

# **Building and protecting Thanh Ha lychee's status of Protected Geographical Indication by upgrading the value chain**

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## **Abstract**

The Thieu Thanh ha lychee has a famous reputation in quality. However, recently the decreased prices lychees fetch has created an important risk for small producers. The lack of technology and institutions for quality management in the value chain was the critical focus point of this case study. The previously separated implementation of projects to improve this value chain failed. Private sector business is still very weak in Vietnam, so the GTZ's implementation policy focused on promoting community enterprise. An integrated approach to upgrading the value chain based on PGI quality building processes was successfully applied by the GTZ and VAAS for this lychee.

The aims of building the PGI status of the Thieu Thanh Ha lychee were to improve the market ability of producers and to protect lychee production. The involvement of small producers using collective action to encourage the homogeneous quality of large-scale quantities for supply and the ability to develop a specific distribution network in order to reach specific clientele remain critical conditions of success. The Thanh ha Lychee Production and Commercialization Association has become a new institution in charge of this challenge task.

However, the implemented activities were on the long of value chain at the same time. Building a common technical package based on indigenous, scientific knowledge and market demand to ensure stabilization of lychee production and quality was part of the first projects implemented. The quality of these products was overseen by an internal quality management mechanism of the Association. The legal process for PGI protection of the Thieu Thanh Ha lychee will be approved in 2007. The research carried out thus far is helping farmers to build a product zoning map to recognize the variety and technical processes, highlighting the close relationship between specific quality and the local ecological conditions in order to achieve a PGI formality. The professional labelling and marketing tools designed to establish distribution contracts with external companies, supermarkets and private stands also contribute to increasing the ability to trace the produce. Also, a Thanh Ha lychee website is being built to promote marketing and tourism.

In conclusion, the Thanh ha lychee case shows that upgrading the value chain for a PGI product in a developing country needs to be integrated with marketing, institutional and technological tools. This is a potential avenue open to a local product seeking a diversification strategy in the context of the recently ratified accession of Vietnam to the WTO.

## **Introduction**

The district of Thanh Ha in Hai Duong province on the Red river delta has a reputation as having the best quality Thieu Thanh Ha lychee (*Lychee Chinensis*). Additionally it has the longest tradition of growing the fruit, more than 150 years. These factors make it very much appreciated by consumers. The area of production is currently 6500 ha. Although the production area is still limited a recent decrease in lychee prices has created an urgent risk situation for small producers. This is in conflict with the poverty reduction policy by lychee plantation development based on the quantity growth in the greater region.

The price of the Thieu lychee has been decreasing, illustrated by a price drop from 1997 when the sale price was VND 15000/kg to only VND 2500 per kg in 2004. In the production area of Thanh Ha district, the Thieu Thanh Ha lychee is mixed with other kinds of lychee. The Thieu Thanh Ha lychee's reputation is abused, leading to decreased consumer confidence in the produce. The economic risks faced by producers may have caused a reduction in the Thieu lychee production area. During the period 2003 – 2005, the project “Institution and local associations development for collective services organization and management” (abbreviated to DIALOGS in French) actively supported the establishment of the Thieu Thanh Ha Association; an organization of farmers that formally participated in the quality management of the product value chain. The Association has a total of 150 members who produce lychee on 49 ha. However a lack of market access and unequal product quality that was without protection certificates were the main constraints to increasing to the added value of the Thieu Thanh Ha lychee. In 2006 the Centre for Agrarian Systems Research and Development in cooperation with a German technical support organisation, the Deutsche Gesellschaft für Technische Zusammenarbeit GmbH, (GTZ) using the framework of the small and medium enterprises development project, has supported the Thieu Thanh Ha Association by regarding it as a rural community enterprise. The core content of the activities was to support the establishment of a Geographical Indication (GI) for the Thieu Thanh Ha lychee. Action was based around the approach of comprehensively improving the factors related to quality management in the value chain in order to create added value to the local specialty. In Vietnam, intellectual property rights have since 2006 included stipulations relating to geographical properties for agro-food products; it is this legal framework that sets up the conditions for the activities discussed in this paper. Nevertheless, it is necessary to create real management institutions for the local agencies and assist in the building of relationships among stakeholders in the value chain to maintain high quality.

Globally, there are many examples of establishing geographic indicators to protect and strengthen the development of local specialties. Quality management literature mentions the experience gained from labeling fresh fruit and vegetable products in the French and US markets as a “good strategy for sustaining consumer confidence and assuring consumer satisfaction” (Codron, Stern & Reardon, 2000). Also mentioned in the literature are the best marketing strategies for fresh fruit: of which a core component is labelling. This labelling should be product specific and producer inclusive as PDO (Protected Designation of Origin) labels. Critical to sustainability of this labelling process is producer participation as a collective action. The current debate and negotiations occurring at the international level concerning the protection of GI are of direct interest to the local agricultural products and foodstuffs referred to as ‘terroir products’ (Berard, Marchenay, 2006).

In Europe, geographical indication protection is used widely with 711 products (and enables consumers to make more informed choices with regard to the quality of goods. For this reason the geographical name is protected for producers from a specific area in which the product is produced and using a particular variety or technical process. However, in the US market, geographical indication violates the trademark system; hence the geographical name is not protected and cannot be used to classify produce. In the American case any producer can use this generic geographical name. The European system of GI serves the same function as a trademark with three specific characteristics: as source-identifiers, as a guarantee of quality and helping to protect valuable economic interests. New questions are being raised about GI products in regard to the diversification of farming and sustainable development. Several examples from France will help show how links can be established between the protection of GI, cultural biodiversity, and local knowledge. Olson (1965) highlights the positive role played by the collective action of different stakeholders in the value chain with the active participation of producers as being a good strategy for reputation management of a brand. The reputation of the brand or label adds value to the chain, the producer and sustains the viability of the commodity chain. The lesson that can be taken from the literature is that success is dependant on combining the protection system of GI and instituting quality management in the value chain by the active involvement of local stakeholders.

A previous paper (Dao The Anh et al, 2005) developed the first steps towards the labelling of Thanh Ha lychee. These include: identification of the characteristics of the variety, defining the area of cultivation, building technical packages to encourage the cultivation of Thieu Thanh Ha lychee with some changes to traditional methods (using experimentation and discussions with farmers) and the establishment of producers and marketing associations. The present paper focuses foremost on the detailed procedures to enable success in the registration of GI. Also discussed will be the specific features from the area which have an impact on fruit quality demonstrated

by documents and experiments. Finally, actions undertaken to diversify marketing outlets for the product will be presented.

## **Method**

The integrated approach applied here is needed to improve both quality and the quality management system in the value chain that coincides with preparing documents to register for a GI product. The approach consists of the following steps:

1. Supporting the preparation of documents for Geographical Indication of the Thieu Thanh Ha lychee. This composed of five steps:
  - a) Identifying specific quality attributes of the Thieu Thanh Ha lychee
  - b) Identifying specific ecological characteristics of the production area
  - c) Statistical analysis to illustrate the relationship between specific characteristics of quality indicators and the ecological and natural conditions
  - d) Mapping the GI region
  - e) Designing the procedures for Good Agricultural Practice (GAP)
2. Training small-scale-producers to enhance their capacity of GAP management.
3. Increasing the internal quality management capabilities of the Association and improving the GI management institutions in the region
4. Promoting ability in accessing and diversifying market for lychee.

## **Results**

### **1: Supporting the preparation of documents relating to geographical indication for the Thieu Thanh Ha lychee Association.**

The Thieu Thanh Ha lychee was originally transplanted to the region from China and has been grown in Thanh Son commune, Thanh Ha district for over 150 years. Recent identification of initial seedlings has been done by other projects in the province to select 42 Thieu Thanh Ha lychee trees to be the vegetative strains. The Thieu Thanh Ha lychee farms already exist, the challenge of the study is to build indicators in order to accurately identify farms with the potential to produce quality fruit that can be labeled with the GI.

#### a) Identifying specific quality attributes of the Thieu Thanh Ha lychee.

In order to evaluate the differences between Thieu Thanh Ha lychee and other Thieu lychee planted in neighboring districts a survey of opinions held by stakeholders such as farmers, distributors and consumers has been used. See Table 1.

The Thieu Thanh Ha lychee is ranked by interviewees as the most delicious (1) by a unanimous 100% of interviewees. These findings are based on indicators such as sweetness, dry-pulp rate, dominant scent, and acidity compared to Thieu lychees from

other districts. Inside the district of Thanh ha, 63% of interviewees saying the quality of the Thieu Thanh Ha lychee divides into 3 main zones, each having a gradually decrease in quality. Zone 1: the most delicious lychee. Originating from 5 communes: Thanh Son, Thanh Thuy, Thanh Xa, Thanh Khe, and Thanh Xuan. This is the region where the Thieu Thanh Ha Association is located in. Zone 2: cultivating a lot of lychee but in lower quality, 16 communes. Zone 3: has lychee of the lowest quality, 4 communes. The Thieu Thanh Ha lychee in the zone 1 is the most delicious because it is the sweetest, high dry-pulp rate and the most fragrant. In order to obtain scientific and quantitative information of the specific attributes of the quality of the Thieu Thanh Ha lychee, it is needed to apply quantitative analysis in the laboratory using three groups of main criteria: sensible, physical and bio-chemical criteria.

*Evaluating sensible criteria of the Thieu lychee in different regions.*

The results from analyzing the sensible criteria show the highest sensible score of 27.39 was achieved by the Thieu Thanh Ha lychee. For the criteria of sweetness, dry-pulp rate, scent, the scores are highest among the others at 4.72; 4.50 and 4.72 respectively. The equality within analyzed samples was very high, see Table 3.

*Evaluating the physical criteria of the Thieu lychee in different zones*

The Thieu Thanh Ha lychee trees that have reached 30 years old have low weight fruits (18,26gram on average), the proportion of pulp is high (82%) whilst the proportion of seed is low (5%). Trees less than 20 years old have bigger fruits (23,07gram average) which are not so different from similar trees in Luc Nag and Too Ky. The seed proportion shows no difference between zones. However, the proportion of pulp for the Thieu Thanh Ha lychee is higher (79% vs. 70-75% in other zones). The study also evaluated the average brix rate of the Thieu Thanh Ha lychee. In zone 1 this was 20.7% and in region 2 it was 19.86% which is higher than the other Thieu lychees. The specific attributes of the Thieu Thanh Ha lychee fluctuated between 19.6% and 21.2% depending on cultivating conditions. Furthermore, the Thieu Thanh Ha lychee has a higher proportion of dry matter in the pulp than other Thieu lychee cultivated in other zones. In Thanh Ha district, the Thieu lychee cultivated in the zone 1 has a higher proportion of dry matter in pulp than those from zone 2. The proportion of dry matter in pulp of the Thieu Thanh Ha lychee as a specific attribute of quality fluctuated between 20.03% and 21.56%. See Table 4. Therefore, the Thieu Thanh Ha lychee qualities can be qualified according to the following attributes:

- Sensible criteria: sweetness, dry-pulp rate, specific scent.
- Physical criteria: high pulp proportion, smooth thorn, stem of fruit is flexible and small.
- Bio-chemical criteria: Brix range from 19.6% - 21.2%. The proportion of matter in pulp ranges from 20.3% - 21.56%. Total sugars range from 16.9% - 18.52%.

#### b) Attributes of nature and ecosystem in the Thanh Ha region.

Climatic attributes: because lychee is a perennial adapted to a sub-tropical climate, the climate and water resource factors strongly affect quality and yield. A reasonable distribution of rainfall in March and April creates favorable conditions for fruiting and Thanh Ha proves to be an appropriate region for Thieu lychee growing.

##### *River and hydrographic system attributes*

Thanh Ha commune is irrigated by three main rivers; Thai Binh, Rang and Van Uc (over 200km in length), additionally, there are many smaller rivers in the area with a cumulative total of 350km. Because of tidal action some parts of Thanh Ha are influenced by salt water. Hence, water in some areas of Thanh Ha consists of a fairly high proportion of cations such as Na<sup>+</sup>, K<sup>+</sup>, Mg<sup>++</sup> (19:6:6 and 12mg/l respectively). These proportions gradually decrease in the far-from-sea regions (Na<sup>+</sup>=19→1; K<sup>+</sup>=6.6→0.66mg/l; Mg<sup>++</sup>=12→1.2mg/l).

##### *Soil attributes*

Three samples of soil were taken from Thanh Ha and other regions. These samples were taken from 2 different layers: 0 – 20 cm and 20 -60 cm. The locations the soil samples were taken from matched the fruit samples taken for testing. The results revealed:

- In Thanh Ha region, most of the soils range from neutral to mildly acidic. The PH index is higher than other areas whilst the hydrolysis PH index is lower.
  - Organic carbon and total nitrogen are medium as opposed to other regions that are poor
  - Total potassium, disintegrated potassium and phosphorous are higher other regions,
- Some other minerals such as Molybdenum and Borate are also much higher than other regions.

#### c) Correlation between soil and quality of the Thieu lychee in Thanh Ha

Using the multi-dimension statistic method (principle factor component analysis) to examine what natural factors have critical affects on the attributes of fruit quality, the study established some quality norms (brix rate, accumulated sugar and dry mineral rate) which can not be used separately to qualify the fruit, rather the combination is what gives the Thieu Thanh Ha lychee it's special quality. The rates of PH hydrolysis index are reversible to lychee quality; 'sour soil' can not sustain trees that produce high quality fruit. The proportion of brix, dry matter and total sugars is closely related to some minerals such as: Na<sup>+</sup>, K<sub>2</sub>O, Mo and Bo. In order to grow the desired Thieu lychee the brix rate must be from 19.6%- 21.2%. Dry matter must be from 20.3% - 21.56% and total sugars from 16.9% -18.5%. The mineral levels for the first layer soil must be:

K <sub>2</sub> O total	=	1.6 – 2.7%
Na <sup>+</sup>	=	0.45 – 2.55 ldl/100 gram of soil
Bo	=	35 - 47ppm/100 gram of soil
Mo	=	27 - 36 ppm/100 gram of soil

d) Defining the protected geographical indication area for the lychee

The protected geographical indication area for the Thieu Thanh Ha lychee is defined using Geographic Information System (GIS) methods.

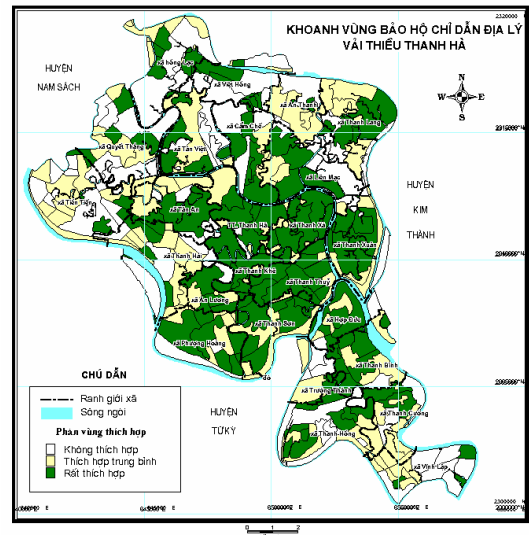
- Map for classifying lychee-quality-areas
- Map for classifying soil
- Map of river and hydrographic systems
- Map of mineral compositions
- Map of nutrition proportion in soil.

The results are:

- 6.020 ha located in communes of the district have all the desirable attributes

- The areas suitable for GI protection are mainly located in communes: Thanh Xa, Thanh Thuy, Thanh Khe, Thanh Son, Thanh Xuan, Hop Duc, Phuong Hoang and An Luong.

These lands are composed of alluvial soils with low acidity. Chemical components make the soil rich at the medium level and the soils have PH rates ranging from medium to lowly acidic.



e) Establishing Good Agricultural Practice (GAP) for Thieu Thanh Ha lychee

The completed production process that established the competencies of GAP for lychee production in 2006 included four important components:

- Techniques for growing and tending lychee in the initial preparatory stage: selecting the branch for grafting, preparing the soil, growing and tending the young lychee sapling.
- Techniques for tending lychee in the production stage: pruning branches, stimulating budding, compelling winter budding and promoting blossoms, tending to the tree in blossom to develop fruiting for harvest.
- Preventing and exterminating insects and diseases that may harm the crop: techniques were developed to define the insects and diseases that may cause harm to the lychee fruit and methods to prevent these threats were implemented.
- Harvesting rules and a schedule for best quality fruit were developed.

## **2: Training small-scale-producers to enhance their capacity of GAP management.**

- Production process, which was completed in 2006, has been applied in most of the lychee cultivated areas in association. The training method based on ToT has been carried out by groups of association.
- The result of lychee harvest in 2006 revealed the areas applying GAP have 3 times higher productivity than those of all areas on average (124 kg in comparison with 47 kg/ sao)<sup>1</sup> due to successfully overcome hoarfrost disease, which helps to get equal quantity of fruit and to reduce disease and insects.
- The reasonable of process is also stated in the fact of production. In order to expand the efficiency of process in wide range, GTZ support association with training course promoting practice skills about lychee cultivation techniques for all members of association.

## **3: Promoting the internal quality management capacity of the association and completing establishment of the GI management institutions in the locality.**

The GTZ consulted for the producers association to implement quality management systems at different levels from the association down to sub-associations and groups. With this decentralized management structure the association can manage the quality of each farmer and is aware of overall production for the whole collective. Additionally, control schedules, collective norms and tools for supervision were constructed. This activity will continue post-GI establishment in 2007.

## **4: Promoting ability in accessing and diversifying market for lychee**

To promote market capacity the GTZ project has linked producers to distributors such as the Phu Thai Corporation, Hoa An Company and the Bao Thanh company. The GTZ also linked producers to retailers in Hanoi through compatible associations. The GTZ identified the potential consumers as those with a comparatively higher income. As a result the producers association and Phu Thai Corporation distribute the high quality lychee through supermarkets and selected retail networks in Hanoi city. The sale price was between 3000 to 5000 VND/kg higher than that in other lesser grade lychee. The linkage between the producers' association and distribution companies under a contract has created a new channel for selling lychee that ensures stability and parity of profit for the stakeholders. Beside the big markets, small markets such as Hai Duong city, highway 5 Hanoi to Hai Phong city and Quang Ninh province have an important role. This allows diversification of the distribution channels. Consumers in these channels know about the quality and attributes of the Thieu Thanh Ha lychee, which strengthens the competitiveness and the Thieu Thanh Ha lychee.

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<sup>1</sup> Vietnamese unit: 1 sao = 360 m<sup>2</sup>



Marketing tools were built and implemented, workshops, customer conferences and fairs were organized in cooperation with the central television network which broadcast programs to popularize the lychee and improve exposure to potential customers. Logos, labels, posters guidelines, advertisements and a website ([www.vaithieuthanhha.com.vn](http://www.vaithieuthanhha.com.vn)) are being made to promote the products and enable the ordering of lychee online which will help the association better plan lychee distribution.

Investment in storage and processing technology will prolong the lifetime of fresh lychees and help diversify product offerings. The project has improved a cold store used by the producers association and transferred technologies useful for processing among other things, jam. The project also supported the association by improving the drying machines to enhance the quality of dry lychee. These activities have contributed to stabilizing producer's income from price fluctuations. Importantly the project has helped producers to approach a big market for dried lychee: China. The project helped the association participate in trade fairs in Ha Khau district, Van Nam province, China. From ten fair exposures seven potential clients discussed distributing dried lychee. From this one contract for supply was signed by the Song Thong trade company in Van Nam province, China.

## **Conclusion**

The results established that the special features that made Thieu Thanh Ha lychee applicable for GI protection are: sweetness, dry pulp rate, scent and some other bio-chemical characteristics. The bio-chemical characteristics relate to the natural conditions such as the climate (distribution of rain fall) rivers and hydrographic system, irrigated water quality and especially mineral characteristics such as K<sub>2</sub>O total, Na<sup>+</sup>, Bo, Mo. The GAP production process of Thieu Thanh Ha lychee has also been defined. The conditions necessary to obtaining protected Geographical Indication status have been met. This local product now has continuously integrated intervention aimed at promoting the product and controlling the quality of the product whilst adding value to the market chain. One of the typical tools used for this approach was the farmer's organization. The interventions of VAAS and GTZ have been continuously carried out even after GI of the Thieu Thanh Ha lychee established protection in 2007. These activities are mainly concentrated on promoting management capacity and gaining access to markets which help the Thieu Thanh Ha lychee association reach its objectives and achieve stability.

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## Appendix

*Table 1: Quality evaluation by taste, smell, feel and appearance of Thieu lychee by district in the opinion of stakeholders*

Thanh Ha district		Tu Ky district		Chi Linh district		Luc Ngan district	
Rank	% of interviewees	Rank	% of interviewees	Rank	% of interviewees	Rank	% of interviewees
1	100	2	25	3	25	2	100
		3	75	4	75		
1		4		5		2	

*Table 2: Evaluation by the stakeholders of quality indicators by sense and by region in the Thanh ha district.*

Indicators	Zone 1		Zone 2		Zone 3	
	Rank	Proportion of interviewees (%)	Rank	Proportion of interviewees (%)	Rank	Proportion of interviewees (%)
Sweetness rate	1	100	2	100	3	100
Dry pulp	1	100	2	100	3	100

Scent	1	100	2	100	3	100
Acrid taste	2	75	1	75	1	100
Acid rate	2	75	1	75	1	100

*Table 3: Results of evaluating quality basing on sensible criteria of the Thieu lychee*

Region	Nbr of sample	Color of pulp	Sweetness of pulp	Sourness of pulp	Crispy rate of pulp	Acrid rate pulp	Scent	Total point
<b>Thanh Ha</b>	10	4.17	<b>4.72</b>	4.89	<b>4.50</b>	4.39	<b>4.72</b>	27.39
<b>Luc Ngan</b>	10	4.11	4.33	4.67	3.94	3.89	4.17	25.11
<b>Tu Ky</b>	10	3.78	4.11	4.33	4.17	4.33	4.28	25.00
<b>Chi Linh</b>	10	2.67	3.22	3.44	2.61	2.89	3.61	18.44

*Table 4: Bio-chemical criteria of the Thieu lychee from different regions*

Lychee regions	Number of sample	Brix rate (%)	Proportion of dry matter (%)	Proportion of accumulated sugar (%)	Deoxidized sugar (%)	VTMC (mg/100g)	Total Acidity (%)	Sugar /Acid
Thanh Ha (Zone 1)	45	20.70	21.59	18.12	14.30	20.19	0.094	194.89
Thanh Ha (Zone 2)	96	19.89	20.83	17.65	14.22	22.70	0.096	183.85
Luc Ngan	10	19.50	20.21	16.56	13.42	24.36	0.109	152.49
Tu Ky	10	19.00	19.78	16.73	14.34	20.77	0.110	154.62
Chi Linh	10	18.10	18.28	15.25	12.11	24.36	0.141	108.54
Range reaching quality attributes		>19.6 - 21.2	>20.3- 21.56	>16.90 - 18.52				