

**COUNTRY CASE STUDIES ON REFLECTING NATIONAL CIRCUMSTANCES AND  
DEVELOPMENT PRIORITIES IN NATIONAL CODES ON GOOD AGRICULTURAL  
PRACTICE BENCHMARKED TO EUREPGAP**

**by**

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## **Abstract**

Good Agricultural Practice (GAP) has been institutionalized in Vietnam with limited level of effectiveness. EUREPGAP has been introduced to Vietnam since 2000 by various foreigner driven projects with the technical assistance from government bodies and a few private companies. This paper examines the implementation of GAP in Vietnam and their impacts; identifies the gap between the existing GAP and EUREPGAP. Failure to EUREPGAP certification and the causes of failure are assessed through the case of dragon fruit – an industry that has been targeted for EUREPGAP in Vietnam.

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## **A. OVERVIEW OF PRODUCTION AND TRADE PATTERNS OF HORTICULTURAL PRODUCTS AND THE ROLE OF EUREPGAP**

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### **I. Production and trade pattern of horticultural products**

Despite of rapid annual growth rate, fruit and vegetables (F&V) production areas in Vietnam accounted for only a small portion in total cultivated areas. In 1999, shares in total cultivated areas were 5% and 4% for vegetables and fruits respectively (IFPRI Report, 2002). The export of F&V was thin. Prior to 1995 ( the year VN jointed AFTA), the export value -mainly to Soviet Russia and other socialist countries- had been tiny. The exporting has taken off since 1995 and reached to 330 million USD in 2001 then declined. Inconsistent quality and quantity have been main constraints to export. Lack of good varieties; poor post harvest technology and weak supply chain management are common reasons of poor performance. Fruit and vegetables are produced mainly by small farmers whose farm size commonly less than 0.3 ha for vegetables and less than 1 ha for fruits.

Vietnam's main export horticultural products are cabbages and spicy vegetables; mango, dragon fruit, pomelo and litchi. Vietnam's main export markets are currently Taiwan, China, Hong Kong, Malaysia, Singapore and Indonesia whose requirements for food safety and quality are not as strict as the European countries. Facing with a saturated **Asian** market, few Vietnamese exporters have made their best efforts to penetrate into and enhance their revenue in European markets. The producers and exporters' awareness and application of the key food safety and quality requirements have been more and more increasing.

### **II. Importance of the EurepGAP standard in the main export markets**

Vietnam's export of horticultural product to European countries is neglectable in its total export volume. Therefore, percentage of export volume that need to be EurepGAP- compliant is insignificant.

However, some Vietnamese exporters, like Bao Thanh company; have currently made efforts to enter into European markets under the requirement of EurepGAP certificate. Apparently, the achievement of EurepGAP certificate will be stimulus for the country's horticultural export revenue. In addition, EurepGAP is currently promoted through various foreigner funded projects as reported at section B.iv.

## **B. IMPLEMENTATION OF G.A.P IN VIETNAM**

GAPs include recommendations to improve the quality and safety of agricultural products. Good Agricultural Practices (GAPs) is defined as "guidelines established to ensure a clean and safe working environment for all employees while eliminating the potential for contamination of the food products" (UM, 2002, p. 5). Specifically, GAPs involves issues such as production site selection, land use, fertilizer and water usage, pest and pesticide control, harvesting, packaging, storage, field sanitation and product transportation (UM, 2002). Four basic items that GAPs focus on are soil, water, hands and surfaces.

GAP in Vietnam is, in practice, mainly referred to site selection, land use, fertilizer and water usage and particularly pest/pesticide control. The enforcement is weak due to lack of resources and lack of co-ordination between agencies.

### **I. Safe vegetable program and organic based fruit program.**

Farmers' overuse of agrochemicals has started since 1992 with the liberalization of input markets. The number of food poisoning incidences has increased thereafter. One example, in 1995 there were 13,000 cases of poison of which 354 peoples died only in the Mekong River Delta in south Vietnam ([www.ykhoa.net/skds/MOITRUONG](http://www.ykhoa.net/skds/MOITRUONG)). Safety control, therefore; is the focus of national governmental program.

#### *Safe vegetable program:*

In response to public requirement of food safety particularly the crisis in food safety during 1994-1997, the Minister of Agriculture and Rural Development has issued a "Temporary Regulations on Safe Vegetables Production" (Decision 67/1998/ QD-BNN-KHCN) in 1998. The Regulations set quality requirements both on internal criteria and external criteria. The Maximum Residual Levels (MRLs), as internal criteria, are adopted mainly from FAO/WHO (Codex Alimentarius Residue in

Food). By the definition, “Safe vegetables” include all vegetables having authentic characteristics, with toxic chemicals and micro organism levels below the MRLs, and safe for consumers and the environment. Thus, IPM knowledge was embedded in safe vegetable production alongside with technical procedures for specific products. The movement of safe vegetable production has spread out since 1999-2000.

Safe vegetable scheme is voluntary to farmers and in practice; government makes efforts to assist farmer organization to apply and implement it. Certification and inspection are executed by an authorized local governmental agency. The certification process may vary by provinces, on principle; the conditions for approval are clean soil and water resource at the place; a sound technical procedures (i.e. applies good seeds; appropriate use of organic and in-organic fertilizers, limit use of growth stimulants and pesticides and appropriate pre-harvest intervals) and finally a satisfied inspections (i.e the chemical residuals are below the MRLs) that use a quick testing method to analyze pesticide residues. The certificate has to be renewed after one or two years, based upon the actual production results (95% vegetables below MRLs and 95 % farmers taking training on safe vegetable production) as in HCMC or based on the satisfied results of laboratorial analysis of vegetable samples as in Dalat. Cost of analysis is usually subsidized by the government. ( Gia, Bui thi et al. 2003. [www.Vegsys.nl](http://www.Vegsys.nl); Tam, PTG and Le thanh Loan, 2005). There are several weaknesses in this certification scheme: a/ the number of samples for residual analysis and the frequency is low ( 1-2 times per year) due to budget constrain b/ Inconsistent results of residual analysis depending on methods of quick testing applied in inspection c/ Quick testing can detect only a few types of pesticide (i.e.organic phosphor and carbamat). Thus, a negative test result may not assure safe vegetables and d/ The sampling for certification renewal may be subjective.

Weak quality control from the government has led to the public mistrust of safe vegetables ( Gia, Bui Thi et al. 2003. Paule Moustier et al.2005. Tam, Phan Thi Giac. 2005). Furthermore, proximity of vegetable market outlets is the most concern of the buyers who have to buy vegetable almost everyday at a small quantity. High price of safe vegetables is another concern to the buyers. Despite of high awareness about health risks due to pesticide residues in vegetables, Vietnamese peoples still consume vegetable daily. Most vegetable buyers buy from hawkers or a

nearby market, taking some preventive measures such as buying only from a trusted seller, looking for insect –bite or poor appearance produces, washing vegetables carefully or well cooking. (Muriel Figuíe . 2003. Muriel Figuíe 4/2004. Cadilhon, J.-J. and P. T. Giac Tam.2004.)

In addition, as post harvest activities are not the theme of the certification scheme, inappropriate field sanitation is a common farmers' practice ( e.g throwing plant residuals into water body whenever it is possible.) that causes water pollution. Post harvest loss is large due to poor technology and infrastructure.

#### Organic vegetable/ fruit production:

In Hanoi, the production of organic vegetables began in 1999 at the initiative of an NGO (CIDSE). The successful case is Hanoi Organics Company that is subject to external control and is awarded a certificate of conformity of its products with international organic production norms. This certification is awarded by “Organic Agricultural Certification Thailand”. The Hanoi Organics company employs inspectors to inspect the production protocols. ( Paule Moustier et al. 2005) In South Vietnam, organic vegetable production is successful with the case of Hung Thien company of which the owner was also an EUREPGAP technical consultant. In general, the success of these programmes is limited as the quantity of sold produce is small.

Organic production of fruit is found with the case of grape in Ninh Thuan province. Grape produced mainly in Ninh Thuan province was found high pesticide residues. This called for a government effort to improve the safety image of the produce. A successful public-private partnership has enabled a trademark of “Ba Mội organic grape”. Ba Mội is a farmer who dedicates to organic farming after taking trainings from government agencies, for which he obtained his trademark with a subsidized certification from government. Nowadays, he is an associated extension worker and collector of organic grape produced by about 20 farmers in the area. With this trademark, his son – a business management graduate- develop a chain to supply to supermarkets in Hochiminh city and other market outlets.

## **II. Quality assurance system in Vietnam**

The quality assurance system in Vietnam currently consists of three main actors - the government, private and foreign sectors. Under the government system,

plant exportation or importation through the border gate has to be inspected for a certificate of plant quarantine. There are eight departments throughout the whole country to issue such a certificate which is considered as a condition for customs procedure. Private system has referred to inspecting companies. The performance of these companies has mostly relied on their prestige. In many cases, foreign customers have relied on this type of inspectors to provide certificate for fruit or vegetable exported. Foreign system is not so popular in Vietnam because of its expensive service. At present, the Institute for Marketecology in Vietnam (IMO Vietnam) is the only international EurepGAP certifier of operating in Vietnam. An EUREPGAP campaign has been made extensively by IMO yet obtained little positive responses from farmer or farmer organizations. Expensive costs is the first restraint for farmer to adopt it.

### **III. Governmental role in national GAP development and implementation: the case in South Vietnam**

In GAP development, the government's traditional top-down method is being replaced by the participatory approach and good governance is being promoted with the increasing role of associations and farmer organizations. The following two cases in the South will illustrate this.

- **Ho Chi Minh City GAP (HCMC) program**

HCMC GAP program has been carried out in HCMC since November 2005 (HCMC Committee, 2005). The program is implemented by a joint of many HCM city's professional authorities including the Department of Agriculture and Rural Development (DARD), the Department of Science and Technology (DOST), the Department of Trade (DoT), the Department of Health (DoH), the Bureau of Standard and Quality Measurement (BSQM), the farmer association and the consumer association in HCMC. These governmental authorities are in charge of conducting the program under the municipal board. Accordingly, several tasks are conducted as follows:

- To establish a criteria system with the responsibility of the DARD in collaboration with the BSQM, the farmer association and the customer association
- To launch the inspection and testing system and to announce testing tools with the responsibility of the DARD, the BSQM, the DOST and the DoH
- To set up the control system at such critical links in the supply chain as producers (farmers, farm cooperative), fruit and vegetables wholesale markets, companies and retailed markets.

The municipal board will perform GAP program upon the request of either producers or traders. The producers are themselves liable for their produce and are under the observance of law.

*The HCMC GAP program with the participatory approach is aimed to get more involvement of producers and traders. However the involvement of various governmental agencies in controlling and certifying may pose a problem in coordinating.*

### **Tien Giang GAP program**

Tien Giang GAP program which is a national project has been officially initiated by Vinafruit – A fruit farmer association- in March 2005. It aims to create a linkage in production and trading of safe fruits under a predetermined procedure and to build up trademark and market strategy for Vietnamese fruit domestic trading and exportation. The program has been performed in the 06 southern city/provinces including Long An, Tien Giang, Vinh Long, Ben Tre, Dong Thap provinces and HCM city, estimated 30% in total fruit area in the whole country.

The project has 56 members in 2005 including the 05 scientists, 26 producers, 19 companies and 06 Departments of Agricultural and Rural Development in the six provinces as the representatives of government's authorities. Its implementations in 2005 include trainings on GAP, setting up technical team in farm cooperatives, building up the market segments for Vietnamese fruits. The program in 2005 has been conducted on 05 fruits including dragon fruit, banana, mango, pomelo and water melon.

According to Ms. Vo Mai -the head of Vinafruit, the forerunner of the Tien Giang GAP program is the Vietnam Competitiveness Initiative (VNCI) sponsored by USAID concerning setting up a strategy for fruit clusters. Tien Giang gap is a non-profit and NGO program funded by various institutes, organizations and producers as the main beneficiaries of the program. The specific system under which the GAP procedures is benchmarked has yet officially been reported. More specifically, its sub-program for developing dragon fruit GAP systems in Binh Thuan and Tien Giang provinces has currently benchmarked to the EurepGAP.

*In brief, the role of the governmental authorities is still essential, to some extent as a backbone of the program in coordinating various participants. Tien Giang GAP program can be considered as a turning point in shifting such a facilitating role from governmental authorities to Vinafruit. However, it is still under the observation of the government .*

#### ***iv. The role of International organizations in EUREPGAP development and implementation.***

In the recent five years, many GAP projects have been conducted by several international organizations as followings.

- Swiss Import Promotion Programme (SIPPO) aims to support Vietnamese exporters to penetrate the EU and Swiss markets by providing information, contacts and training. EurepGAP has firstly been introduced in Vietnam under this project in 2000. The duration of project is 10 years (1999-2009).
- VN Competitiveness Initiative (VNCI) Project is sponsored by USAID to enhance the SME capacity, particularly to push the business linkage in supply chain including agricultural products. The duration of project is 4 years (2003-2006). RAISE SPS and VNCI Program which belongs to this project, is for developing GAP systems for dragon fruit producers and exporters in Binh Thuan and Tien Giang provinces.
- JICA financed a three year project ( Nov 2005- Nov 2008) to assist farmers in dragon fruit production for exporting to Japan.
- Brand building for agricultural products Project: The project is sponsored by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH in the period of 05 years (2005-09). The objective of the project is to qualify market players within the fruit and vegetable value chain and to establish a modern regulatory and legislative framework for the national distribution network.

The project consists of two parts. First, post harvest training and technology transfer will qualify farmers, collectors, wholesalers and retailers involved throughout the supply chain in the 3 main farming areas: the Red River Delta in the north, the Mekong River Delta in the south, and the area of Dalat, in the centre of Vietnam. The training will be provided by local training institutions and service providers, in cooperation with relevant business associations like Vinafruit, as well as the Institute of Agricultural Engineering and Post-Harvest Technology, the Department of Plant Protection and the Department of Trade in the respective provinces. In total, about 6000 participants shall be qualified through about 80 workshops and seminars. Additionally, a group of 30 farmers of mango, dragon fruit, pomelo and litchi will be supported in their efforts to achieve EurepGAP certification to improve their export potential. This will be done in cooperation with the Swiss Import Promotion Program. Finally, 40 collectors in the three regions will be supported to upgrade their equipment for washing, processing, sorting and packaging. The second part is the advisory and know-how transfer to the Department for Domestic Market Policy of the Ministry of Trade. It consists of consultancy and recommendations for a legislative framework for managing and supporting the national distribution networks.

Reported by the Southern Fruit Research Institute (SOFRI), FAO has also performed 03 projects related to horticultural production, not directly involved in EurepGAP as follows:

1. Research on fruit flies ( *Bactrocera dorsalis*, *B. correcta* ) in fruit production in the period of 01 year (07/1999 -07/2000)
2. Technology transfer (seeds, training, and piloting model) for poor farmers in Ben Tre and Tra Vinh provinces in 2000-2001
3. Emergent support for flood areas in Tien Giang, Dong Thap, Vinh Long and Can Tho provinces in 02-08/2001

### **C. THE GAPS BETWEEN VIETNAM G.A.P AND EUREPGAP**

Legal framework relevant to horticulture practice are enacted by Standing Committee of National Assembly in the form of ordinances and then detailed for implementation by administrative bodies in form of decrees and decisions (see Table 01). Some provinces are formulating and implementing Safe vegetable project which is based on this legal framework. However, the framework do not comprise all EurepGAP requirements.

Table 01. Regulations in the Vietnamese legal framework relevant to EurepGAP

<b>Section</b>	<b>Control point</b>	<b>Location of Vietnamese legal framework</b>
1.	Traceability	Not available in Vietnamese legal framework
2.	Record keeping and internal self-inspection	Not available in Vietnamese legal framework
3.	Varieties and rootstocks	Decree N°. 57/2005/ND-CP ( April 27, 2005) by the government
4.	Site history and site management	Decree N°. 57/2005/ND-CP ( April 27, 2005) by the government
5.	Soil and substrate management	Not available in Vietnamese legal framework
6.	Fertilizer use	Decree N°. 113/2003/ND-CP (Oct. 7, 2004) by the government, and Decision N°. 72/2004/QD-BNN (Dec. 8, 2005) by the MARD
7.	Irrigation/Fertilization	Ordinance No. 12/2003/PL-UBTVQH 11 (July 26 <sup>th</sup> 2003) by Vietnamese Standing Committee of National Assembly
8.	Crop protection	Ordinance No. 36/2001/PL-UBTVQH10 (July 25 <sup>th</sup> 2001) by Vietnamese Standing

Committee of National Assembly

9.	Harvesting	Ordinance No. 12/2003/PL-UBTVQH 11 (July 26 <sup>th</sup> 2003) by Vietnamese Standing Committee of National Assembly
10.	Produce handling	Ordinance No. 12/2003/PL-UBTVQH 11 (July 26 <sup>th</sup> 2003) by Vietnamese Standing Committee of National Assembly
11.	Waste and pollution management, recycling and re-use	Ordinance No. 36/2001/PL-UBTVQH10 (July 25 <sup>th</sup> 2001) by Vietnamese Standing Committee of National Assembly
12.	Worker health, safety and welfare	Ordinance No. 12/2003/PL-UBTVQH 11 (July 26 <sup>th</sup> 2003) by Vietnamese Standing Committee of National Assembly
13.	Environmental issues	Ordinance No. 36/2001/PL-UBTVQH10 (July 25 <sup>th</sup> 2001) by Vietnamese Standing Committee of National Assembly
14.	Complaint form	Not available in Vietnamese legal framework

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Under these Vietnamese regulations, horticulture producers must comply with all following conditions:

- Agriculture site is not polluted and isolated from sites subject to pollution and food contamination. Farmers have to carry out the system of waste treatment.
- Usage of fertilizer, pesticide, and other chemicals has to be compliant with relevant regulations. The list of allowable fertilizers is promulgated by the Ministry of Agriculture and Rural Development in each period of time.
- Producers are liable for their produce and its source.

Agriculture producers shall have to apply to be certified by local authorities of public health that they meet requirements of safety. Agriculture producers and traders who are registered in the DPI shall have to announce their quality assurance of food safety. Label of horticulture produce must be composed of name of the produce (for example: Blue dragon), name and address of the producer, quantity, production and expiry date, storage period.

**Table 02. Policy affecting the horticulture practice**

<b>Food Hygiene</b>	
Ordinance No. 12/2003/PL-UBTVQH 11 (July 26 <sup>th</sup> 2003) by Vietnamese Standing Committee of National Assembly	Regulations on food hygiene
Decree N°. 163/2004/ND-CP (Sep. 7 <sup>th</sup> , 2004) by the government	Details for implementation of articles of the Ordinance on food hygiene
<b>Plants Protection and Quarantine</b>	
Ordinance No. 36/2001/PL-UBTVQH10 (July 25 <sup>th</sup> 2001) by Vietnamese Standing Committee of National Assembly	Regulations on Plants Protection and Quarantine
Decree N°. 58/2002/ND-CP (June 3 <sup>rd</sup> , 2002) by the government	Regulation on plant protection, plant quarantine and pesticide management
Decree N°. 26/2003/ND-CP (March 19, 2003) by the government	Punishment on violations of plant protection, plant quarantine and pesticide management
Decision N°.15/2004/QD-BNN (April 14, 2004) by the MARD	the List of allowable pesticide, limitedly used pesticide, forbidden pesticide
<b>Seed Plants</b>	
Decree N°. 57/2005/ND-CP ( April 27, 2005) by the government	Punishment on violations of seed plants
<b>Goods Quality</b>	
Ordinance No. 18/1999/PL-UBTVQH10 (Dec. 24 <sup>th</sup> 1999) by Vietnamese Standing Committee of National Assembly	State management on food quality
Decree N°. 179/2004/ND-CP (Oct. 21, 2004) by the government	State management of quality of goods
Decision N°. 05/2005/QD-BNN (Jan. 30, 2005) by the MARD	Regulation on Announcing quality assurance in agriculture
<b>Fertilizer</b>	
Decree N°. 113/2003/ND-CP (Oct. 7, 2004) by the government	State management of producing and trading fertilizers
Decision N°. 72/2004/QD-BNN (Dec. 8, 2005) by the MARD	Regulations on production, trading and using fertilizers

In short, apart from section 14, 05. 01 and 02, other controlling points have at least been mentioned in the Vietnamese legal framework with a view to EurepGAP requirement. Record keeping and self-inspection are not legal duty of producer. Legal provisions for GAP in Vietnam are very general and lack of guidance to implement and monitor like EurepGAP. The MoH is the standing governmental agency accountable to the government. However, for implementation, it is usual to have more than two ministries to be responsible for one sector. The procedures for coordination among these ministries has just promulgated in the Joint Circular No. 18/2005/TTLT/BYT-BTM dated on July 7<sup>th</sup> 2005.

#### **D. EUREPGAP ATTEMPT IN VIETNAM: THE CASE OF DRAGON DRUIT.**

##### **I. Rationale for a case study of dragon fruit in Vietnam**

Among several horticultural products having high export value dragon fruit has currently been one of the most important export products. Exportation of dragon fruit has brought about socioeconomic implication to a large portion of poor smallholders in rural areas like Binh Thuan, Tien Giang and Long An provinces. At present, many GAP programs have chosen dragon fruit as this fruit is relatively tolerant of pests and diseases.

##### **II. Producers and exporters of dragon fruit**

Dragon fruits are produced mainly in Binh Thuan ( south of middle part) , Tien Giang and Long An provinces ( the Mekong river delta in the south VN). Vietnamese dragon fruit has mainly been exported to China, Taiwan and Hong Kong (50%), Malaysia (20%), Singapore and Indonesia. Dragon fruit exported to European countries (German, the Netherlands, and France) is about 5% - 10% in total export revenue of dragon fruit in the whole country in 2004 (Vinafruit, 2005). Most of transactions have performed at the Chinese and Vietnamese border area without customs procedure (Binh Thuan DoTT, 2004). Vietnamese dragon fruit has held 40% in the European markets (Vietnam Economic Times on 24/10/05).

**Table 03. Dragon fruit production, output and export value in Vietnam**

	Production area (ha)	Export value	output (tons)
Binh Thuan in 2003	5074	6 mil USD (17,029 tons)	87,000
Long An in 2005	1700	na	25,000
Tien Giang in 2004	1950	na	27,000

Source: Binh Thuan DoTT (2004), Long An DARD (2005) and the MARD (2005)

In Binh Thuan, there are six enterprises with their own brand names, including Hoang Hau, Long Hoa, VinaHSingGon, Phuong Giang, Kieu Nga and one Vegetable-Fruit Export Company. While the two formers are producers and exporters, the four latters are only collectors and exporters. Hoang Hau Company is currently the largest producer and exporter in Binh Thuan province with 100

hectares and on the way to expand to 300 hectares. Its export in 2004 is 10.000 tons, revenue 3 million USD; estimated figure in 2005 is 3.5 million USD.

Long An and Tien Giang provinces have mostly exported their dragon fruit to China at the border area without customs procedure. Dragon fruit in these two provinces has also been sold to foreign countries through Hoang Hau Co., in Binh Thuan province or Bao Thanh Co., (Ticay Trademark) in HCMC. The export value in the two provinces has not been reported. Estimated from an official in Long An province, nearly 20% dragon fruit output in Long An has been exported to China and other countries.

### III. Failure to EUREPGAP the first attempt and its lessons

The first introduction of EurepGAP in Vietnam was in 2000 through SIPPO program. Two years latter, there has yet been any further promotion or more implementation from the governmental authorities, research institute concerning EurepGAP.

As a participant in the SIPPO workshop in which EurepGAP has firstly been introduced to Vietnam, Bao Thanh Co., has foreseen the demand of such a certificate in its fruit and vegetable trading. This company has started its own investment in EurepGAP for its four main suppliers in Binh Thuan province since 2003 (see Table 04). This investment has involved the participation of several professional institutes: the Institute for Marketecology which is now the only international EurepGAP certifier of operating in Vietnam (IMO Vietnam), the Post – Harvest Technology Institute (PHTI), HCMC Branch belonging to the MARD and Binh Thuan provincial authorities during the EurepGAP accomplishment.

**Table 04. Receivers of investment from Bao Thanh Company in 2003 - 2004**

Name	Rationale of failure in 2003-04
Hoang Hau Dragon Fruit Farm	Unwillingness to cooperate with Bao Thanh Co. to fulfill and complete the projects
Nguyen Thuan Dragon Fruit Farm	Lack of human resource, especially agricultural engineer
Phu Hoi Dragon Fruit Cooperative	Scatter farming sites
Ngo Man dragon fruit farm	Lack of efforts

Source: Interview with owners of Bao Thanh Co., on 21/10/2005

Though all receivers of Bao Thanh's investment have not successfully achieved EurepGAP in 2003-04, such a kick-off investment has brought about significant implications and lessons: First, it can be seen that EUREGAP is solely an initiative of private sector. Second, the diffusion of EUREPGAP to farmer level needs the involvement and support of relevant state institutes and the local authorities at the beginning. The supports are through either technical, financial aspects or social

recognition which is especially important to smallholders. Third, the implementation of EurepGAP has also required the cooperation of various actors in the supply chain of which trust must be built among actors along the chain. Failure to establish a trust with suppliers, Bao Thanh investment gained no returns.

EurepGAP has covered the whole procedure from farm-site to handling and storage. Apart from requirements on appearance, shape and size, EurepGAP certification requires other factors that are constraints to farmers such as record keeping for traceability, site history and site management, welfare and environment issues. Different values and high investment cost are other main constraints beside trust in the supply chain.

*For Hoang Hau company, only investment in housing for workers and in-field toilette costs approximately four billion VND (equivalent to 260,000 USD) which is financially and technically troublesome. This investment is affordable only if the market price is 30-40% higher than existing market price, according to the 100 ha producing/ exporting company's owner. For small producers like those in Phu hoi co-operative, management cost is so large as farmers are scatter. For Mr. Muoi Man who has carefully selected a newly deforest area to build his 20 ha farm and applied organic based method; his produce and technical procedure is nearly perfect. Record keeping was a hard task that he tried to overcome. The last points that made him fail to obtain EUREPGAP certificate were the absence of toilette, equipment housing and field sanitation. At first, he could not accept the idea to make a flush toilette. Later, he built it and said "Investment in infrastructure is my capital anyway. However, the insistence from project staff have made me upset. The investment is mainly beneficial to the exporting company. Thus they should make a contract to buy my produce and give me an advance of 30% total contract value like other traders of traditional market".*

Up to now, Vietnamese dragon fruits smallholders and exporters have been interested in EurepGAP, especially in the process of AFTA and WTO. Some smallholders have received the supports of international programs in the cooperation with Vietnamese institutes and organizations like the Southern Fruit Research Institute (SOFRI), Vietnam Fruit Association (VINAFRUIT) and Post – Harvest Technology Institute, HCMC Branch (PHTI).

## **E. CONCLUSIONS**

There is no doubt that the success of the projects aiming to assist Vietnamese farmers obtaining EurepGAP certificate will have positive impacts not only on market aspects but also on environmental and social aspects. It also makes a spill-over effect to other farmers and regions. Technical as well as financial and cultural aspects need to be tapped. Researchers should be involved in the implementation to extract lessons for duplication. Even if the technology and changes in farmers' habit are feasible, finance is the big problem particularly to small scale farmers. Big investment to fulfill EUREGAP requirements in couple with the tendency of decreasing world price would be main obstacles for the farmers' adoption. Quantifying impacts of EUREPGAP on farmers in developing countries needs to be studied.

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