholesalers (this form prevails) or wholesalers come directly to wharf to get products.

Some big wholesalers themselves go to regional places to buy products, mainly from traders. They also parcipate in exporting but through small channels, about 3 – 6% to Campuchia & China (source 15, appdx 2)

Chart 6: Wholesalers and direct relationship.

Wholesalers dont do business of just pomelos only, they also deal with other kinds of fruits at the same time such as king oranges, pineapples, watermelons...., the quantity of pomelos they buy is rather big, over 2 tons/ each time (source: indepth interview with wholesalers).

The quantity of smaller wholesalers is smaller, they sell an average of about 200 – 300 kg each day (source: indepth interview with small wholesalers)



at market Phạm Văn Hai)

3.2 Post cropping process.

The stages that wholesalers perform at wholesale markets such as to *do early process, packing, labeling and handling* are generally quicker than those of traders, because the destination is not far from wholesale markets. However, the classification is a little in details, prices therefore much higher, as below:

Table 7 : Classification of pomelos and prices (wholesalers).

Pomelos Năm Roi	Pomelos da xanh
Special caterogy (2 – 3 kg/ 1 fruit): 130,000VND/ a ten	
Caterory 1 (1.2 -< 2kg/ 1 fruit): 115,000 VND/ a ten	100,000 VND/ a ten
Caterory 2 (0. 8 – <1.2 kg/ 1 fruit): 110,000 VND/ a ten	80,000 VND/ a ten
Caterory 3 (< 0.8 kg/ 1 fruit): 100,000 VND/ a ten	70,000 VND/ a ten

(Source: Reference to prices at market Tam Bình of March/ 2006, HCMC, source 28, appdx 2)

So, compared to buy prices from traders, pomelos Năm Roi have been sold at a price double, while pomelos da xanh also attain a high prices up to 30%-50% compared to buy prices.

3.2.1 Preserving and packing.

According wholesalers, pomelo stays longer, tastes better, it can stays as it be for 10-30 days (source: indepth interview with wholesalers). If pomelos haven't been sold all in the same day, they could be kept for to-morrow with a condition that they shall not be wet or displayed under the sun. So, pomelos shall be kept in bamboo baskets or displayed on stall high above

In some cases pomelos are loading on ground, specially low quality ones. This way is not for long, pomelos could be damaged because they get in touch with floor that is wet and full of virus.

When selling to retailers or consumers, products shall be wrapped by plastic bags (with holes), loading in small basket or big baskets.

Wholesalers don't label pomelos, according to them buyers just look at the fruit and recognize the quality and as they know the sellers are trusty, no need labels.

3.2.2 Loss

Loss at the expense of wholesalers is:

a. Preserving : 1 – 2%

b. Handling, loading: about 5 % (only when wholesalers do the handling from traders').

Loss in handling is not much, because most sellers take charges of handling. Only some small wholesalers at small markets do handle products to retailers, but the distance is not long and loss is also not worth mentioned.

c. Loss of prices in the following cases:

- Pomelos are damaged when get wet or displayed under the sun.

- Pomelos are still young (taste not good and skin shrinks after several days).

3.3 Contract and payment.

Wholesalers don't sign written contract but they just make a phone call for certain agreement with traders. In business, wholesalers receive immediately and pay in cash right the way.

3.4 Income.

Income of pomelos wholesalers is rather big, with buy price at 60,000 – 68,000 VND/ 1 ten, they can sell at a price almost double (100,000 – 130,000 VND/1 ten).

3.5 Difficulties and how to overcome.

Pomelos wholesalers when interviewed said that they are very pleased with this business, without difficulties except some of them mentioned in the loss section. But, as we have noticed they have some problems that require support such as packing, labeling and preserving. See more on how to overcome difficulties in the traders section.

4. PRODUCT PROCESSING ENTERPRISES.

In Vĩnh Long, Hoàng Gia is one of few enterprises processing fruits in the Mekong Delta that also does the process of pomelos (pomelos juice). In 2004, Enterprise Hoàng Gia decided to invest a production chain of canned pomelo juice Năm Roi with capacity of 4,5 million products/year. This development of this processing factory has helped enterprise to consume pomelos (small pomelos), and export processed products to other countries (America, Germany, Spain etc.).

According to Ms.Trà Giang, director of pomelos company Hoàng Gia *any fresh pomelo that meets highest quality standard shall be kept for export, supermarkets get second priority. And small fruits, the segments of them shall be separated and squeezed for juice that shall be canned for local consumption and export.* (Source 17, appdx 2).

However, there's a truth that the investment for such pomelo processing factory is very high, but the outlet (demand for pomelo processed products) is not high, expenses still exist for electricity, workers, costs etc...so the factory of enterprise Hoàng Gia has to cease operation for there's not enough work. (Source: farmers seminars conducted by Axis.).

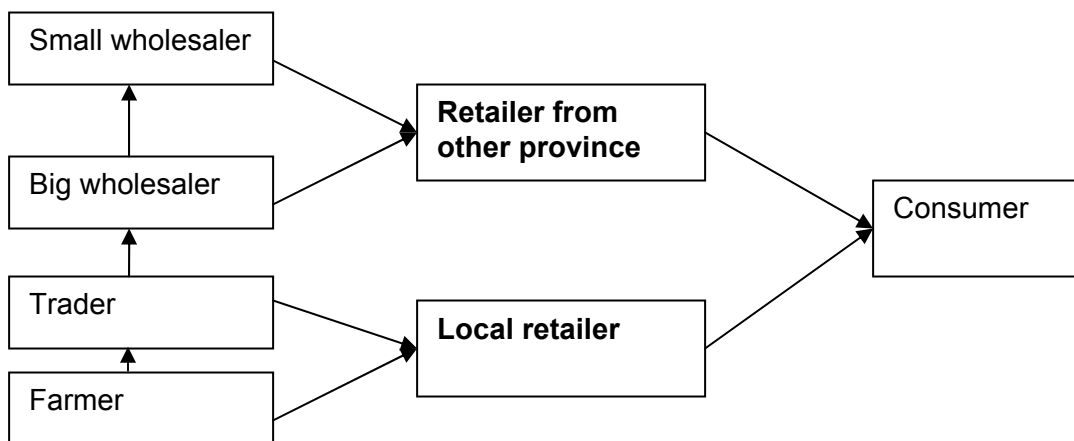
Not only the factory of enterprise Hoàng Gia falls into difficulties but almost processing factories of vegetables and fruits in the Mekong Delta also meet with this situation due to outlet not stable. If this situation continues, the export of processed fruits (including pomelo juice) shall be a problem hard to solve.

Another thing is the quality of squeezed pomelos juice of Việt Nam is not high (easy to get bitter after certain period of time) that's also the reason local consumers don't really concern.

Although Vĩnh Long is really a large stall of pomelos in the Mekong Delta with specialty pomelos Năm Roi, Da Xanh.. of high quality, in season it could give a not small quantity, it also can give products in reverse season, but the products processed from pomelos have not been welcomed as expected due to local habitual consumption (it), the quality of squeezed pomelos don't correspond to the taste of consumers, specially the quality standard for export. This situation could become better with the participation of functioning agencies, specially in looking for markets, assisting with documents for certification (like Eurogap is an example that Hoàng Gia concerns), and transportation costs for export to help reduce costprice for squeezed pomelo juice (Source 22, appdx 2)

5. RETAILERS.

Chart 7: Retailers and direct relationship.



5.1 General characteristics.

Retailers in Vĩnh Long usually come to traders stall to buy products. Sometimes they also buy from farmers. Because they do business in a small province where produces lots of fruits, so the scope business of regional retailers is small, from 1 million – 1.5 million, average of each buy is about 50 – 100 kg.

Retailers of other provinces usually buy products from wholesalers at wholesale markets or from smaller wholesalers who distribute directly to retailers'. The scope of retail business in other provinces and cities are various, specially at two big cities: Hà Nội & Hồ Chí Minh. Retailers could be cart hawkers along streets, they could also be owners of big shops, with business capital amount to several ten million....

Pomelos have also been sold through supermarkets in HCMC, Hà Nội and through dealers in the provinces of the Mekong Delta, Nha Trang, Bà Rịa Vũng Tàu, Đà Nẵng...Recently, pomelos have also been displayed for sale at Tân Sơn Nhất airport of HCMC. But due to poor packaging, the consumption through Tân Sơn Nhất airport, tp HCMC is still limited. .

5.2 Early process/ Classification/ Packing/ Labeling.

5.2.1 Early process.

The way to do early process, packing for pomelos to go into supermarkets (mainly pomelos produced by cooperatives or those enterprises purchase and diliver to supermarkets) has been mentioned in the section of post cropping process of traders/ enterprises (article 2, 1).

At shops, stalls, markets..., retailers nearly don't do any early process, just make fruits clean before sale. .

5.2.2 Classification.

The classification has been made before by traders or wholesalers in order to indicate prices for each category, so after received products retailers just do a re-classification as required by customers.

5.2.3 Packing and labeling.

In business, packing shall be done by traders or wholesalers (see more on the section of traders, wholesalers) (pictures 18, 19, 20, appdx 3). When selling to consumers, except when delivery to be made to customers (restaurants, cuisines, coffee ins, governmental agencies....) retailers should use small baskets or carton, or just use plastic bags for holding products.

Just like wholesalers, retailers dont worry about labeling products, because there's no requirement from consumers or concerning authorities.

Storage and preservation process by retailers is similar to what have been mentioned in the section of wholesalers (see more on page 22)

5.2.4 Transportaion (see pictures 21-23)

When purchased from traders : pomelos shall be carried by retailers (by morobicycle, three-wheel cycle...) or traders take them to retailers (also by their own means)

When purchased from wholesalers : transportation shall be done by retailers (morcycle, 3-wheel...)

When sold to customers : retailers do the transportation by motorcycles (to hotels, restaurants....). If sold to normal consumers, retailers almost dont have to do the handling.

However, in big cities there are some retailers (hawkers) of pomelos who go around living quarters. After several buys, they have certain order for retailers (10-20 fruits or more) In this case retailers should do the delivery at customers houses.

5.2.5 Loss.

Loss caused by handling from wholesalers to retailers shall not be counted due to short distance. Loss shall occur when pomelos in storage and preservation. Fruits withered or stems broken shall be sold at low prices => Loss at this stage is about 1 – 2 %.

5.3 Contract and payment method.

For salers, there's no contract, payment in cash shall be made immediately or overlapping payment.

For buyers, no contracs at all, immediate payment in cash.

5.4 Fees and incomes.

Due the characteristics of each market that the retail prices of this retailer much differ from those of retailers in faraway provinces, this shall be clearly mentioned in below table :

Table 8 : Retail prices of pomelos in Vĩnh Long compared to HCMC :

	Retail price in Vĩnh Long	Retail price in HCMC*
Special category	-	> 20,000 VND/kg
Category 1	8,000 – 9,000 VND/kg	12,000 – 17,000 VND/kg
Category 2	5,000 – 6,000 VND/kg	6,000 – 12,000VND/kg
Category 3	3,000 – 4,000 VND/kg	

(Source: 28, appdx 2)

**According deales of pomelos Nãm Roi. From the 25th of the 12th lunar month to Têt, the prices pomelos Nãm Roi increase very high, specially pomelos with branches (beautiful ones for display on Têt occasion) One goodlooking pomelo fuirt could get 35.000đ/ fruit while normally it's only about 15.000 - 17.000đ (Source 24, appdx...)*

So, with the same products, price in HCMC is double compared to that of the province. Compared to wholesale price, retailers in city get income double higher than those in province.

5.5 Difficulties and how to overcome.

In the process of study difficulties of retailers were not much, the degree of 'pressing' not high with pomelos, main centered around the stages of preservation, storage, market information and feedback..

Difficulties	Support requirement
<p><u>Storage, preservation.</u> Retailers have not been announced of modern techniques for long preservation of pomelos. They just let pomelos going on in natural situation in storage and preservation</p> <p><u>Market information</u> no update of information on current market prices.</p> <p><u>Receiving feedback.</u>: Retailers meet directly with consumers and receive feedback directly from them. But treatment for this feedback information is still limited. Just only supermarkets could handle this comparatively good.</p>	<p>→ In training courses, GTZ should have <u>introduction leaflets</u> for distribution to retailers relating to more effective and simple methods of storage of pomelos.</p> <p>→ Reference to proposals for administration and promulgation of market information in the section of traders.</p> <p>→ Encourage consumers to <u>feedback their ideas, expectation and proposals</u> in regard to preservation, consumption ..., and specially processed products from pomelos. These information should be handled periodically and reported to concerning agencies for proper treatment.</p>

Beside above ideas, there's another idea relating to product packaging. According to the idea of Ms. Đoàn Thị Mai Hương, Chief of the Administrative Office of air service company Sasco, now **Tân Sơn Nhất airport is in badly need of a supply source of fruits of category 1 to sell to local foreign tourists**, this is to advertise fruits of Việt trademark and also provide a variety of fruits at the airport. But to design a proper packaging for pomelos is not simple (for 1 fruit/ 2 fruits / bags) because the material and style must go along with products and the taste of customers. Ms. Hương also disclosed that Sasco is ready to cooperate with any source that could supply fruits that are good, rare with high quality, and also with design companies that could design certain packaging for fruits, specially pomelos for tourist on bus or on airplanes. (source No. 22, appdx 1)

6. CONSUMERS.

6.1 Impression of a fruit of high quality.

According consumers, a pomelo of highest quality should have the following features:

Big size, good weight, fat thorns, skin straight, fresh stem and thorough colour, goodlooking (source: consumers groups interview).

While description of an ideal pomelo of farmers is more specific:

Pomelo of pear shape, yellow colour, brigh, shiny, weight is about 750g – 1.4 kg;, no scratch no sunburn, no scar, Segments with light yellow colour, watery, round, fat and transparent pulpy bulbs; clear sweet taste, no seeds, easy to peel. (source: farmers groups interview).

Through the above description we can see farmers know very well about the products that they expect. But in reality, the products that come to consumers dont have the same quality, the

output of good quality pomelos is very small, so the impression of a good pomelo from consumers is still very limited, they mainly depend on the outlook for classification. However, pomelos could have the same look but the quality is much => **This is the different point of consumers.**

6.2 The habit of buying and consuming pomelos.

According consumers, pomelo is a good fruit, nutritious that has medical effect and is one of 5 traditional fruits displayed on 5-fruit plate of Tét ritual. As grapes, green dragons and mangos...., consumers are ready to pay high prices for good quality pomelos, specially on the occasion of Tét*. (source 30, appdx 2).

But average consumption of pomelos is small, from 5 kg/ year (source: consumers group interview). The main reason is the high price of pomelos, only low quality ones are cheap, these are not delicious. Another reason is time, it takes too long from peeling to eating as compared to other fruits (outside and inside skin, segments wrappers....) , and not convenient (immediately) because it needs a knife, not be able to peel manually (source: consumers groups interview)

The majority of consumers buy pomelos from *market, or dealers*. Some consumers with high living standard buy pomelos at *supermarkets*. At supermarkets pomelos are not always fresh because they have been long perverved in cool places, while products in markets are fresher because they have been sold away daily, markets are closer to households, prices could be bargained, cheaper and easy to select because they are not in packaging.

Local consumers don't worry about pomelos of safe quality so labels shall not be important when they buy pomelos, they just pay attention to which *category* of pomelos such as Năm Roi or Da xanh, Phúc Trạch or Đoàn Hùng and the outside characteristics of fruits and disregard whether they come from enterprise Hoàng Gia or other agencies => This makes local enterprise not 'heartfully' with building trademark for pomelos, unless for export markets.

6.3 Problems of consumers.

Main problems	How to overcome
<ul style="list-style-type: none"> - They don't know all <u>benefits</u> from pomelos - Some people don't know how to <u>distinguish</u> caterories of pomelos so they sometimes spend high price for normal quality pomelos. - Don't pay much attention to hygienic safety condition of pomelos. - A habit of eating fresh pomelos <u>rather than</u> drink squeezed pomelos juice. -<u>Price</u> of pomelos is high. - Lack of <u>information</u> and trusty source of information about good pomelos. (fruits guarantee, with label and clear source), also pomelos peeling service for customers. 	<ul style="list-style-type: none"> -> The mass media need to help advertise the benefits of pomelos for health and how to distinguish categories of pomelos for consumers and supply information on sources of good pomelos with cheap prices. -> To cooperate with consumers association to encourage their feedback, stimulate farmers to be more confident in the registration of products quality and labels. ->To promote agreement of members in the whole system for a measure to reduce production costs and fees for a better costprice for consumers.

* One can spend about 50,000 – 70,000 VND to buy a couple of pomelos for friends or for displaying on 5-fruit plate (source: indepth interview with retailers in HCMC).

7. The role of organizations in the development of pomelos of Vĩnh Long.

We can say that the pomelos have been paid much attention by the administrative agencies of Vĩnh Long but difficulties still exist in planning area for specialized cultivation, finance, application of scientific technologies and labor force. In addition, problems of management and execution starting from projects on paper to practical works are biggest difficulties not only for pomelos of Vĩnh Long but also for vegetables and fruits of Việt Nam in general.

Every year, The People's Committee of the province of Vĩnh Long has orientation of planning production area and guidelines for programming caterories of segmental fruit trees, including pomelos. The People's Committee also has policies to support, to grant priority for reduction of enterprise income tax, land tax, and invest in watering system to support farmers in their production, assist with free disease tree species, net houses and technology transfer. Presently, the People's Committee is adopting a project of 'protection of products origin', it shall be an opportunity for pomelos of Vĩnh Long to expand further to exporting markets.

Under the supervision of the Province People's committee, the Department of 'Agriculture and Rural Development of Vĩnh Long every year has had support with finance to buy free disease species, and direct concerning branches such as Farming Encouragement Center, Plants Protection Office and Agriculture Office to organize short time training courses to transfer advance technology, organize farmers clubs, production cooperatives and update information of market prices. The existence of these clubs and cooperatives has built a stable relationship model for farmers, they can exchange experience in production and look for outlet for their products, this shall reduce the dependency of farmers toward traders.

The Agriculture of the province of Vĩnh Long has coordinated with Commerce Proceeding Center, and the Department of Planning and investment to organize seminars, clients meetings, fruits fairs. In recent year (2005) The Department of Planning and Investment had financially supported enterprises to build their trademarks (30%), advertise their trademarks (70%), organize for enterprises to participate fairs and exposition (50%) (in 2005 fair participation in Germany), organize fairs in the province twice a year, participate fairs in the country 6 times a year (source: indepth interview with the department of Planning and Investment).

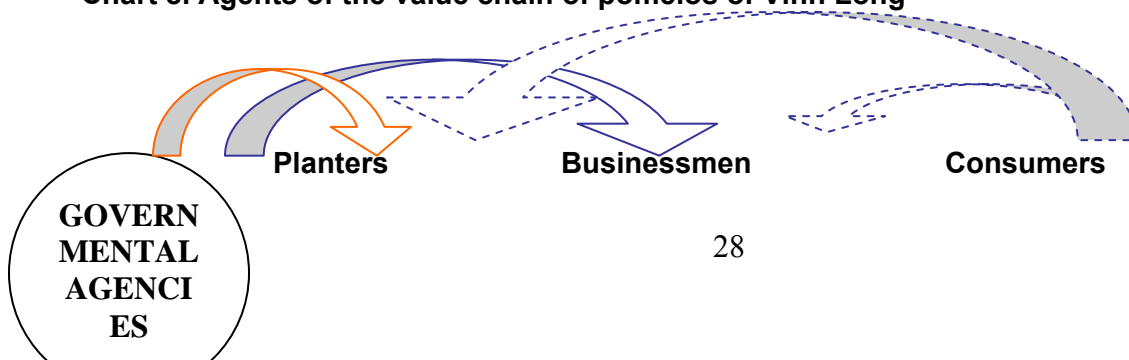
The Agriculture Department has coordinated with The Department of Science and Industry to look for consultant agencies for realization of projects on trademarks, products origin names, support enterprises to apply quality system management according to international standard...But in realistic present situation, applications of the department of Science and Industry seem very limited and some are still in concept. Example is the application of preserving solution for pomelos has not been conveyed to target users (Source: indepth invertivew with the department of Science and Industry of Vĩnh Long).

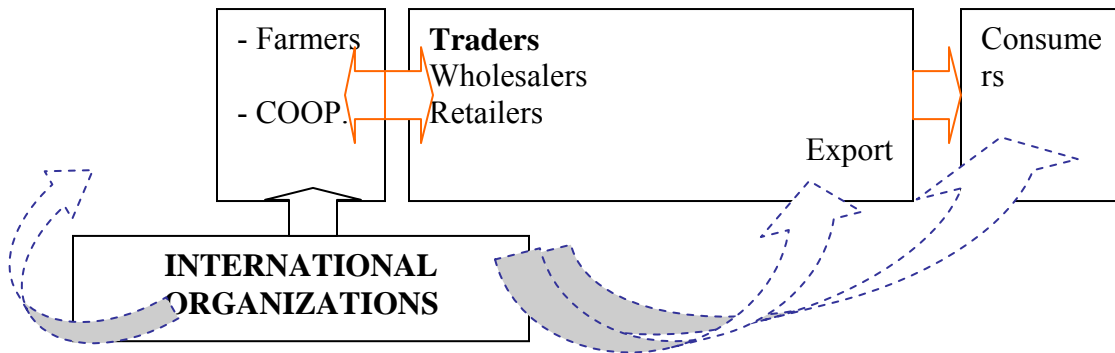
Beside main agencies above, the Institute for Southern trees study (Sofri) and the University of Cần Thơ have also assisted a lot in studying promelos and measures for anti-insects and diseases. Now in the province there have been projects starting study pomelos conducted by international organizations. (source 24, appdx 1)

Up to now, support from international organizations is almost small. (Indepth interview Sofri)

Chart below shows the agents that act on the value chain of pomelos of Vĩnh Long.

Chart 8. Agents of the value chain of pomelos of Vĩnh Long





Red arrows: Positive affect
 Grey or white arrows: Weak affect
 Interrupted green arrows: Lack of affect

So, look at the chart 17, we can see the main agents affecting the value chain mainly concentrate on farmers, lack of action on traders and specially consumers. Affective action on consumers factor is very important because if consumers only accept products of high quality, traders must try their best to satisfy the demand, and farmers themselves have to cultivate products that attain high quality.. But now, **the value chain is nearly affected by one direction that puts farmers in a position to sell ‘what they have’ and not ‘what consumers need’.**

The support from functioning agencies and international organizations is exactly positive, specially for farmers. But we still dont see high results affecting on other links of the chain such traders – main collectors of products – and consumers – the end users of products => These are basic points that should be concerned in supporting the development of the value chain of pomelos Vinh Long by functioning agencies and relating organizations.

IV. ANALYSIS OF STRONG AND WEAK POINTS, OPPORTUNITIES AND CHALLENGES.

In this section we shall go over strong and weak points, opportunities and challenges of the value chain of pomelos in the present situation of production and consumption of fruits of Việt Nam . .

	Strong points	Weak points
Species	<ul style="list-style-type: none"> - Vinh Long now have several pomelos species of delicious quality, giving fruits around the year such as Năm Roi, Da Xanh: Năm Roi Bình Minh is famous for delicious quality, without seeds; - Da xanh now has been favoured in markets. - Certain advanced technologies to improve and create tree species have been conducted here. 	<ul style="list-style-type: none"> - Farmers have habit of buying tree species at cheap prices without clear sources. - Late application of modern technologies for tree species. - Now there are lots of categories of pomelos species affected by rose fungus and insects... and there’s no proper method for treatment; knowledge of cultivation and care as directed by applicable technologies is not high enough.

Land	<ul style="list-style-type: none"> - The land in Vĩnh Long is suitable for pomelos planting. Particular the district of Bình Minh is most suitable for pomelos Năm roi - According to project of the People's Committee of the province of Vĩnh Long, until 2010, surface for pomelos cultivation shall attain 9.000 ha. 	<ul style="list-style-type: none"> - The area planting trees is scattered here and there, not grouped. - The cultivation of trees is still awkward, with many different kinds of trees. - No planning for cultivation area, specially area for free disease trees.
Income	<ul style="list-style-type: none"> - The pomelos of Vĩnh Long have economic value higher than other fruits in the zone. 	<ul style="list-style-type: none"> - The price of pomelos is now high that influences consuming demand. - The cost price is high that makes export price high in the area. - There's no effective network of information of market price for agents of the chain, specially exporting of processed products.
Trademark and export	<ul style="list-style-type: none"> - The pomelos of Vĩnh Long have had export market but still small compared to the output (5 – 10%) - Enterprise Hoàng Gia has exported pomelos Năm roi under a protected exclusive trademark of Pomelos Năm Roi Hoàng Gia 	<ul style="list-style-type: none"> - The output of pomelos that attained quality standard is still limited, not enough to meet even local demand. That's the reason that causes difficulties for many factories. - Products that attained export standard is not much, another reason is that they don't meet with strict standard requirement from export companies. - Enterprises don't know well the procedure to register a trademark so they are still hesitating.
Post cropping technologies	<ul style="list-style-type: none"> - Preserving time of pomelos in natural condition is too long. - Preserving pomelos after cropping is simpler than other fruits. - In the Mekong Delta, there's potential for processing industry of segmental fruits including pomelos. 	<ul style="list-style-type: none"> - No effective transfer of advanced technologies for post cropping stages (transportation, packing, labeling) specially the industry for processing pomelos. - The manufacturing chain for processed pomelos doesn't operate to its capacity, partly because the source of supply, partly because the quality of processed products and lack of outlets for the products.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Relationship in the value chain</p>	<ul style="list-style-type: none"> - Many farmers coordinate themselves to make a small groups that do the watering and care according to scientific instruction, apply advanced technologies to raise production. - The enterprises like Hoàng Gia, Thế Nghiệp...have begun to set up relationship between farmers and enterprises in order to guarantee the outlets of products and build a stronger area of specialized cultivation. - The consuming system of pomelos (and other fruits as well) until now depends on confidence and verbal agreement which also has its strong point that causes such 'agreement' to realize simply and rapidly. 	<ul style="list-style-type: none"> - The relationship of farmers and traders/ enterprises and consumers is still weak that influences the capacity of offering products of traders and enterprises, it also causes difficulties in collecting enough products to meet certain contract requirement; this is due to poor habitual business practice of farmers (sell to those who pay high, no written contracts, their products are not stable so traders and enterprises could not get a big quantity of products when necessary.) - Distribution system is still operative on the basis of 'personal effort'. Most members of the system lack of basic knowledge in modern business, that causes high fees, poor quality and big costprice. - Business relationship has not been established on legal basis, so there's no guarantee of supply source and quality as expected.. - There's no feedback from consumers to business links and cultivators, and information to authoritative agents.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">The concern of organization</p>	<ul style="list-style-type: none"> - It withdraws the attention and support from governmental agencies and organizations. 	<p>Action is clearly reflected on the part of farmers, not on the part of traders system, wholesalers and retailers, specially consumers.</p>

	Opportunities	Challenges
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<p style="text-align: center;">Development of products & Products circulation</p>	<ul style="list-style-type: none"> - Vĩnh Long is now having big opportunity to <u>develop specialized cultivation area for pomelos</u> due to the natural characteristics of Vĩnh Long and certain pomelos that have been long famous. - The coordination of production and consumption of fruits (including Vĩnh Long) with name <u>GAP Sông Tiền</u> shall create a production center to supply fruit tree species for other provinces in the area and for the whole country, and to develop production and business as well (because its location is in the area that has airport, waterways, the Institute of Southern fruit tree study). - The program of <u>establishing value chain for vegetables and fruits of Việt Nam</u> from now to the year 2009 of the Ministry of Planning & Investment shall strengthen the cooperation in-between those concerned and there shall be clear assignment from production to circulation stages. - The establishment of the first <u>National Fruits Business Center</u> by the province of Tiền Giang and SATRA is a bridge to link the provinces of the Mekong Delta and HCMC and partly contribute to business transaction of fruits of the Mekong Delta, including pomelos. - Opportunities to cooperate with domestic airports to increase the sale of fruit category 1. 	<ul style="list-style-type: none"> - Pomelos have still been planted at will <u>here and there</u>, difficult for authorities to handle in planning and determining output and thorough quality => this is also a biggest challenge that decides the successful business of pomelos in domestic markets and abroad as well. - The development of <u>industry zones</u> in the countryside is threatening to “encroach” land planting pomelos here. - <u>Sense and habit of</u> cultivation and doing small business without contract is also challenges, when VN is going to enter into WTO where competition is vigorous. - Program for establishing value chain is very important, but the execution of it is difficult in respect of <u>coordinating</u> enterprises/ traders into a big association where information from different source could be conveyed to other links. - There’s not many clients who frequent the Fruits Business Center now (see picture) though it has been modernly invested. Finding out the reason, reviewing all levels of personnel and the whole system is a challenge that could help to upgrade the effectiveness of the center.
<p style="text-align: center;">Demand of market & export</p>	<p><u>Demand of market</u> of fresh pomelos and processed products from pomelos has been increased in recent years in the country and abroad due to the characteristics and good effect of pomelos on the health of human being (reduce cholesterol, increase vitamin C, anti-fat build up on the wall of arteries....)</p>	<ul style="list-style-type: none"> - When China <u>entered into WTO</u>, the export of fruits into China then met with difficulty, because the policy of priority for border business was no longer granted, imported fruits must attain high quality guarantee of hygienic safety products and our fruits didn’t meet the requirement. - Due to spontaneous and small production, <u>the price of pomelos of Việt Nam</u> is now classified high in the zone.

Trademark and competition	<p>The <u>program protecting source of products</u> of the Departments of Agriculture and Commerce of the province of Vĩnh Long shall give a good opportunity to those organizations and enterprises that want to establish trademarks for the pomelos of Vĩnh Long</p> <p>- <u>Good competition</u> is also opportunity for pomelos of Việt Nam to establish themselves and perfect in the country and abroad.</p>	<p>- When VN enter into the WTO, the pomelos of Vĩnh Long must compete with other kinds of pomelos (directly) and other kinds of fruits (indirectly) in the zone and over the world (specially with Thailand and China.)*</p> <p>- Opportunities of high competition shall open to local famous trademarks (Đoan Hùng, Phúc Trạch v.v.)</p>
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V. CONCLUSION AND PROPOSAL.

Among the fruits of Việt Nam, pomelos are easy to plant and give high productivity. Vĩnh Long is a famous province to have pomelos Năm Roi, Da Xanh .. which are being grouped to plant on vast area. But the most difficulty for the value chain of pomelos (and other fruits as well) as we had opportunity to study (such as green dragon of Bình Thuận / grapes of Ninh Thuận, vegetables and roots of Đà Lạt, clean vegetables of HCMC) is how to **build CONFIDENCE of all participants in the value chain, upgrade the SENSE and RESPONSIBILITY of each link, from selecting tree species, care..., to cropping and circulation of products. And that it is necessary to enhance the role of consumers, who are the persons to make decision of quality and circulation of products.**

In order to achieve this, it requires that all organizations and concerning agencies extend their concerns and support and specially exercise **determinative** treatment of all violation and also encourage all individuals and groups who have rendered their contribution in the chain to make products attain high quality and be able to circulate with best costprice. As for consumers, press agencies and TV and Vietnam consumers protection association should strictly announce and encourage both way information, treat feedback promptly, upgrade perception of consumers toward the pomelos of Vĩnh Long and vegetables and fruits of Việt Nam in general.

**According to source 29, appdx 2, fee for transport on airplane of VN to Europe is 2,5 USD/kg, while of Thailand is 2 USD/kg. Thailand has signed particular priority customs, authorizing export all vegetables and fruits to China with a favour tax of 0%. Our fruits shall have to compete severely when exported to China, this market consumed 90% of export quantity. According to evaluation of a cadre of market administration in HCMC, Chinese fruits overcome VN market with a marketshare of 25-50%*

Below we have some more proposals for the training courses that shall be conducted by Metro and GTZ in coordination with the Ministry of Commerce for pomelos of Vĩnh Long, concretely as below:

1. GTZ should organize seminars to introduce concrete models of the value chain of pomelos (Thailand, China, or some developed countries), along with their difficulties and practical realization and results attained. Base on these facts that proper measures should be taken to apply in the value chain of pomelos of Vĩnh Long. Beside, it should be mentioned that the importance of the execution of these works is synchronous and throughout at every link of the chain, not aiming at any single target.

2. Training courses for contracts, legality should organize for all in general so that members at each link understand their benefits, obligation and necessary responsibility => It should have the participaton of financial organizations, banks, development and investment Funds..., and

help explain problems involving debts, capital loans, bank transfer etc., and commitment and support as well (if any)

3. Training courses about technologies and post cropping are necessary to organize for all members of the value chain so that they know the roles of each agent in the chain => Metro and the Research Institute of post cropping, the Institute of Southern vegetables and fruits, the University of Can Tho, other international organizations and typical enterprises should cooperate to proceed.

4. Beside, training courses should be organized for practical & specialized exercises for each link with relating subjects right at gardens (farmers) or at business places (traders/ wholesalers). Example: farmers with planting and care techniques, natural fruits secure ways, diseases symptoms and prevention etc... Traders: packaging, labeling, wrapping, handling and dealing with foreign targets etc... Metro & GTZ should organize a sample model with smooth operational chain from cropping to consumption of products for all agents of the value chain, assist with outlets for products of quality standard.

5. The administrative agencies should bring to close cooperation of 4 elements (Farmers. Businessmen, Scientists and the State) with thorough execution of enlarging area for specialized cultivation of pomelos. GTZ should assign consulting experts to assist the administrative agencies to plan export strategy for pomelos to include documental procedure for obtaining certificates of specific market for pomelos and processed products, additional information relating to squeezed pomelos juice and technologies applied by advanced countries, business proceeding and new export markets for pomelos of Việt Nam and also partial finance support for each project./.

Appendix 1: List of respondent

No	Full name	Role in the value chain	Position	Address / Agency	Contact number
1	Ngô Long Bồi	Expert	Head of agricultural science department	Agricultural & rural development department	0907960085
2	Nguyễn Trọng Danh	Expert	Head of management science department	Science & technology department	0918346536
3	Hồ Văn Hùng	Expert	Deputy director	Promotion & investment center	0913773015
4	Võ Văn Quốc	Expert	Deputy director	Encouraging agricultural expansion center	0918039718
5	Nguyễn Quốc Bảo	Expert	Deputy director	Seed center	0918311338
6	Nguyễn Thị Bích Nguyệt	Expert	Director	Protective	0913184942
7	Bùi Thị Đào	Expert	Head of Gardener association	Gardener association	070 820931
8	Nguyễn Văn Còn	Expert	Agricultural expert	People committee	0918403987
9	Lưu Nguyễn Trà Giang	Trader	Director	Hoang Gia LTD	0903304000
10	Lê Văn Sĩ	Trader		Mỹ Thới 2, Mỹ Hòa commune	0908972335
11	Bùi Thành Danh	Trader		Ấp Mỹ Thới 2, Mỹ Hòa commune	0918179318
12	Lê Văn Chiến	Trader		Ấp Mỹ Thới 2, Mỹ Hòa commune	0909633883
13	Dương Thị Mỹ Châu	Retailer		Ấp Thành Hòa, Thành Trung commune	070-828897
14	Trần Thị Điệp	Trader		Tân Vĩnh Thuận, Tân Ngãi commune	070-836119
15	Trương Thị Cẩm Hường	Farmer		Mỹ Thới 1- Mỹ Hòa commune -Huyện Bình Minh district	070-752508
16	Phạm Văn Vĩnh	Farmer		Mỹ Thới 1- Mỹ Hòa commune - Bình Minh district	
17	Nguyễn Tấn Khách	Farmer	35	Mỹ Phước 1 - Mỹ Hòa commune	070-752620
18	Lê Ngọc Em	Farmer		Mỹ Phước 1 - Mỹ	070-752735

				Hòa commune	
19	Nguyễn Văn Chăng	Farmer		Mỹ Thới 1- Mỹ Hòa commune -Bình Minh district	070-752705
20	Trương Thanh Tùng	Farmer		Mỹ Thới 1- Mỹ Hòa - Bình Minh district	
21	Ngô Thanh Sơn	Farmer		Mỹ Thới 2- Mỹ Hòa - Bình Minh district	070-891126
22	Lê Văn Xê	Farmer		Mỹ Thới 2- Mỹ Hòa - Bình Minh district	
23	Đoàn Thị Mai Hương	Customer	Chief of secretariat	Sasco company	8448358
24	Đỗ Minh Hiền	Expert	Head of department	Sofri	073-893129

Appendix 2: Reference document

Stt	Name	Report/Magazine/ web	Date
1	Website of Vĩnh Long province	www.Vinhlong.gov.vn	
2	Vĩnh Long : many specializing cultivation bring benefit of 50 millions VND/ha,	http://www.setira.com	
3	“Vĩnh Long - oportunity & investment” magazine	Tạp chí “Vĩnh Long Cơ Hội & Đầu Tư”)	2002
4	Transfer economic – agriculture structure in Vinh Long province	http://www.agroviet.gov.vn	2005
5	Viet Nam Rural & agriculture	www.agroviet.gov.vn	
6	Ennovate comprehensively in oder to develop fast & permanently.	http://www.vinhlong.gov.vn	2005
7	Plan for agricultural production in 2005	Agricultural & rural development department	2005
8	Supporting project for supplying system of vegetable & fruit in Vietnam		
9	Vĩnh Long: find solution to improve competitive ability	www.agroviet.gov.vn	
10	Vĩnh Long: fruit output increases 8.5 &	http://vietnamgateway.org	2006
11	Comprehensive solution to improve segment fruit manufacture in Vinh Long	Agricultural & rural development department	12/2004
12	Website of Ticay company	http://www.ticay.com.vn	
13	Website of Encouraging agricultural expansion center	http://www.khuyennongvn.gov.vn/	
14	“Bold” farmer in integrating time	www.vietnamnet.vnn.vn	
15	Forum “re –organize segment fruit manufacture system & pomelo” &”	http://www.tiengiang.gov.vn	
16	Grow Nam Roi pomelo with high technology	www.Vietnamnet.vnn.vn	
17	Diversify Nam Roi product	http://www.ticay.com.vn	
18	Technology to grow Nam Roi pomelo	Encouraging agricultural expansion center	2002
19	Vinh Long try to have many specializing cultivation bring benefit of 50 millions VND/ha	http://www.agroviet.gov.vn	2004
20	Vĩnh Long: meeting “ancestor” of Nam Roi pomelo	http://vietnamgateway.org	

21	Vĩnh Long : many specializing cultivation bring benefit of 50 millions VND/ha,	http://www.setira.com	
22	Mekong delta: which ways for special fruit?	http://www.baocongantphcm.com.vn/	02/ 2006
23	Preserve pomelo by chitosan	http://www.lamdong.gov.vn	13/03/2006
24	HCM market before “G” time	http://www.vietnamnet.vn	2006
25	Necessary of making plan for specializing pomelo cultivation ara	http://www.ticay.com.vn	12/2005
26	Industrial take place of pomelo ara	http://www.sggp.org.vn	2004
27	Impact of pre – harvest & post harvest technology on Nam roi pomelo quality in vinh Long	Agricultural & rural development department, Vĩnh Long	2002
28	Reference price of Tam Binh market, Vĩnh Long	http://www.agroviet.gov.vn	2006
29	Find permanent way to export fruit	http://www.mof.gov.vn	2004
30	Medicine of “ Ngu qua” tray	http://www.vnexpress.net	2006

Appendix 3: Picture

<p>Pomelo variety</p>	 <p>1. 5 roi pomelo</p>  <p>4. Bưởi Lông pomelo</p>	 <p>2. Da xanh pomelo</p>  <p>5. Đường Núi – Tân Triều pomelo</p>	 <p>3. Thanh Trà pomelo</p>
<p>Sadec seed garden</p>	 <p>6. Seed plant</p>	 <p>7. Sadec seed garden</p>	 <p>8. Sadec seed garden</p>
<p>Growing & harvesting</p>	 <p>9. grow pomelo</p>	 <p>10. Harvest</p>	 <p>11. Harvest</p>

		 <p>13. Arrange in bamboo basket</p>	 <p>14. Arrange pomelo after cut</p>
<p>Preliminary treatment, classification</p>	 <p>15. Pomelo waiting to be classified in garden</p>	 <p>16. Preliminary treatment, classification at trader's place</p>	 <p>17. Preliminary treatment, classification at collecting enterprises</p>
<p>Packing, labeling</p>	 <p>18. packed by jute bag</p>	 <p>19. Packed by carton</p>	 <p>20. packing & labeling, (5 Roi Hoàng Gia)</p>
<p>Transportation</p>	 <p>21. By motobyke</p>	 <p>22. By boat</p>	 <p>23. By truck (Hoàng Gia)</p>

<p>Storage</p>	 <p>24. At traser's place</p>	 <p>25. At wholesale market</p>	 <p>26. Arrange on shelf (Hoàng Gia)</p>
<p>Trading place</p>	 <p>27. Retail place in Vinh Long (at house)</p>	 <p>28. Retail place in Vinh Long (on street)</p>	 <p>30. At supermarket</p>  <p>33. National trading fruit center</p>
<p>Processing</p>	 <p>34. pomelo juice</p>	 <p>35. Pomelo Sweet soup</p>	 <p>36. "Gỏi bưởi"</p>

Phụ lục 4: Một số tiêu chuẩn về cây giống bưởi đã được công bố.

Viện Nghiên cứu Cây ăn quả miền Nam (SOFRI)	TIÊU CHUẨN CƠ SỞ	Số hiệu: TCCS 04-2001
	CÂY GIỐNG BƯỚI CHIẾT CÀNH Standards for Saplings of Pummelo (Marcotting)	Thời gian có hiệu lực:

Tiêu chuẩn này được áp dụng cho cây giống bưởi (*Citrus maxima*) chiết cành, sản xuất từ cây đầu dòng hoặc từ lỗ nhân nhanh có chứng nhận âm tính các bệnh Vàng lá greening và bệnh Tristeza, và còn trong thời gian cho phép khai thác.

1. YÊU CẦU KỸ THUẬT

Chỉ tiêu	Quy cách
Đường kính gốc	Từ 1,0-1,2 cm
Chiều cao	Không dưới 60 cm
Số cành	Tối thiểu 2 cành
Lá	Xanh tối và có kích thước, hình dáng đặc trưng của giống
Số lá	Hiện diện đầy đủ từ vị trí 1/2 chiều cao cây đến ngọn
Bộ rễ	Phát triển tốt, có nhiều rễ ọc
Độ đồng đều	Đồng đều, khỏe mạnh đạt $\geq 90\%$
Sâu bệnh	Không có triệu chứng các bệnh: Vàng lá greening, Tristeza, loét, ghẻ, chảy mủ, thán thư và các loại sâu hại: nhện, bọ trĩ, sâu vẽ bùa, rệp sáp.

2. PHƯƠNG PHÁP KIỂM TRA

- Kiểm tra dáng giống và có lý lịch cây giống gốc cấp S₁ hoặc lỗ nhân nhanh chứng thực và có độ sinh trưởng theo 1.
- Đường kính gốc cây giống: đo phía dưới nơi ghép 2 cm, lúc kiểm định cây giống.
- Chiều cao cây giống: đo từ mặt môi trường trong bầu đến đỉnh chồi thân chính của cây giống.
- Có xác nhận âm tính qua phép thử PCR đối với bệnh Vàng lá greening, phép thử ELISA đối với bệnh Tristeza (theo Viện Nghiên cứu CÀQ miền Nam).
- Thời gian kiểm định: khi lỗ cây giống đạt các yêu cầu kỹ thuật

3. NHẬN HIỆU- BẦU ƯƠM- VẬN CHUYỂN VÀ BẢO QUẢN

3.1. Nhận hiệu:

Chữ in rõ ràng, nhận được ép hoặc bọc nhựa chống thấm ướt. Các nội dung ghi trên nhãn:

- Tên giống: bưởi.....(chiết cành)
- Tên cây đầu dòng:
- Lô sản xuất: số thứ tự cây giống trong đợt sản xuất, tháng ghép, năm chiết
- Cơ sở sản xuất: tên và địa chỉ
- KCS: tên nhân viên và cơ quan nông nghiệp kiểm định cây giống đủ tiêu chuẩn.
- Tình trạng bệnh: sạch bệnh
- Địa tương của đơn vị sản xuất cây giống (nếu có)

3.2. Bầu ươm

- Bầu nuôi dưỡng cây giống có màu sẫm bên trong, chắc chắn, nguyên vẹn.
- Kích cỡ bầu ươm: đường kính là 14-15 cm, cao 30-32 cm
- Số lỗ thoát nước từ 20-30 lỗ/bầu
- Đường kính lỗ: 0,6-0,8 cm
- Môi trường bầu ươm: đầy bầu đủ ẩm, phủ kín rễ, không có cỏ dại.

3.3. Vận chuyển và bảo quản

- Cây bưởi được bảo quản (chăm sóc hoặc chờ bán) trong nhà lưới 2 cửa ngăn chặn đùn rầy chống cành.
- Trước khi vận chuyển, cây giống phải được phun các loại thuốc trừ rầy có tính lưu dẫn.
- Cây bưởi khi vận chuyển phải được bao che kín.
- Các bầu ươm xếp chồng lên nhau không vượt quá 1/2 chiều cao cây giống.
- Chân cành giống (nơi tiếp giáp mặt bầu ươm) phải được cố định một cách chắc chắn vào bầu ươm.

Viện Nghiên cứu Cây ăn quả miền Nam
vườn Viện trưởng

Viện Nghiên cứu Cây ăn quả miền Nam (SOFRI)	TIÊU CHUẨN CƠ SỞ	Số hiệu/TCCS 05-2001
	CÂY GIỐNG BƯỚI GHEP MÁT Standards for Saplings of Pummelo (Grafting)	Thời gian có hiệu lực:

Tiêu chuẩn này được áp dụng cho cây giống bưởi (*Citrus maxima*) ghép mắt.

1. YÊU CẦU KỸ THUẬT

Chỉ tiêu	Quy cách
Gốc ghép	Phải có thân thẳng và cổ rễ ngay
Dạng cây gốc ghép	Cây gieo từ hạt, cây giâm cành sạch bệnh, cây do nuôi cấy mô
Đường kính gốc ghép	- Từ 1,0-1,2 cm - Gốc ghép được cắt ngang cách vị trí ghép 2 cm về phía trên. Khi xuất vườn phải cắt gốc ghép lại. Mặt cắt nằm tiếp giáp ngay phía trên chân của cành giống.
Chiều cao cây giống	Từ 60-80 cm
Thân cây	Thẳng, vững chắc, thân phải tròn (phía trên vị trí ghép 2 cm), không mang các thương tích cơ giới nghiêm trọng sâu đến phần lõi gỗ.
Vị trí ghép	- Cách mặt môi trường trong bầu ươm 20-30 cm. - Mối ghép đã hàn gắn, liền sẹo tốt.
Số cành	Chưa phân cành
Lá	Xanh tốt, có kích thước, hình dạng đặc trưng của giống
Số lá	Hiện diện đầy đủ
Bộ rễ	Phát triển tốt, có nhiều rễ tơ
Độ đồng đều	Cây giống đồng đều, khỏe mạnh $\geq 95\%$
Sâu bệnh	Không có triệu chứng của các bệnh: loét, ghẻ, chầy mủ và các loại sâu hại: thán thư, nhện, bọ trĩ, sâu vẽ bùa, rệp sáp.

2. PHƯƠNG PHÁP KIỂM TRA

- Kiểm tra đúng giống và có lý lịch cây giống gốc cấp S₁ hoặc lô nhân nhanh hoặc cành ghép chứng thực và có độ sinh trưởng theo 1.
- Đường kính gốc cây giống: đo phía dưới nơi ghép 2 cm, lúc kiểm định cây giống.

- Chiều cao cây giống: đo từ mặt môi trường trong bầu đến đỉnh chồi thân chính của cây giống.
- Có xác nhận âm tính qua phép thử PCR đối với bệnh Vàng lá greening, phép thử ELISA đối với bệnh Tristeza (theo Viện Nghiên cứu CÂY miền Nam).
- Thời gian kiểm định: Khi lô cây giống đạt các yêu cầu kỹ thuật

3. NHÃN HIỆU-BẦU ƯƠM- VẬN CHUYỂN VÀ BẢO QUẢN

3.1. Nhãn hiệu: chữ in rõ ràng, nhãn được ép hoặc bọc nhựa chống thấm ướt. Các nội dung ghi trên nhãn:

- Tên giống: bưởi..... (ghép mắt)
- Tên cây đầu công:
- Gốc ghép: tên gốc ghép, cây giâm cành, cây hạt hay cây nuôi cấy mô.
- Lô sản xuất: số thứ tự cây giống trong đợt sản xuất, tháng ghép, năm ghép
- Cơ sở sản xuất: tên và địa chỉ
- KCS: tên nhân viên và cơ quan nông nghiệp kiểm định cây giống đủ tiêu chuẩn.
- Tình trạng bệnh: sạch bệnh
- Biểu tượng của đơn vị sản xuất cây giống (nếu có)

3.2. Bầu ươm

- Bầu nuôi dưỡng cây giống có màu sẫm bên trong, chắc chắn, nguyên vẹn
- Kích cỡ bầu ươm: đường kính là 14-15 cm, cao 30-32 cm
- Số lỗ thoát nước từ 20-30 lỗ/bầu
- Đường kính lỗ: 0.6- 0.8 cm
- Môi trường bầu ươm: đầy bầu đủ ẩm, phủ kín rễ, không có cỏ dại.

3.3. Vận chuyển và bảo quản

- Cây bưởi được bảo quản (chăm sóc hoặc chờ bán) trong nhà lưới 2 cửa ngăn chặn được rầy chống cách.
- Trước khi vận chuyển, cây giống phải được phun các loại thuốc trừ rầy có tính lưu dẫn.
- Cây bưởi khi vận chuyển phải được bao che kín.
- Các bầu ươm xếp chồng lên nhau không vượt quá 1/3 chiều cao cây giống.

Viện Nghiên cứu Cây ăn quả miền Nam
Miền trước

Viện Nghiên cứu Cây ăn quả miền Nam (SOFRI)	TIÊU CHUẨN CƠ SỞ	Số hiệu: TCCS 02-2001
	CÀNH GHEP: CAM, QUÝT, BƯỞI, CHANH Standards for Budstick of Orange, Mandarine, Pamelo, Lemon/Lime	Thời gian có hiệu lực:

Tiêu chuẩn này được áp dụng cho các loại cành giống (có chứa mắt ghép) cây có mùi: cam, quýt, bưởi, chanh... thu trên lô nhân nhanh sạch bệnh còn thời hạn khai thác.

Cành ghép là một đoạn cành có chứa mắt ghép để nhân giống đoạn cành để ghép nhân giống, thu ở một đợt phát lộc của cây.

1. YÊU CẦU KỸ THUẬT

Chỉ tiêu	Quy cách
Tiết diện	Dạng tròn hoặc dạng tam giác
Vỏ cành	Vỏ cành trơn láng và có màu xanh đậm (loại cành tam giác) hoặc có vài đường chỉ màu xám (loại cành tròn).
Mắt	Còn nguyên vẹn
Cuống lá	Cuống lá có vết cắt sắc, dài khoảng 2-3 mm
Độ dài	20-35 cm
Tuổi cành	Từ 3-4 tháng
Sâu bệnh	-Không có triệu chứng của côn trùng hại: rệp sáp, sâu vẽ bùa của các bệnh loét, ghẻ, chảy nhựa. -Không có nấm mốc phát triển trên các cuống lá rụng khỏi cành ghép (khi đã đóng gói).

2. PHƯƠNG PHÁP KIỂM TRA

-Có xác nhận âm tính qua phép thử PCR đối với bệnh Vàng lá greening và phép thử ELISA đối với bệnh Tristeza (theo Viện Nghiên cứu CÂY MIỀN NAM).

3. GHI NHÃN-BAO BÌ-BẢO QUẢN

3.1. Ghi nhãn-Bao bì:

-Cành ghép được cột thành từng bó 20 cành, dây cột dính kèm 1 nhãn ghi rõ tên giống được viết bằng loại mực không nhòe khi gặp nước. Tất cả được chứa trong bao PE loại trong và hàn kín. Bên ngoài bao PE có dán nhãn hiệu.

-Các nội dung trên nhãn hiệu: tên giống, dòng, tình trạng dịch hại chính, lô sản xuất, ngày thu hoạch, đã xử lý thuốc phòng ngừa bệnh nào, số cành, tên cơ sở sản xuất và địa chỉ, KCS.

3.2. Bảo quản:

Bảo quản cành ghép trong túi PE trong, hàn kín và rút chân không trong túi, không có cành hoặc cuống lá bị nấm, mốc, không có hơi nước đọng. Hai đầu vết cắt của cành ghép có nhúng parafin.

-Cành cam, quýt: nhiệt độ bảo quản 4,5^oC, ẩm độ 80-90 %

-Cành bưởi: nhiệt độ bảo quản 8-10^oC, ẩm độ 80-90 %

Chức vụ	Viện Nghiên cứu Cây ăn quả miền Nam
Thời điểm	Viện trưởng
Mã vạch	TS. Nguyễn Minh Châu
Địa chỉ	
Điện thoại	