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RAISE SPS COLLABORATIVE TRADE CAPACITY BUILDING PROJECT IN SUPPORT OF VIETNAM'S FRUIT SECTOR: THE CASE OF DRAGON FRUIT

RAISE SPS DIAGNOSTIC REPORT #42

AUGUST 2007

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EXECUTIVE SUMMARY

In September 1999, the Ministry of Agriculture and Rural Development of Vietnam (MARD) implemented a new program for the development of vegetables, fruits and flowers for the period of 1999-2010. The main objective of this effort was to raise the value of all horticultural exports to US\$ 1 billion by 2010. Of eleven fruits that were given high priority status for export, dragon fruit was given the highest priority. Dragon fruit has played an important role in small farmer horticulture in Vietnam for about 20 years, mainly as a cash crop for domestic markets. Serious interest in export markets was initiated by some enterprising farmer groups around 2000, but export potential has been constrained since most small farmer production techniques in Vietnam do not comply with international sanitary and phytosanitary (SPS) requirements. For that reason, several donors (USAID, AusAID), MARD, and dragon fruit supply chain stakeholders joined forces and implemented a collaborative effort to improve small farmer access to export markets through attainment of group EUREPGAP certification. To date, the project has organized fast-tracked pilot farmer groups that achieved EUREPGAP certification by the end of 2006; formed a viable exporting cooperative; trained over 200 farmers on EUREPGAP protocols; conducted marketing research work in Europe; developed a new national dragon fruit standard; and provided capacity building activities in SPS awareness, pest risk assessment, and post-harvest handling techniques geared to the U.S. market.

“Landmark” Activities in the VNCI/RAISE SPS Support of the Dragon Fruit Sector	Date	Description
First RAISE-SPS technical assistance mission to Vietnam	August 9–21, 2004	Together with RAISE SPS, met with many key stakeholders in the fruit sector to review key sector constraints in relation to SPS issues in order to design a SPS-related support program for VNCI’s fruit sector initiative. A joint VNCI/RAISE SPS trade capacity building support program for Vietnam’s dragon fruit industry was conceptualized and designed.
Dragon Fruit GAP Project’s Opening Conference	Jan 9–18, 2005	AusAID’s HortResearch/SOFRI project and USAID’s RAISE/SPS and VNCI projects coordinated efforts to improve the quality of and enhance the exports of Vietnamese dragon fruit in Tien Giang and Binh Thuan. After the three projects obtained funding approval, a series of conferences in HCMC, Tien Giang and Binh Thuan was organized to introduce the joint project, raise awareness of beneficiaries and stakeholders on the importance of GAP, EUREPGAP, SPS and food safety in an integrated economy, and encourage them to participate in the project. There were 33, 58, and 121 participants in the HCMC meeting, Tien Giang and Binh Thuan conferences respectively. More than 30% of the participants in Tien Giang and 70% in Binh Thuan were from the private sector: farmers, cooperatives, exporters, collectors, social and business groups, and associations. The rest included MARD officials from Ha Noi, HCMC and other fruit provinces, Vinafruit, academics, and the media.
PRA training	May–June 2005	

“Landmark” Activities in the VNCI/RAISE SPS Support of the Dragon Fruit Sector	Date	Description
US Entry Requirements Workshops	May 31–Jun 6 2005	<p>In the scope of the DGP, four workshops on US entry requirements were organized by RAISE SPS in HCMC, Tien Giang Ha Noi, and Binh Thuan. Main purpose of these workshops are: (1) to introduce the DGP, (2) raise awareness of beneficiaries and stakeholders on SPS issues for df and fresh fruit and vegetable in exporting to US. and food safety in integrated economy, and encourage them to participate in the project, (3) status of Vietnam’s accession to WTO and SPS related matters.</p> <p>There were over 200 participants in 4 workshops included MARD officials, farmers, cooperatives, exporters, collectors, social and business groups, associations, academics, and the media</p>
EU market research (and workshops) for marketing strategy for Vietnamese dragon fruit	June–July 2005	<p>The RAISE SPS activity consists of two parts:</p> <p>Part I: EU market research funded by RAISE/SPS project. The research explored market demand, market share, consumer behavior, competitor analysis, and SPS requirements in UK, Holland, France, and Germany</p> <p>Part II: workshops presenting the EU market research in HCMC and Binh Thuan funded by VNCI. In the workshops and during meetings with individual dragon fruit export companies, the expert provided consulting on marketing strategies for df in EU</p> <p>The workshops were well attended by fruit exporters, farmers, fruit association, research institute and media (90 pax in HCMC and 62 pax in Binh Thuan).</p>
Packhouse training and consulting	June 2005	<p>Through RAISE SPS, Dragon Fruit GAP Project organized training on post harvest technology for dragon fruit farmers and packhouse operators in Binh Thuan on June 8th and 9th 2005. The main purposes of the training were:</p> <p>Improving knowledge on GAP, GMP, and HAACP principles in handling and packing dragon fruit;</p> <p>Introducing and enhancing the application of post harvest technology (packing);</p> <p>Raising awareness on safety and hygiene practices.</p> <p>The training was comprised of three parts: (1) general principles of GAP, GMP, and HACCP in fruit handling with focus in hygiene and sanitation from farm to consumer, (2) post-harvest technology for dragon fruit, and (3) self-assessment of dragon fruit harvesting and packhouse operation and recommendations for improvement.</p> <p>There were 50 participants included DARD officials, agriculture extension officers, farmers, exporters, collectors, and packhouse operators.</p>
Pilot training initiative leading to adoption of Good Agricultural Practices and EUREPGAP certification	Jun 2005–Oct 2006	<p>DGP supported to Ham Minh Dragon Fruit Cooperative of 11 dragon fruit farmers in Binh Thuan to adopt GAP and obtain EUREPGAP certificate for the group and its packhouse. The objective is increased chances of success for exporting to the EU market thru EUREPGAP certification for greater demonstration effect in the fruit and vegetable industry</p>

“Landmark” Activities in the VNCI/RAISE SPS Support of the Dragon Fruit Sector	Date	Description
PRA training	August 2005	RAISE SPS funds 2 fruit scientists to spend a month at USDA-APHIS facilities in No. Carolina to learn how to prepare PRAs (pest risk assessments) according to USG protocols. These PRA’s are an obligatory requirement for all fresh fruit and vegetables entering the US from foreign countries
PRA’s drafted	Sept–Dec 2005	As a result of the RAISE SPS training in No. Carolina, VN scientists successfully drafted PRAs for DF and several other exotic fruits and submitted them to USDA-APHIS.
Market promotion with supermarkets, restaurants, hotels, etc.	Sept 06	In support of accessing higher value markets by dragon fruit, VNCI developed a dragon fruit promotion video clip for df enterprises and association to use in international trade fairs.
Develop initial branding approaches for Vietnamese dragon fruit	Sep 2005–Sep 2006	VNCI cooperated with Business Club for Vietnamese Agricultural product branding (CAB) to support the DF Association in developing Geographic Indicator for Binh Thuan Dragon Fruit.
12. Presentation of DF Project at Global USAID Event	Feb 2006	The VNCI/RAISE SPS DF Project was selected as a case study for presentation at a global USAID agribusiness conference on “linking farmers to markets” in Cairo. The VNCI project manager made the presentation.
13. Writing of Domestic Fruit Standards	Mar 06	Under VNCI’s initiative and after obtaining industry consensus, the Directorate for Standards and Quality - MOST released the DF national grading standard. To reinforce application of the standard, VNCI and Binh Thuan DOST produced an illustrative wall chart & presented it to stakeholders in Binh Thuan in March 2006
14. Analysis and presentation of major VN supermarket fruit value chains	June–July 2006	RAISE SPS, in collaboration with Nong Lam University, conducted an assessment of the high value fruit supply chains between Dalat highlands and supermarkets based in HCMC
15. EurepGAP Certification	Oct 2006	Ham Minh Cooperative passes inspection and receives Group EurepGAP certification for both field and packhouse operations
16. VNCI Project Activity for DF Terminated	January 2007	
17. Web Site Support	May 2007	RAISE SPS assesses needs of the coop after EurepGAP certification, and decides to fund a local firm to design a marketing-driven website for the Ham Minh Cooperative. Website will be maintained for 2 years.
18. RAISE SPS Project Activity for DF Terminated	August 2007	

I. DRAGON FRUIT SUMMARY REPORT: GOOD AGRICULTURAL PRACTICES AND EUREPGAP CERTIFICATION FOR VIETNAM'S SMALL FARMER- BASED DRAGON FRUIT INDUSTRY

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ABSTRACT

In September 1999, the Ministry of Agriculture and Rural Development of Vietnam (MARD) implemented a new program for the development of vegetables, fruits and flowers for the period of 1999-2010. The main objective of this effort was to raise the value of all horticultural exports to US\$ 1 billion by 2010. Of eleven fruits that were given high priority status for export, dragon fruit was given the highest priority. Dragon fruit has played an important role in small farmer horticulture in Vietnam for about 20 years, mainly as a cash crop for domestic markets. Serious interest in export markets was initiated by some enterprising farmer groups around 2000, but export potential has been constrained since most small farmer production techniques in Vietnam do not comply with international sanitary and phytosanitary (SPS) requirements. For that reason, several donors (USAID, AusAID), MARD, and dragon fruit supply chain stakeholders joined forces and implemented a collaborative effort to improve small farmer access to export markets through attainment of group EUREPGAP certification. To date, the project has organized fast-tracked pilot farmer groups that achieved EUREPGAP certification by the end of 2006; formed a viable exporting cooperative; trained over 200 farmers on EUREPGAP protocols; conducted marketing research work in Europe; developed a new national dragon fruit standard; and provided capacity building activities in SPS awareness, pest risk assessment, and post-harvest handling techniques geared to the U.S. market.

BACKGROUND

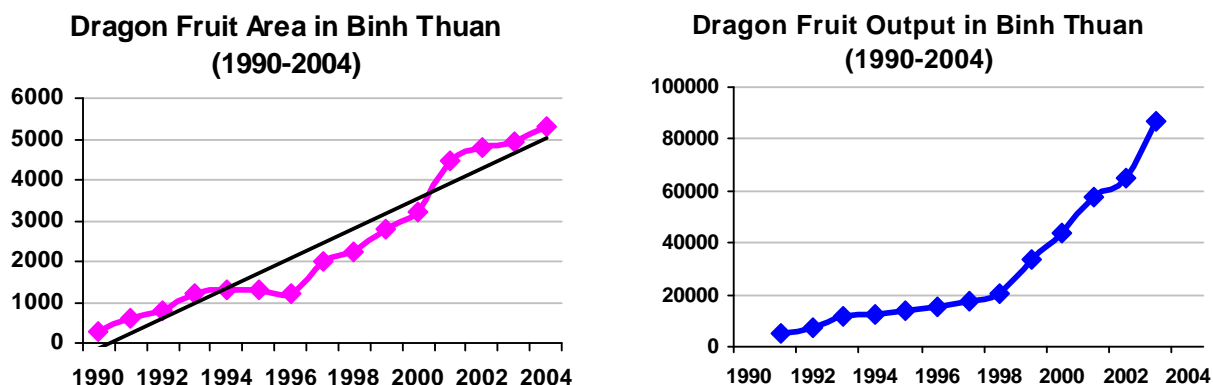
VIETNAM'S FRUIT INDUSTRY

Since 1986, government has undertaken reforms to open the economy. This has impacted agriculture – production has shifted from low-return crops to higher-value crops. Prior to 1986, fruit was just grown for subsistence/family consumption, but since then, production has become more commercial. In Vietnam, 85% of rural households are involved in vegetable, fruit and flower production (International Food Policy Research Institute, 2002). About two third of fruit and vegetable output is sold commercially and the commercialization is significantly greater in the South. Most of fruit growing households own a farm plot of 0.5 – 2 ha. Household income for this small farmer base mainly depends on horticultural production. Although production has been able to satisfy the increase in domestic demand in terms of quantity, the response is still limited with regard to quality and regularity of supply. The most controversial dilemma of the fruit industry in Vietnam is that large volumes of acceptable fruit for exporting or processing is rarely available due to low and inconsistent quality – especially in the peak harvest season when farmers are in negotiation with traders and wholesalers for their best produce.. Compliance with regional and international quality standards is perhaps the greatest obstacle to Vietnamese fruit and vegetable exports to middle- and high-income countries. Export of fresh fruits is now limited to approximately 1.3% of total national production. Vietnam's primary fruit export products are canned pineapple, fresh and frozen dragon fruits, dried longan and litchi. These products are exported to a total of 40 countries, but in very small quantities. Due to the general poor fruit quality and lack of uniformity, Vietnam cannot compete with Thailand in the export of fruits, particularly mango and durian. In September 1999, the Ministry of Agriculture and Rural Development of Vietnam (MARD) implemented a new program for the development of vegetables, fruits and flowers for the period of 1999-2010. The objective of this horticultural effort was to increase domestic demand for vegetables (to 8 million tons), fruits (to 6 million tons), while raising the value of all horticultural exports to US\$ 1 billion by 2010. To help reach this objective, a multi-donor initiative has been launched to provide technical assistance to dragon fruit stakeholders. The primary recipients of this assistance are small holders and processors who are acquiring sound knowledge of entry requirements in the export markets, with a particular emphasis on sanitary and phytosanitary standards (SPS).

THE DRAGON FRUIT INDUSTRY

Eleven fruits were given high priority status in the MARD export initiative. Dragon fruit (*Helocereus undatus*; also known as “pitaya” fruit in Latin American markets) was given the highest priority. Dragon fruit has played an important role in small farmer horticulture in Vietnam for about 20 years, mainly as a cash crop for rural and urban domestic markets. Farmers in the southern Binh Thuan Province, who subsist mainly from growing rice, have thrived in recent years after having planted “thanh long” (dragon fruit or pitaya) on their farms. Some districts in Binh Thuan have been able to significantly reduce their levels of poverty through successful small farmer production of this fruit. Dragon fruit is now widely recognized as a specialty of Binh Thuan Province. Serious interest in export markets was initiated by some enterprising farmer groups around 2000. Dragon fruit production occupies about 5400 hectares. Small farmers tend plots in the size range of 0.5 to 2 ha.

FIGURE 1: TITLE



To date, dragon fruit from Binh Thuan has been exported to China, Hong Kong, Malaysia, Taiwan, Thailand, Singapore, Holland and Germany. Producers of dragon fruit in Vietnam have seen prices for their fruit decline in recent years which can be attributed, in part, to their dependence on local and nearby export markets. There are about 10 major dragon fruit exporters in Vietnam but a significant proportion of the total production is sourced from many small growers. The potential of dragon fruit exports to high value western markets has been seriously constrained since most small farmer production techniques do not comply with international regulatory and food safety requirements. The dragon fruit sector has clearly suffered from the lack of an appropriate model for the implementation of internationally acceptable, good agricultural practices (GAPs).

FIGURE 2: TITLE

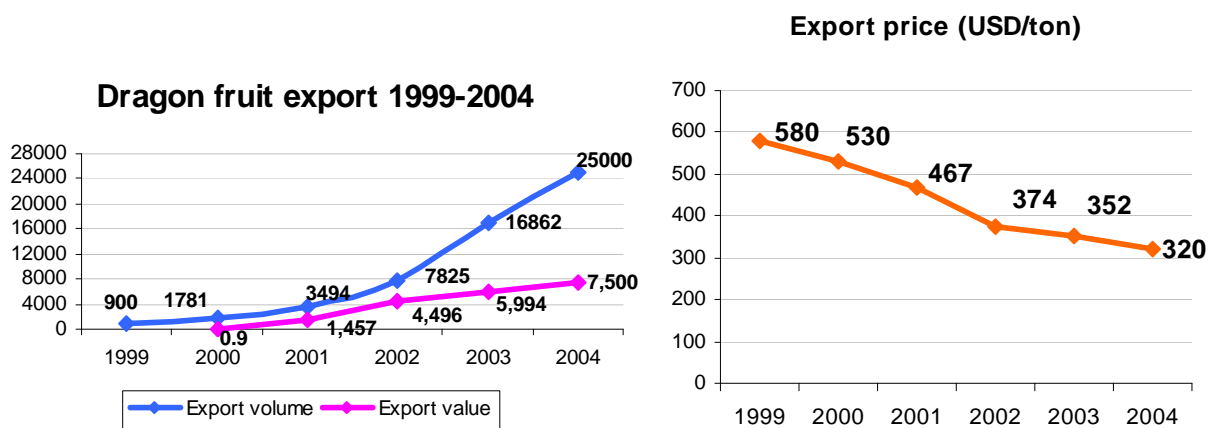
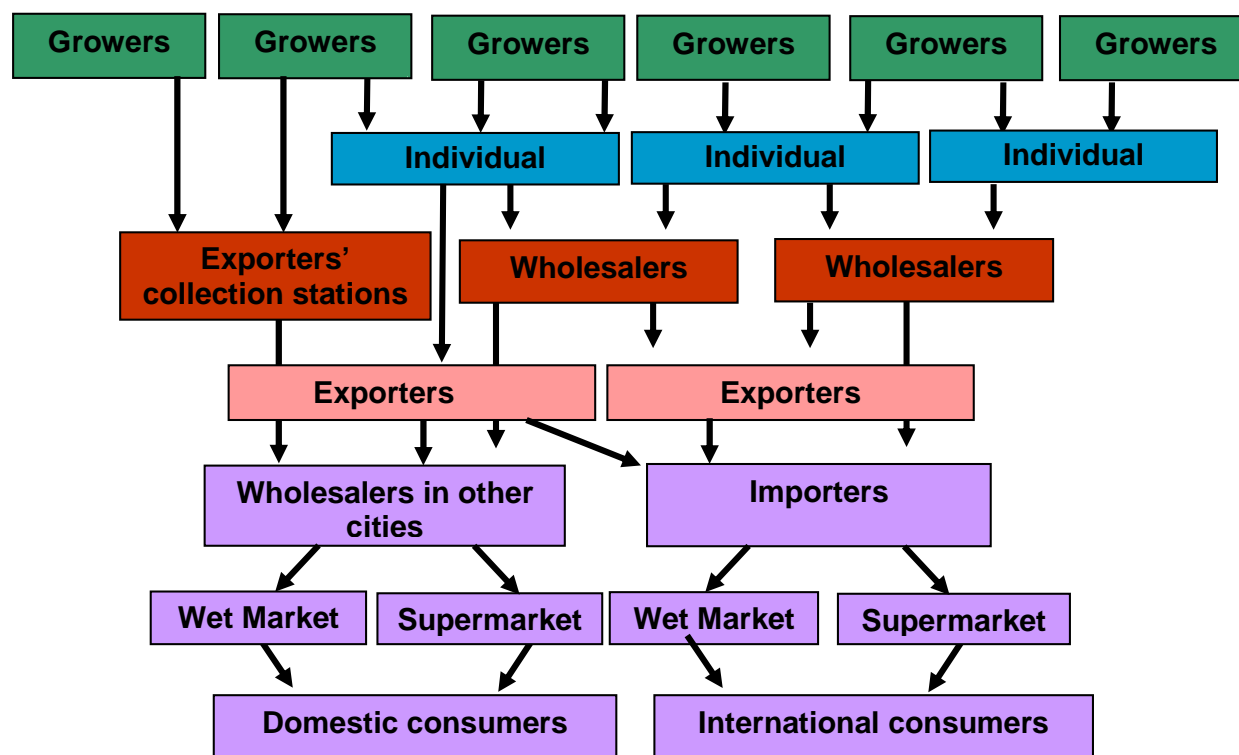


FIGURE 3: THE DRAGON FRUIT VALUE CHAIN



1. THE DRAGON FRUIT GAP PROJECT

In response to this need, several donors (USAID, AusAID) and dragon fruit supply chain stakeholders joined forces and implemented a collaborative effort to address SPS and marketing constraints in order to improve small farmer linkage to export markets. The highest priority of the project is to help the dragon fruit sector meet internationally acceptable export requirements, with the specific objective of obtaining EUREPGAP group certification for a majority of the small farmers in the target area (over 300 farmers in two provinces). In order to achieve this objective, the project has the following core initiatives:

- Supporting a pilot group of dragon fruit farmers to form a EUREPGAP dragon fruit cooperative;
- Coordinating with MARD to design a EUREPGAP-based field training program;
- Preparing GAP field manuals that will be used to educate the farmers in the pilot cooperative, and spreading this knowledge to several hundred farmers in other cooperatives;
- Market research and competitiveness analysis for dragon fruit in European markets;
- Linking small producers, exporters, and supermarket chains;
- Developing a branding strategy for Vietnamese dragon fruit;

- Providing information on EU/US market entry requirements, with a focus on pest risk assessment (PRA);
- Providing recommendations for the development of new national dragon fruit standards;
- Research on domestic policy constraints which impede dragon fruit export; and
- Recommendations for using information and communication technologies (ICT) to link public and private sector stakeholders in the dragon fruit industry.

The key partners in this 3-year effort were USAID/Vietnam's VNCI Project, HortResearch of New Zealand (funded by AusAID), MARD's Southern Fruit Research Institute (SOFRI), and USAID/EGAT's RAISE SPS Project. The approach to the problem was novel in that both USAID and AusAID funding was leveraged to cover all the necessary bases needed to link the small farmers to the new markets. VNCI and RAISE SPS established project priorities with MARD and designed the overarching collaboration; HortResearch committed to a 3-year field implementation program; VNCI fast-tracked a pilot group of about 50 farmers in year one, developing new national standards for dragon fruit, and executing market promotion; on-farm training is being implemented by SOFRI; RAISE SPS provided technical assistance in SPS awareness, market analysis, phytosanitary requirements, PRA training, packhouse sanitation, and small farmer linkages to multinational supermarkets; and an international NGO (IMO) provided oversight for EUREPGAP certification protocols. This collaboration is unique in that USAID and AusAID field projects are working in synch with centrally funded counterpart projects in order to achieve GOVN priorities. Multinational private sector and NGO entities have also been involved.

2. MAJOR RESULTS

2.1 RAISING AWARENESS ON GAP, EUREPGAP, SPS, AND INTERNATIONAL MARKET REQUIREMENTS

So far, the major results of the project's effort is the increased awareness among farmers regarding the challenges of export. The project has organized more than ten workshops in urban and rural settings on GAP, EUREPGAP, SPS requirements, and international market requirements. Media and marketing materials have been distributed and proven to be effective. Project Information Updates and Frequently Asked Questions (FAQ's) have been provided at farm level. TV shows have been broadcast in the project areas to better address farmer and exporter questions relating to upcoming project activities and any changes in quality standards and entry requirements in target markets. Additionally, the project has encouraged and assisted partners such as the Southern Fruit Research Institute and the Vietnam Fruit Association (VINAFRUIT) to engage in social marketing of the project concept to farmers, exporters and other industry stakeholders.

The impact of these outreach activities has extended well beyond the actual number of invited participants in the workshops to industry leaders, policy makers, and a large number of curious farmers who are not currently enrolled in the program. This is due, in a large part, to efforts by provincial and district level officials in Binh Thuan and Long An (the two main dragon fruit production provinces) who have been stimulated to, on their own, carry out supportive activities in adoption of EUREPGAP practices and market promotion. Recently, the Ministry of Agriculture and Rural Development has announced that the government will launch a national program to boost application of the GAP certification approach in

other major fruit sub-sectors such as citrus, mango, litchi, and longan. Their willingness to invest in these other sectors is largely due to their perception that the dragon fruit GAP effort is a major success.

2.2 EUREPGAP IMPLEMENTATION

The project activities are generating results in two main areas, capacity building, and establishment of the building blocks leading to group certification:

2.2.1. Capacity building for local implementing organizations

For SOFRI:

- Staff has been up-skilled in GAP through hands-on experience gained during implementation of first EUREPGAP model for the Vietnam fruit industry.
- Enhanced capability and confidence has been generated such that the GAP implementation model has been extended to other crops.
- Staff has been given the opportunity to promote the implementation model themselves, and to empower and up-skill other small holders.

For provincial implementing agencies:

- Their understanding of issues associated with GAP for dragon fruit have been significantly enhanced.
- Knowledge has been generated such that they can now extend the EUREPGAP model for fruit crops to farmers and exporters of other crops..
- They have been given recognition as the project leaders in their role as facilitators between project implementers and the farmer groups.

2.2.2. Helping farmers to achieve group EUREPGAP certification

The project has carried out the following strategic steps in implementing EUREPGAP protocols in the field:

1. Conducted an extensive baseline “situational” analysis which identified farmer groups, fruit collectors, extension personnel and facilitators for future monitoring and evaluation purposes..
2. Benchmarked the current crop production practices of 150-200 small dragon fruit farmers in Binh Thuan and Tien Giang. Developed a benchmarking questionnaire ensuring that the questions were pertinent to EUREPGAP accreditation and captured key data useful for the introduction of new changes to farmer, fruit collector and packhouse exporter practices. Conducted the survey in two provinces. Analyzed and reported the results to all project beneficiaries.
3. Used the results of the benchmarking survey to identify obstacles that were impeding the attainment of export market EUREPGAP requirements. Jointly developed an implementation strategy with all project beneficiaries.
4. Developed training material (presentations, handouts) with technical staff for delivery to farmers, fruit collectors and packhouse operators.

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5. Provided training for facilitators who organized and led ‘GAP Group’ discussions and supported farmers with training in EUREPGAP principles and field implementation.
6. Developed additional written resource material for farmers and fruit collectors in the form of GAP implementation manuals (Updated these manuals as new information became available during the course of the project.)
7. Organized pilot groups of 10-15 farmers, with each group strategically clustered within priority areas of dragon fruit production. SOFRI personnel experienced in the establishment of cooperative approaches in the Mekong Delta have identified “farmer-leaders” who are assisting in the implementation of common crop management systems based on clusters of farmers.
8. Implemented training programs for farmers in safe use of agrichemicals, on-farm record-keeping, and safe fruit handling. Implemented EUREPGAP traceability procedures for inputs in pilot ‘GAP Groups’ to measure compliance.
9. Involved other technical experts who provided information on local policy e.g. health and safety regulations and environmental policy.
10. Benchmarked the performance of farmers within the ‘pilot’ GAP Groups to permit the future identification of measurable changes in their practices and compliance with EUREPGAP procedures.
11. Promoted group learning and farmer “shared experience” sessions where farmers in the ‘pilot GAP Groups’ will provided support and perspective for new farmers in the process of forming their own ‘GAP Groups’.
12. Encouraged active linkages with other aligned projects to complement the technical knowledge provided to farmers and exporters with market information and phytosanitary standards in target markets.

After completing the benchmarking of current practice on 200 farms, the two first groups of 25 farmers were selected and organized into a cluster. The farmer groups committed to forming and sustaining a EUREPGAP cooperative that will ultimately seek the EUREGAP accreditation. However, these two groups had different structure. The first group, which is comprised of more advanced farmers in terms of production capacity, skill, education, and finance, is an independent cooperative named Ham Minh GAP Cooperative. In addition to formalizing and encouraging business relationships, this cooperative will also uphold a cooperative management structure that satisfies the EUREPGAP Internal Control System (ICS) requirement. The second group, which is comprised of smaller farmers, has been linked with a big packhouse/exporter. The exporter is purchasing fruits from this group and managing the quality assurance system of the group as stipulated in a written contract.

In order to support the two groups in implementing EUREPGAP, the project provided:

- EUREPGAP requirements training in 2 phases
- Two inspection trainings for group internal inspectors and provincial agriculture extension officers
- Three IMP/ICM and risk assessment trainings
- Two HACCP requirements trainings in post-harvest handling

- Monthly inspection visits and on-farm advice
- Cooperative development training and consulting

After eight months struggling with all these challenges, the first group has achieved the following results:

- The group has formed a cooperative named Ham Minh GAP cooperative.
- All members have completed basic farm upgrades such as waste treatment and disposal, toilet facilities installed for field workers, fertilizer and chemical storage structures, etc...
- Record of farm practices are being kept
- Provision of protective equipment, clothes and tools for workers
- Workers trained in hygiene and safety requirements
- Use of fresh manure banned
- Pesticides are now more limited in use and are stored in proper structures.
- Regularly-scheduled meetings of the pilot groups are being held to ensure sharing of experiences and timely execution of solutions to problems

2.3. MARKET ACCESS RESULTS

Since dragon fruit has only been commercialized in the recent past, there had been no international market research conducted specifically for this Vietnamese product. Limited information on target markets had kept Vietnamese dragon fruit exporters from having an accurate and long term marketing strategy. To address this issue, the project conducted a market research and competitiveness analysis for dragon fruit in the UK, Germany, France, and Netherlands – the four principal countries in Europe which import fruit. Research results and options for developing a marketing strategy were presented to all industry stakeholders. In addition to information on customer preference and competitors, the marketing study confirmed that SPS requirements and quality standards must be observed in the EU markets for dragon fruit. Other information gathered by the marketing research included information on transportation costs, branding, and the need for revised national grades and standards for Vietnamese dragon fruit. Importantly, many exporters learned through the marketing research that demand in the EU for imported dragon fruit was not as high as originally envisioned – thus there was the realization that adherence to EUREPGAP standards would be even more important in order to maintain competitiveness for a somewhat limited market.

The dragon fruit association of Binh Thuan Province and the local government units have requested the project to help the province in the development of a regional brand for dragon fruit (since Binh Thuan is the largest dragon fruit producing province in Vietnam). A series of workshops were conducted in the province in order to help stakeholders become familiar with the branding concept and process. The association which represents fruit farmers and traders in the area, in conjunction with local, related agencies such as the Department of Trade, Department of Science and Technology, Department of Agriculture and Rural Development, formed a branding team and started a “regional brand project” for dragon fruit.

At a more micro level, the market linkage support helped the Ham Minh GAP cooperative to set up a business relationship with Metro Cash and Carry Vietnam and the Metro Buying Group Hong Kong. Metro is one of the largest supermarket chains in Europe and has over 550 stores in Europe. The first consignment of Ham Minh GAP cooperative product to Metro Frankfurt in Dec 2005 is proof of the project's successful efforts to link farmers to markets.

The project is also helping the industry in making steps towards accessing the U.S market, where the WTO SPS agreement is enforced rather harshly. Through the RAISE SPS Project, two Vietnamese experts have been trained by APHIS to conduct pest risk assessment for some key fruits including dragon fruit. The project also increased awareness of (1) sanitary and phytosanitary (SPS) issues involved in exporting fresh fruit and vegetables to US, (2) the process of trade negotiation between the US and Vietnam, and (3) knowledge of quality and quarantine that Vietnamese exporter should prepare and equip in the integrated economy

2.4 EUREPGAP CERTIFICATION SUCCESS

In early 2006, the Ham Minh GAP Cooperative decided to use their own personal investments to build a medium-sized packhouse facility which had a high degree of hygiene required for the European export market. No donor funds were used to support the construction of this facility. In June 2006, the Ham Minh Cooperative made an attempt at group EUREPGAP certification. A Swiss delegation arrived to carry out the inspection of the farms and the packhouse facility. The group failed to attain certification at that time, largely due to some issues related to water management and water quality on the farms. IMO and VNCI quickly went to work in order to help the farmers correct the problems. In October 2006 the Swiss certification body was invited back to inspect the Ham Minh operations, and this time, a group of about 20 farmers and the packhouse facility achieved formal EUREPGAP Group Certification – the only agricultural cooperative in Vietnam to attain this distinction.

In mid-2007, the RAISE SPS COP visited the Ham Minh Cooperative to discuss needs subsequent to the EUREPGAP certification. Although the stakeholders lobbied hard for RAISE SPS to provide funding for Ham Minh to attend regional and European trade shows, funding for such activity was no longer available at the time. As a compromise, RAISE SPS funded the design and initiation of a website (<http://www.thanhlonghamminh.com>) for the Ham Minh EUREPGAP group, so they would be able to further promote their unique product to potential buyers in Asia, Europe, and other key markets.

3. CHALLENGES AND LESSONS LEARNED

The project tried to involve as many stakeholders as possible in the many different stages of the project action plan. As a result, the project encountered considerable challenges in donor coordination, and coordination of industry stakeholders – especially in the initial planning stages. But probably the most difficult challenge of all was to convince the farmers to actually change their traditional agricultural practices.

Major challenges in Vietnamese rural areas such as Binh Thuan province included lack of well trained human resources, cumbersome administration mechanisms, and lack of interaction between public and private sectors. Such an environment served to obstruct the project's efforts in knowledge and technology transfer to the local implementers who work most directly with the farmers.

The DGP was somewhat unique in that it has managed to leverage the funds and expertise of several donors, existing donor projects, and professional organizations. This collaboration has resulted in the launching of many small activities efforts that seek to complete their own limited scopes, while trying to make a contribution that impacts the overall project objective in a significant way. However, each project and organization has its own distinct nature, agenda, priority, and constraints that affected the timing of the implementation. Aside from formal training events, it was difficult to communication among implementing donor organizations at the provincial level.

At the industry level, GAP or EUREPGAP is a new concept. There are a limited number of international organizations, and no local expertise whatsoever, that can provide the specialized training and consulting which might eventually lead to group EUREPGAP certification. Another challenge at this level is that engaging industry stakeholders in the project activities requires constant effort and patience as the reward of the cooperation is often not well envisioned by the private sector entities, With certain players in the industry, the project should have different approach mechanisms in order to educate, build momentum, and at the end, win their commitment and cooperation to the project.

At the field level, the most difficult challenge that the project encountered was to convince the farmers to change their habits and attitudes toward environmentally sustainable and responsible farming. The most difficult task has been making farmers adopt record-keeping practices, such as those related to recording the application of fertilizers and crop protection product, inventory, sales, and keeping receipts of input purchases and sales. Changing their awareness on safety and hygiene has also been a long, and difficult process. The traditional use of various agrochemicals - herbicides, pesticides, fungicides, insecticides, fertilizers, and growth agents - , is often unscientific and sometimes indiscriminate. For example, “unscientific” usage might be based on the assumption that “x-dosage caused 10% accelerated growth, and there 2x-dosage will double growth”. Also, the government laws on types and use of crop protection products for fruit, and for dragon fruit in particular, are unclear and insufficient.

The project also found it difficult to convince farmers to change their practice toward safe and quality production, especially since they lacked market information which would convince them of the economic benefits of “safe” hygienic production. Additionally, farmers are not well provisioned with information on the status of Vietnam economy as it integrates with the global economy, They need to be made aware of the importance of WTO accession, and international market requirements for fresh fruit and vegetables, as remote and alien as those concepts may seem.

KEY “LESSONS LEARNED”

As Vietnamese agriculture, and the fruit industry in particular, are underdeveloped in terms of infrastructure, technology, human resources, and farmer awareness of international SPS requirements, we have found that changing the traditional habits and practices of a resource-poor farmer base requires much more effort and time than originally envisioned. Attempts to obtain quick results over a broad base of a traditional farming community has the potential to cause negative impact, no matter how much funding is applied to the effort. When introducing new practices, especially those based on foreign cultures, one requires constant communication, momentum building, and the clear demonstration of economic benefit to the participants. Despite initial plans to train a very broad base of farmers initially in GAP, we took the decision to invest time and resources in organizing a few groups of “pilot” farmers – with the intent of putting them on a fast track to certification. Although some jealousies were aroused by farmers left outside of the pilot groups, we believe the overall industry appreciated the effort. Now they

have some bellwether groups acting as test cases. If these pilot groups, who are receiving the most intense technical assistance, cannot achieve EurepGAP certification, it will help the vast majority of farmers in their ultimate decision making as to what level of their personal time and resources should be committed to the effort.

We also found that although seemingly redundant from a Western perspective, it was absolutely necessary to engage as many stakeholders as possible in the effort, especially allowing active participation of all levels of government – federal, provincial, district, and village. The “all-inclusive” feel generated by this approach, at times reduced efficiency of execution, but in the end the major benefit is that participants feel that the initiative refrains from playing favorites. This is important because in Vietnamese culture, small disgruntled factions can cause major delays in larger project implementations.

One of the cardinal rules of agricultural projects is to let market forces be the driving force of the effort. We regretted that our marketing analysis component was not able to be performed earlier on in the project. Despite considerable “buzz” about the market potential of this product in Western markets, our initial analysis indicated that the demand side in Europe is probably smaller than originally imagined, buyers will be choosier than expected with regards to quality (especially shape and size), and several new global competitors have entered the marketplace and will offer stiff competition to Vietnam.. All these factors might give some pause to those who are considering ramping up their dragon fruit production just because this large, high profile project is currently taking place in their Province. Hopefully, the results of our market analysis, which was performed midstream, will encourage local farmers not to rush to find an exporter, but to rush to find new techniques and home-grown strategies to vastly improve the safety and quality of their fruits.

II. DESIGN OF A USAID COLLABORATIVE TRADE CAPACITY BUILDING PROJECT IN SUPPORT OF VIETNAM'S FRUIT SECTOR: THE CASE OF DRAGON FRUIT

Dr. John Bowman, RAISE SPS COP, DAI

EXECUTIVE SUMMARY

During two weeks in August 2004, the RAISE SPS COP visited Vietnam with the objective of helping the newly established VNCI fruit cluster define a high profile, lead project – with the additional objective of defining linkages to and possible co-funding from, the Bethesda-based RAISE SPS Project. The trip was fully funded by VNCI. Major outcomes are as follows:

1. Many interviews were held with public and private sector stakeholders in the fruit industry in order to find out their priorities for a cluster- and export-oriented project that might receive funding from VNCI and RAISE SPS.
2. Although most GVN officials wanted attention to several fruits, it was decided that for the initial pilot project it would be best to start small and expand later after success could be demonstrated. For that reason, and given the limited funding available between VNCI and RAISE SPS, it was decided to focus on only one crop – dragon fruit – as it seems to have high export potential, is already accepted in many export markets (but in limited quantities), and would benefit from application of “standards/quality” issues germane to the RAISE SPS Project. GVN officials frequently cited dragon fruit as a good choice for the project, but also wanted assistance with longan, lychee, and rambutan – or with the high value vegetables from Da Lat.
3. Due to close interaction with a visiting Thai delegation that had significant experience in improving the standards of certain high value vegetables through a GAP (good agricultural practices) cluster approach in Western Thailand, it was decided that a sound course of action would be to base the dragon fruit project on a GAP cluster approach, but with the objective of obtaining actual EUREPGAP certification. Many stakeholders and GVN officials wanted assistance that would bring market access to the U.S. as well, but we felt that the primary thrust of the project should be EU entry (as a first step towards safer/higher quality fruits).
4. At the very end of the Mission, VNCI learned that New Zealand scientists, in collaboration with MARD's Southern Fruit Research Institute, was on the verge of submitting a proposal to AusAID/Hanoi

for the funding of a GAP cluster-based support project for dragon fruit in Binh Thuan and Tien Giang provinces. It is an ambitious two year project and highly field oriented (employing a hands-on training approach in farmer’s fields). It involves SOFRI as the implementing partner backed up with technical support from several New Zealand agro staff with extensive field experience in Vietnam (VNCI does not have such agro expertise in-house).

5. As the basic thinking and objectives of the NZ project was almost identical to ours, we decided to design our project as a support project to their project. We consulted with the principals of the NZ project and they are enthusiastic to receive support and collaborate with the RAISE SPS/VNCI activity if at all possible. The project outlined below is a draft of RAISE SPS/VNCI initial thinking of how this collaboration might occur. RAISE SPS has built-in additional cooperation from other sources to create a cost sharing environment with other development entities – which is encouraged by USAID/W. The activities and funding are presented in more detail further below, but the following table presents the bottom-line:

Collaborators	Estimated Funds (\$ USD)
HortResearch New Zealand (thru AusAID)	180,000
RAISE SPS (USAID)	85,000
VNCI (USAID)	55,000
KENAN Institute - Bangkok (USAID et al)	30,000
USDA/APHIS (or FAS)	6,000
STAR (USAID)	6,000
Total	362,000

6. Next Steps

The key next steps are as follows:

- Discuss initial design with VNCI and arrive at consensual approach
- Share design with HR/SOFRI/MARD and determine if approach is acceptable
- Confirm interest from other collaborators (Kenan, USDA, STAR) in co-funding and participation
- RAISE SPS and VNCI obtain CTO approvals for joint activity
- Initiate planning for kick-off conference/forum in late November/early December 2004

PROPOSED DRAFT SCOPE OF WORK FOR VNCI/RAISE SPS FRUIT CLUSTER ACTIVITY

A. BACKGROUND

The salient result of the RAISE SPS recon trip in association with VNCI’s fruit cluster was the recommendation that the cluster establish a pilot project to bring “good agricultural practices” (GAPs) to small groups of dragon fruit farmers in the South – with the objective of eventual certification by EUREPGAP or some other international body. Serendipitously, VNCI learned on the last day of the

RAISE SPS mission that a New Zealand group (HortResearch), which had been working with the Southern Fruit Research Institute (SOFRI) on quarantine pest issues, had come to a similar conclusion, designed a similar project, and was in the process of applying to AusAID for funding.

After some follow up with HortResearch (HR), it was decided that the best way to leverage scarce RAISE SPS/VNCI funds would be for the proposed RAISE SPS/VNCI project to form a support project built around the proposed HR project. The HR project is designed to be funded at a level of approximately \$180,000 and involves close fieldwork with farmers over a 2 year period.

The following SOW designed by RAISE SPS takes into account all of the interviews with fruit sector stakeholders, who were repeatedly asked what kind of “SPS”-type intervention was of interest to them. The RAISE SPS/VNCI collaboration has been designed to bring in additional collaboration and support from other interested entities, mainly because it always makes sense to leverage as many funds as possible, and USAID’s mandate for RAISE SPS encourages cost sharing and international collaboration. In the end, there is no guarantee that these other entities (AusAID, USDA, Kenan Institute, STAR) will be able to contribute as scripted, however, the activities described for VNCI and RAISE SPS can still be effectively utilized for existing groups of dragon fruit farmers even if co-funding fails from all the other cooperators (these could be farmers already supported by the IMO programs).

If after year 1 this pilot program is deemed to be successful, the VNCI fruit cluster should request additional funding (possibly in collaboration with HR) to extend the model to other dragon fruit farmers, or to farmers of other fruit types such as longan, grapes, lychee, etc... The model could also be extended to high value vegetable farmers in Da Lat if the VNCI fruit cluster was willing to accommodate vegetables.

B. MANAGEMENT OF RAISE SPS/VNCI ACTIVITY:

Overall Coordinator: Dr. John Bowman, COP of RAISE SPS

VNCI Coordinator: Ms. Nguyen Phuong Thao, Head VNCI Fruit Industry Cluster

HortResearch Coordinators: Mr. James Walker (HR) & Dr. Nguyen Minh Chau (SOFRI)

C. PROPOSED CORE ACTIVITY (CONDENSED HORTRESEARCH/SOFRI PROPOSAL – FUNDED BY AUSAID OR NZ AID):

YEAR 1

1. Co-organize Opening Conference/Forum for dragon fruit growers with RAISE SPS and VNCI
 - *focus on introduction of overall project to farmers, as well as GAP, cluster, and competitiveness concepts*
2. Benchmarking of current production practices
 - *focus on development of crop monitoring systems, determination of best practices, assessment methods for compliance*

3. Establish initial pilot clusters (6 groups of 10-15 farmers), select farmer/leaders to assist in implementation of GAPs
4. Identify best “advanced groups” of farmers and focus on obtaining EUREPGAP certification at end of year 1
5. Develop training program in safe agrochemical management for MARD technical personnel who will extend technologies to farmers (training of trainers/create manuals)
6. Develop training program for SOFRI staff in EUREPGAP certification (training of trainers/create manuals)
7. Provide technical support for facilitators who will lead “GAP group” discussions and training in EUREPGAP implementation
8. Benchmark performance of farmers at end of year 1 to measure compliance levels with EUREPGAP – provide year 1 progress report

YEAR 2

9. Identify non-compliance issues with under-performing year 1 farmers and take steps to up skill them. Establish 6 new cluster groups who will learn from mistakes of year 1 cluster groups
10. Implement GAP training with new clusters
11. Establish a broad base of compliance with all project participants, with the objective of EUREPGAP certification for as many as possible – provide final report

D. PROPOSED VNCI ACTIVITIES

1. Opening Conference/Coordinating Meeting
 - *Organize and fund venue in HCMC; serve as meeting host*
 - *Organize and fund venue in Hanoi with GVN officials as primary audience*
 - *Provide 1-2 speakers on competitiveness, cluster formation and management*
 - *Note: Once GAP activities have started, VNCI could serve as point of coordination between the field activities in the two target provinces*
2. Market Promotion
 - *As project develops, serve as primary disseminator of project progress, results*
 - *Promote project with GVN officials, retail buyers, import/export houses, processors, donor agencies*
 - *Develop seal of quality and/or branding mechanism for the project*
 - *Develop posters, videos, handouts and other promotional materials*
3. Instructional Materials

- As needed and instructed by HR and SOFRI, develop instruction manuals, videos, and flip charts, and any other materials to assist in farmer training
4. Domestic Fruit Standards
- SOFRI and several other MARD offices frequently cited the need for proper establishment of Vietnamese *domestic fruit standards as a high priority item in SPS-related technical assistance*
 - *Organize the visit of a standards expert (possibly ex-USDA) who will assist MARD officials in the writing of domestic dragon fruit standards. RAISE SPS will fund airfare, VNCI funds salary and per diem*

E. PROPOSED RAISE SPS ACTIVITIES

1. Opening Conference/Coordinating Meeting

- *RAISE SPS COP serves as co-moderator and presenter (on SPS topics), both in HCMC and Hanoi*
- *With VNCI coordinator, meets with HR, MARD, and other officials in order to finetune and clarify next steps in the project and secure additional sources of funding*
- *RAISE SPS funds attendance of foreign expert in traceability, food safety, and entry requirements into US and EU markets*

2. Market Analysis

- *RAISE SPS, in concert with Bangkok-based Kenan Institute, design and execute a joint marketing analysis for dragon fruit and other Vietnamese fruits*
- *RAISE SPS to focus on market potential in US and EU; Kenan to focus on market potential in SE Asia, and Thai/Vietnam competitiveness issues*

3. Supermarkets Analysis

- *An RAISE SPS team will undertake an analysis of the leading supermarket chains in Vietnam, with an emphasis on dragon fruit potential and overall supply chain management philosophies. If possible, will link to supermarket activity in China and Thailand*

4. Pest Risk Assessment (PRA) Training

- *MARD/Plant Protection Dept., SOFRI, and USDA/APHIS all cited PRA training for Vietnamese scientists as one of their highest priority items in order to make progress towards entry of ffv into the U.S.*
- *APHIS strongly believes that training of two Vietnamese scientists (one from South, the other from the North) in the USA is far more useful than bringing more APHIS personnel to Vietnam. The Vietnamese need to learn how to write these PRAs on their own.*
- *RAISE SPS will fund airfare and per diem for one Vietnamese scientist (Southerner) to attend 2 weeks of customized PRA training at APHIS's facility in Raleigh NC – USDA will fully fund the participation of the Northern scientist*

5. Writing of Domestic Fruit Standards

- *SOFRI and several other MARD offices frequently cited the need for proper establishment of Vietnamese domestic fruit standards as a high priority item in SPS-related technical assistance*
- *RAISE SPS will fund the travel expenses of a foreign expert (likely to be ex-USDA) to assist MARD officials with the writing of fruit standards for dragon fruit and one or more other fruits. This may take up to 3-weeks in country. VNCI will cover salary and per diem of the individual.*

F. PROPOSED ACTIVITIES FOR USDA/APHIS

1. USDA will provide or find funds for one Vietnamese scientist to travel to the U.S. for customized PRA training in Raleigh NC
2. They will also assist RAISE SPS in identifying an expert consultant (possibly with USDA-AMS expertise) who will assist the Vietnamese in writing their domestic standards for dragon fruit and one or more other fruits

G. PROPOSED ACTIVITIES FOR KENAN INSTITUTE

1. Participate in Opening Conference/Forum, possibly offering a speaker on a topic relevant GAP cluster work or on Asia regional competitiveness issues
2. In close collaboration with RAISE SPS, will co-write an analytical marketing study for dragon fruit, and possibly other Vietnamese fruits with export potential. Their focus will be on dragon fruit marketing issues relevant to Thailand/Vietnam/China, and possibly to other SE Asian markets.

H. PROPOSED ACTIVITIES FOR USAID STAR PROJECT

1. At the Opening Conference/Forum, provide 1-2 speakers for presentations in HCMC and Hanoi on topics relevant to STAR and the dragon fruit cluster – such as, SPS/TBT, WTO accession, plant varietal protection rights, seed import/export issues, etc.
2. Also assists VNCI with venue funding and setup in Hanoi

Please consult the following table for timing and budget breakdown of these proposed activities:

POSSIBLE USE OF RAISE SPS (RSPS), VNCI, AND OTHER FUNDS IN SUPPORT OF THE HORTRESEARCH GAP PROGRAM

Activity	When	RSPS	VNCI	USDA	Kenan	STAR	AusAID
GAP Field Implementation Program with dragon fruit (df) cluster groups in two southern provinces	Dec 2004 – Dec 2006						180,000
Coordinating Conference/Forum (seminar w/ df growers in HCMC followed by seminar in Hanoi with govt officials) 1. RSPS COP serves as overall coordinator between RSPS, VNCI, NZ/AusAID; at workshop presents on SPS (2 weeks) 2. RSPS Consultant on traceability, food safety, US/Europe entry requirements (1 week) 3. STAR provides 1-2 speaker on latest SPS/TBT developments affecting fruit industry, plant varietal protection, seed import, etc... assists with Hanoi venue)	Late Nov. or early Dec 2004	8,000 15,000	5,000			6,000	
Joint Market Analysis (a marketing study for VN fruits with a focus on df internal/external markets, competitive positioning with Thailand/China) RSPS (focus on Europe/US) Kenan (focus on SE Asia)	Dec. 04 – Jan. 05	30,000			30,000		
Market Promotion (promotion of GAP df program with supermarkets, restaurant, hotels, ag fairs, export/importers, develop seal of quality, branding, promo materials)	Jan.- Dec 2005		15,000				
GAP Instructional Materials (designed and produced locally according to the specs of HortResearch/AusAID)	Jan.– Dec. 2005		5,000				
Supermarket Analytical Piece (study of major VN supermarket supply chains for ffv, with connections to supermarkets in China and Thailand)	Jan- Mar 2005	20,000					
Pest Risk Assessment Training (through arrangement with MARD/DPP, cost/share PRA training in USA for 2 VN fruit experts) South scientist (df expert) North scientist (longan, lychee...)	Jan 05 (??)	6,000		6,000			
Writing of Domestic Fruit Standards (Need to hire an expert – possibly USDA - to assist GVN officials in writing official domestic standards for df and perhaps several other fruits. RSPS pays airfare, VNCI pays salary and per diem)	Jan- Feb 2005	6,000	30,000				
TOTALS		86,000	55,000	6,000	30,000	6,000	180,000

KEY FINDINGS FROM VISITATIONS AND INTERVIEWS

FIELD TRIP (BINH THUAN) AND GAP WORKSHOP (HCMC) WITH THAI DELEGATION

3. Although the Binh Thuan dragon fruit cluster put on a good show and presented a solid, cooperative front to the Thai visitors at the MARD Provincial Office in Binh Thuan, it became obvious that behind the scenes the farmers are not yet highly cooperative. There is considerable distrust of other farmers (especially with regard to eagerness to find foreign buyers and meet standards in export markets), and farmers are either staying independent or siding with alliances being formed by the two most powerful grower/exporters (Mr. Long and Mr. Hiep)
4. Although the term “cluster” is frequently used and technically there is an industry-supported “dragon fruit cluster”, my impression is that the stakeholders still need considerable awareness training in the meaning, advantage, and management of clusters.
5. Vinafruit gets constant credit for being at the forefront of the dragon fruit cluster and holding it together, but it is very weak, has limited assets, and doesn’t appear to be well connected to the needs of the cluster members. They feel it is just an organization to belong to, with very limited capacity to solve the problems of the cluster members.
6. Since the Thai cluster members have been focused on vegetable farming in the Western region of Thailand, there is a bit of a disconnect with regard to the possibility of further cooperation with the dragon fruit cluster. The most logical Thai/Vietnam cooperation in GAP would be between the Thai cluster and the formation of a GAP Vegetable Cluster in Da Lat. However, since the Thai’s seem to have some excellent dragon fruit varieties but lack growing expertise, and the Vietnamese have higher production expertise and volume (but lack GAP expertise), there may be some grounds for cooperation in dragon fruit – but it will be exceedingly important to figure out if Thailand and Vietnam can both produce dragon fruit in such a way that each can enjoy the benefits of lucrative export markets, without allowing competition between themselves to lower the world price.
7. Although it was frequently mentioned that dragon fruit is a crop with very little pest pressure and therefore has very few problems with pesticide abuse, a trip to the field (and subsequent interviews with government officials) pointed to the contrary. Although pest pressure may be low relative to other crops, farmers are still mismanaging the use of available agrochemicals – therefore, a GAP program focused on proper agrochemical use and safety should be a good investment for donors, even if many farmers eventually cannot obtain the much sought-after EUREPGAP certification.

MARD INSTITUTE OF POST HARVEST TECHNOLOGY (HCMC)

1. This Institute is already deeply involved with the dragon fruit industry of Binh Thuan province. Several of its senior staff have been giving hands on training in IPM and other GAP-like sustainable agricultural practices . In this regard, they have been working in close collaboration with IMO. They have also been conducting important research in the area of post harvest handling and transport of dragon fruit.
2. Undoubtedly, their participation in our project would be mandatory (in combination with SOFRI, which is the Institute that would focus more on farmer support in the province of Tien Giang)

3. Importantly, they believe that dragon fruit should receive high priority in our project, since they regard it as one of the top five fruits (#3) that merits attention for Vietnam agriculture (#1 is processed pineapple; #2 is processed mango; #4 is fresh pomelo; #5 is fresh and processed mangosteen).
4. They also believe that a dragon fruit marketing study should be undertaken by our project.
5. This Institute, in addition to being a prime collaborator in the implementation of GAPs, will be able to make a significant contribution through continued work in post harvest treatments against the fruit fly (hot water dip, steam vapor, irradiation).

VEGETEXCO (VIETNAM VEGETABLE AND FRUIT EXPORT CORPORATION - HCMC)

1. VEGETEXCO is a significant player in the dragon fruit industry. They are an SOE and have already shipped extensive quantities of dragon fruit to Europe (and SE Asian countries) by boat – but their customers will be demanding EUREPGAP certification in 2005 and therefore they are very interested in our project. They are already participating in the IMO-led dragon fruit GAP project.
2. They are funding researchers at the Post Harvest Institute to assist them with reducing losses in the shipping of dragon fruit by sea containers to Europe.
3. Since the New Zealand project has formed an alliance with an exporter called “VEGEFRUCO”, the relationship between these and other exporters needs to be clarified in terms of participation in our project.

BAO THANH PRIVATE COMPANY (“TICAY” BRAND – HCMC)

1. TICAY is the export group led by Mr. Long. They have extensive experience shipping dragon fruit and other fruits to China, and have experience shipping dragon fruit to Europe but only by air. They wish to ship to Europe by sea once they have EUREPGAP certification and once they figure out how to reduce the post harvest losses in the ships. They also have a keen interest to ship to Japan and the USA.
2. Although Mr. Long is a board member of Vinafruit, he admits that the organization is very weak and needs more assets in order to be effective.
3. My impression is that they are very sensitive about relationships with other farmers and exporters of dragon fruit in Binh Thuan. I also have the impression that there is some tension between TICAY and Dr. Mai of Vinafruit, as Dr. Mai has interest in supporting dragon fruit farmers in other provinces. Since it appears that Mr. Long is not participating in the NZ EUREPGAP Project, but his main rival – Mr. Hiep – is participating, the relationship with our project and TICAY has to be carefully weighed. Mr. Long has extensive expertise but appears to be more of an independent force who blazes his own path and is not as cooperative in dragon fruit cluster and association matters.

SWIRE PACIFIC COLD STORAGE (HCMC)

1. Swire is a huge, highly modernized cold storage facility that does most of its business in frozen/chilled seafood and meats. Although they are a Vinafruit member and have handled small

quantities of dragon fruit, apples, raspberries and other fruits, their potential for inclusion in our project is minimal.

2. Swire might serve as a source of technical expertise should our project or other projects be able to assist with preservation of the dragon fruit cold chain from farm to port in some fashion.
3. They believe that the Vietnam fruit industry will only move significantly forward when multinationals (such as Dole, Chiquita, Del Monte) start to invest heavily in local infrastructure. They do not see a lot of upside potential for our project to ally with the supermarket chains, as their progress has been slow due to the efficiency of the wet markets and customer reluctance to pay more outside the wet markets.

TAN TRUONG AGRICULTURAL COOP (BINH DUONG)

1. Tan Truong is a large (>900 ha; > 100 farmers) fruit-based agricultural coop focused on mango, durian, and longan (but they also grow other fruits and vegetables). They grow “export quality” fruit but have only shipped to China and SE Asia. They have a partner in the U.S. (AMC) who supplies agrochemicals and t/a for their cucumber production operation (in turn, Tan Truong ships processed pickles in brine to the U.S. client).
2. TTAC is most interested in finding clients for their fresh fruits in the U.S. and Europe. They are partnering with a processor (VEGETEXCO) who will can and export many of their fruits to the U.S. and Europe. Their fresh fruit volume to local supermarkets (Metro, Saigon Co.op) is also increasing (but is not very lucrative).
3. They are willing to participate in a dragon fruit project based on GAPs, but are more interested in GAPs for mangos and longan which they claim are more pesticide intensive.
4. Since dragon fruit is just a minor business for them, I don’t think they would be the best candidates for inclusion in the field aspects of our project – however, they should be included in any workshops and open trainings that we may do (especially since they are Vinafruit members). They are highly interested in any Europe/US market studies that we might do – their priority is to find new buyers for ffv in Europe and processed fruits in the U.S.

VINAFRUIT (HCMC)

1. Vinafruit is a fruit industry association with over 50 influential members from both the northern and southern fruit growing areas. They are an excellent source of information for current and past efforts in GAP-related areas such as biological control and IPM (Integrated Pest Management).
2. Many of their members are extremely important stakeholders in the fruit cluster and more specifically, in the dragon fruit group. However, due to lack of assets and a leadership which may have “polarized” certain members, they have very little impact – especially on what is happening in the field with regard to implementation of GAPs.
3. Many of our interviews were with Vinafruit members, who frequently commented that they were happy to be members in the association but that it was ineffective and they really were not benefiting much from the membership aspect.

4. The role of Vinafruit in the GAP project is probably mandatory, but needs to be carefully crafted due to politics amongst the various dragon fruit growers. It is most likely the role of VNCI to best define the role of Vinafruit in the project and to decide what kind of resources need to be brought to bear upon this association in order to make it a more viable entity. Vinafruit leadership does seem to be highly supportive of the concept of GAPs and with the notion of choosing dragon fruit as a top priority for the first pilot programs.

INSTITUTE OF AGRICULTURAL SCIENCES FOR SOUTHERN VIETNAM (IAS - HCMC)

1. IAS seemed highly supportive of a pilot project in GAP for dragon fruit in Binh Thuan and gave it high priority. They would also be very interested in a GAP/IPM project for grapes in Ninh Thuan.
2. They should be kept informed of our plans but it seems like a highly bureaucratic organization, not ideally suited for field implementation activities. Those would be better organized through SOFRI and the Post Harvest Institute.

SOUTHERN FRUIT RESEARCH INSTITUTE (SOFRI – TIEN GIANG)

1. SOFRI was highly supportive of our idea to support GAP work with dragon fruit and seemed enthusiastic to participate. Their Institute is not only a highly reputable center of research (especially in areas of fruit fly control, biological control, biotechnology), but would also make a good partner when it comes to hands on training of trainers, and for the selection of participating farms/coops.
2. They stressed the need for market information on the potential of dragon fruit and the SPS barriers, as well as the need for competitive positions analysis with regard to Thai production. SOFRI would really like us to help Vietnam develop a set of domestic standards for dragon fruit and other fruits. They feel this is a key missing link which is holding back the development of the fruit sector.
3. SOFRI, mainly through some of its international collaboration, is a leader in the area of fruit pests of quarantine significance. It has been working for several years with New Zealand and Australia, and more recently USDA/APHIS, on fruit fly and other pests which must be controlled for export consideration.
4. SOFRI suggested that we link our project with the work of several New Zealand consultants who were planning a dragon fruit project with EUREPGAP implications. Later we were able to contact the New Zealand scientists and discovered that they (HortResearch of NZ) in collaboration was going to approach AusAID-Hanoi for funding of a dragon fruit project with SOFRI as the lead implementation entity. So, the SOFRI Director did at least inform us of the NZ work, but very much understated the SOFRI lead role (which must have been decided upon for several months).
5. It makes very good sense to build our project around the SOFRI/HortResearch dragon fruit project since our objectives are so similar, and since they want to focus on field implementation (something which VNCI is less interested in and less capable of funding for any length of time).

TIEN GANG VEGETABLE AND FRUIT COMPANY (VEGETIGI - TIEN GIANG)

1. VEGETIGI is a high volume (> 15,000T/yr) producer of processed fruit products. They manage a large (>3,500 ha) corporate farm (pineapple, mango, soursop) and also source from contract growers.

In addition to domestic consumption, they ship product to SE Asia and some European countries. They have a strong desire to find buyers in the U.S. market.

2. Their factory operations (canning, bottling, freezing) have international certifications but their farming operations do not. Therefore, the idea of a GAP program (especially with their contract growers) is appealing.
3. They acknowledged the need for a GAP program in dragon fruit, but this would not be of high interest to them since dragon fruit is a minor item in their sales profile. However, they would welcome a project that would somehow train their contract growers in GAPs and more importantly, in post harvest quality maintenance.
4. My impression is that working with them in the field is not a good match for our project, however, they would most benefit by attendance in our workshops on SPS measures and USFDA and EUREPGAP entry requirements.

SGS – VIETNAM LTD (HCMC)

1. SGS is a French-based third party certifier with outstanding international reputation in both agricultural and non-agricultural fields. In agriculture, they have acquired special expertise in GAP programs and European certification programs for mango and other fruits in Australia. In Vietnam, they have 5 offices and their main GAP related work has been with the shrimp industry in southern Vietnam. They have not yet worked in the area of ffv in Vietnam.
2. As opposed to EUREPGAP, they prefer to use a certification system known as SQF (since it allows for group certification and has programs for both fresh and processed goods).
3. It is not clear at this point if they would be a good fit for the SPS/VNCI component of the project. Supposedly, they already have some kind of a MOU with the SOFRI/NZ project where they will act as advisors at start up, and possibly as trainers. They are undoubtedly an excellent source of expertise in all aspects of certification and quality assurance, but at some point they will have to charge for their services and they are among the most expensive in the business.
4. I believe we should keep in communication with them, invite them to participate in any workshops we might hold, and follow closely their commitment to the SOFRI/NZ dragon fruit project. But in terms of an operational arrangement, we may be better off doing direct teaming with IMO – a smaller and more development-oriented certification firm (described below)

INSTITUTE FOR MARKETECOLOGY (IMO – HCMC)

1. IMO is a Swiss-based inspection and certification firm that seems to be specialized in developing country work. In Vietnam, they already have experience with GAPs in organic shrimp production. They have recently initiated GAP projects for dragon fruit in Binh Thuan and coffee in Da Lat. All of their work seems to be focused on the objective of EUREPGAP certification, which is what most ffv farmers want.
2. IMO has already participated in the formation of a Binh Thuan dragon fruit cluster and is helping train 6-10 farmers for Group EUREPGAP certification. They seem to be working independently from the SOFRI/NZ project, although with quite similar objectives. Their main technical partner in the

collaboration appears to be the MARD Post Harvest Institute in HCMC and the suppliers of Mr. Long.

3. IMO could be an ideal partner for us in the dragon fruit GAP effort. They are small, easily manageable, cost effective, and seem not to have a mercenary profit motive since they have development goals in mind. What needs to be done is for VNCI to more carefully assess the quality of their work to be sure they are hard working, competent, and legitimate.
4. They are heavily involved with the supply chain of Mr. Long, but are very enthusiastic to work with us to expand that project, or start a new GAP project with other farmers.

SAIGON COOP SUPERMARKET (HCMC)

1. SC is a medium sized Vietnamese supermarket chain that sources about 10T/day of ffv from a combination of local and imported sources.
2. Although they buy fair amounts of dragon fruit, most of their interests lie with vegetable sourcing from Da Lat. They buy directly from growers and wholesalers but don't seem to have investment interest in getting directly involved in safety/quality issues that affect their fruit supply chains. They seem to trust (without question) "safe" labeling schemes run by suppliers and government officials and are most interested in help with transport, storage, new varieties, and small farmer volume issues.
3. SC does not seem to want to invest in quality/safety issues of the supply chain, nor was export ever mentioned as a high priority – therefore, they would not be a good partner for our GAP dragon fruit project.

MARD DEPT. OF AGRO-FORESTRY PRODUCT PROCESSING (HANOI)

1. This department is the one most involved in issues pertaining to the improvement of Vietnamese fruit sector so that access to foreign markets can be increased for both fresh and processed products. They were highly knowledgeable and cooperative.
2. They highly approved of our choice of dragon fruit in Binh Thuan as a potential pilot project, but also hoped we might work with lychee production in the North.
3. They believe international market research for dragon fruit and other Vietnamese fruits needs to be done in advance of further work in GAPs.
4. They would appreciate it if elements of our project would provide more basic training of Hanoi-based MARD staff in issues related to WTO, SPS, and Europe and U.S. entry requirements for food and agricultural products.
5. This Department should be a high profile participant in our project.

MARD DEPT. OF PLANT PROTECTION (HANOI)

1. This is the department which is the center of expertise for agricultural issues relating to WTO and the SPS Agreement.

2. DPP is developing a close relationship with USDA/APHIS in the vital area of pest risk assessments and fruit fly control programs. Proper enrichment of this cooperation is crucial if Vietnamese fresh fruit will ever have a chance to enter the U.S. market.
3. They were supportive of our idea for a GAP pilot project with EUREPGAP certification as a final objective, however, they would prefer use to work on other fruits of higher economic importance with known pesticide residue issues (e.g., longan, lychee).
4. After hosting a delegation of USDA/APHIS experts, they are hoping to send several scientists for pest risk assessment training at APHIS facilities in the U.S. It may make perfectly good sense for our project to assist in this effort.
5. DPP is also exploring efforts to utilize an irradiation facility in HCMC in the fight against fruit fly contamination of fruits. U.S. authorities will accept irradiation as a fruit fly control method (unlike Europe), therefore, our project might be well served to offer further training in this technology for use in dragon fruit export.
6. DPP should be a high profile participant in our project.

MARD DEPT. OF INTERNATIONAL COOPERATION (HANOI)

1. DIC is very supportive of our GAP pilot project concept, although they would prefer to see rambutan, lychee, or longan as the fruit of choice. Dragon fruit would be a good choice, but not the best.
2. Their highest priority concern for new projects at present is the acquisition of new fruit varieties (especially citrus and grape) used in other countries. However, poor infrastructure and awareness of SPS issues is hampering this process. Therefore, they would welcome additional basic SPS and WTO training for MARD officials to help them build better policy for the import/export of agricultural goods.
3. DIC would also be very keen for our project to assist the GOV write domestic standards for it's fruits of highest economic significance – dragon fruit would be a good place to start.
4. They also believe that international market analysis for Vietnam's fruits is sorely lacking.
5. This Department should also be a key player in our project.

MARD DEPT. OF AGRICULTURAL EXTENSION (HANOI)

1. DAE agreed that a better understanding of SPS and standards issues is crucial to the future of the Vietnamese fruit industry. However, their highest priority projects involve demonstration of post harvest losses.
2. They believe the "Safe Grape" project in Ninh Thuan has been an excellent demonstration of the importance for Vietnamese fruit to meet more rigorous international standards, so they feel that our dragon fruit project should visit and learn from the experiences of the grape project.
3. DAE should be considered as a key cooperator since they have many extension specialists who should be trained in some aspects of GAP through our project. Also, they believe there are many

sources of “extension funds” for pilot activities at the Provincial level, and they can help us find these sources of funds.

USAID STAR PROJECT (HANOI)

1. STAR is most concerned about improving the domestic standards environment in order to facilitate GOV accession into the WTO. They are also concerned about too much EU influence in the determination of Vietnam standards and would like to see more conformity of local standards with U.S. type standards. Unlike our project, they are less interested in economic growth through agricultural export successes.
2. It is likely, therefore, that STAR may take an interest in supporting some aspect of our project which will involve the writing of new Vietnamese standards for fruits according to a U.S. perspective.
3. There is also some synergy to be gained by STAR if our project, as much as possible, serves to educate Hanoi-based GOV bureaucrats in various aspects of international trade related to SPS other issues related to standards (especially those concerning APHIS and FDA issues).
4. Therefore, if STAR funds are available for inclusion in our project, they would most likely be used for seminar/workshops with participating MARD officials based in Hanoi.

METRO SUPERMARKETS (HCMC)

1. METRO is the biggest multinational supermarket chain in Vietnam (purchase >700T ffv/month) and is the supermarket with the most ambitious plans for getting control over quality and safety issues in its ffv supply chain. For this reason, they are the most logical choice among the Vietnamese supermarkets for participation in our project.
2. Timing is excellent as they are on the verge of making some major investments in farmer/supply chain relationships, including the building of a large, centralized agricultural receiving station that will perform quality assurance (through improved sorting, packaging, labeling procedures) on most of all locally-sourced ffvs.
3. They seem genuinely interested in participating in our project and are in agreement with us that making steps towards EUREPGAP is a step in the right direction for small fruit farmers.
4. We need to make a proposal to Metro (as they will not propose to us) for inclusion in our pilot project that over the long term will make sense to them. The challenge will be to pick a type of participatory role that is meaningful, does not ask too much of them, and has a chance at making a beneficial long term impact for them. To do this in a dragon fruit project will be difficult because in financial terms it is a low impact proposition (since dragon fruit is a low volume product). Most likely, we might have to try a strong “corporate social responsibility” approach with them and see if that catches their fancy.
5. Just to have the METRO name associated somehow with our project will be a big plus in terms of project image and legitimacy.

BIG C SUPERMARKETS (HCMC)

1. Big C is a Vietnamese supermarket chain with 2 large hypermarkets in HCMC, and one in progress in Hanoi. They are French-owned.

2. They will not be good partners with our project for several reasons. They don't seem very serious about making investments with their suppliers that will improve safety/quality. Currently, even their in-house q/a systems relating to agro-quality seem very weak. They are focused on buying, and feel it is the job of the supplier to improve quality if necessary. Although they buy significant quantities of dragon fruit (mainly from Mr. Hiep in Binh Thuan), they would prefer that our project focus on other crops such as citrus, durian, mango. They have no agro staff or agro field inspectors. Reliable supply and volume of dragon fruit is of much higher interest to them than a new level of quality/safety.
3. All this may be understandable as Big C, as of yet, may have no interest in buying "export quality" produce.

HORTRESEARCH/NEW ZEALAND (HCMC AIRPORT MEETING)

1. HR/NZ is an agricultural research and consulting entity based in New Zealand, partially funded by the GONZ. They have a strong record of success in assisting NZ and Australian growers of apples, kiwi and other fruits gain access to European and other markets.
2. On the last day of the RAISE SPS mission, we found out that HR/NZ was in the process of submitting a proposal to AusAID-Hanoi for the implementation of a 2 year field project to improve GAPS in dragon fruit with the objective of EUREPGAP certification. As their project had remarkably similar goals and objectives as the envisioned project that would result from a RAISE SPS/VNCI collaboration in support of the fruit cluster, the SOW for the RAISE SPS/VNCI project more fully describes the HR/NZ project and attempts to build itself around that project in a complementary fashion.

III. MARKET ACCESS STUDY OF SELECTED EU MARKETS (UK, NETHERLANDS, FRANCE, GERMANY) FOR VIETNAMESE DRAGON FRUIT

Steven Humphreys, Fintrac

EXECUTIVE SUMMARY

There are two genera and more than 24 different species of pitahaya or dragon fruit, the fruit of *Hylocereus*, a climbing cactus plant. The four principal commercial varieties are: *Hylocereus undatus* (red skin, white flesh, grown mainly in Vietnam and Thailand), *H. polyrhizus* (red skin, red flesh, grown mainly in Israel), *H. costaricensis* (red skin, purple flesh, grown mainly in Nicaragua and Guatemala), and *Selenicereus megalanthus* (yellow skin, white flesh, grown mainly in Colombia, Ecuador and Israel). The most widely grown is *H. undatus*, a self compatible cultivar, also known as dragon fruit because of the scaly appearance of its skin. This is the species that has been grown in Vietnam for many years.

While demand for Vietnamese dragon fruit in the target markets studied for this report is still relatively small compared to other exotic fruit, it is growing steadily as the product becomes better known and more widely available from different sources on a year round basis. Eurostat figures from 2004 show that approximately 230 tons of dragon fruit were imported into the EU from Vietnam. Actual figures obtained through importer interviews of only four EU countries show the annual import figures are much larger, approximately 590 tons for airfreight product, and 168 tonnes for seafreight imports of Vietnamese dragon fruit. Compared to many other exotic fruits, consumption is very low, and mainly within the Vietnamese and other Asian communities living in Europe, we are talking of figures 2 tons per day. To put this into perspective we should compare these EU imports with volumes of exports of dragon fruit to other Asian countries, of 1000 tons per month (33 tons per day), from Binh Thuan alone. The current EU market, therefore, pales into insignificance. Very small quantities are also going to other countries such as Canada mainly to supply the ethnic communities in large cities like Vancouver.

The relatively high price and bland taste of *H. undatus* are the main reasons given by EU buyers for dragon fruit remaining a niche product. It is however well established in markets targeting Asian clients in the EU.

Having spoken with 32 different companies in the four countries studied it appears that there is good interest in sourcing a range of tropical fruit products from Vietnam, in addition to the existing dragon fruit business. In particular pomelos, litchis, longans and mangoes have been mentioned. Expanding the range offered to potential importers will also help shippers arrange better deals on airfreight by consolidating a range of products on carriers.

Israeli and French (CIRAD) researchers are working on new varieties and commercial cultivars with better taste characteristics. If Vietnamese producers could obtain some of this plant material, expand the range of different pitahaya varieties on offer, and do it year round, then they would be in a better position to increase their market share.

Improvements in packaging and in-store merchandising will also have a positive impact on sales. Bringing down the airfreight cost by encouraging exporters to work together to consolidate their air cargo bookings, for instance, may also bring significant competitive benefits to the industry.

IMPORT VOLUMES IN THE EU AND THE FOUR COUNTRIES STUDIED

Dragon fruit comes under EU customs classification number 08109040 which groups together three niche exotic fruit imports. Since we assume that there are no passion fruit or carambola exports from Vietnam, this data indicates that approximately 230 tons of product has been imported from Vietnam in 2004.

However it is apparent that Eurostat is not capturing all the import data, in part due to the fact that these niche products come into the EU as mixed consignments, often labeled merely as “fresh fruit and vegetables.” This is commonly understood by the industry.

If we use import figures given to us during interviews with individual wholesale companies during the market survey (see below), we estimate that the real annual airfreight imports of pitahaya are 590 tons coming principally from Vietnam and Thailand, with some minor seasonal shipments from Colombia, Ecuador, Guatemala, and Israel

Netherlands data obtained from interviews with importers	
Bud Holland	100 tons per year (includes Ecuador, Colombia and Guatemala)
TFC	100 tons per year
Total	200 tons per year

France data obtained from interviews with importers	
Exofarm	35 tons per year (includes Israel and Colombia)
Dang	50 tons per year
Drevin	50 tons per year
Tang Freres and other Asian	50 tons per year
Total	185 tons per year

Germany data obtained from interviews with importers	
Weichert	70 tons per year (includes Ecuador and Israel)
Trofi	5 tons per year
Cobana Fruchtring	5 tons per year
Estimates from importers in Frankfurt	20 tons per year
Total	100 tons per year

UK data obtained from interviews with importers	
Utopia	35 tons per year
MWW	15 tons per year
New Spitalfields wholesalers	50 tons per year
Saturnalia	5 tons per year
Total	105 tons per year

However there is also a significant quantity of dragon fruit going from Vietnam to Europe by seafreight, approximately 2 twenty foot containers per month (each holding 7 tonnes of fruit) so this would add a further 168 tonnes per year to the airfreight figure, putting total annual EU imports of fresh product at 758 tonnes, or 2 tonnes per day.

DRAGON FRUIT MARKET IMPORT DATA – EU 2004

08109040 Passion fruit, carambola and pitahaya

PARTNER / REPORTER	EU15-EU15 (AT, BE, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE)											Total
	INDICATORS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
BR-BRAZIL	QUANTITY_100KG	1	1	4	3	1	3	2	8	7	3	33
	VALUE_EUROS	270	192	1266	633	234	401	343	1735	1337	519	6930
CN-CHINA, PEOPLE'S REPUBLIC OF (CHINA)	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	:	0
	VALUE_EUROS	:	:	:	:	:	:	:	:	:	:	0
CO-COLOMBIA	QUANTITY_100KG	397	448	486	452	453	517	384	461	525	733	4856
	VALUE_EUROS	150956	179352	186651	169183	159081	174169	147877	172246	203253	284064	1826832
EC-ECUADOR	QUANTITY_100KG	460	9	253	239	3	245	:	233	238	9	1689
	VALUE_EUROS	62658	5963	43007	36334	1356	40510	:	34343	35332	5640	265143
GT-GUATEMALA	QUANTITY_100KG	:	:	:	:	:	3	:	:	:	:	3
	VALUE_EUROS	:	:	:	:	:	985	:	:	:	:	985
IL-ISRAEL (GAZA and JERICHO->1994)	QUANTITY_100KG	111	181	247	236	46	0	40	342	961	850	3014
	VALUE_EUROS	39530	69779	96062	92451	18507	97	13808	120893	307279	222530	980936
IR-IRAN, ISLAMIC REPUBLIC OF	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	:	0
	VALUE_EUROS	:	:	:	:	:	:	:	:	:	:	0
KE-KENYA	QUANTITY_100KG	795	1050	998	809	806	714	531	749	1034	850	8336
	VALUE_EUROS	266957	348393	349082	283514	256810	223067	168550	259761	370438	299502	2826074
MH-MARSHALL ISLANDS	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	:	0
	VALUE_EUROS	:	:	:	:	:	:	:	:	:	:	0
MY-MALAYSIA	QUANTITY_100KG	1848	1846	2212	2460	3133	2853	2275	2780	2907	2080	24394
	VALUE_EUROS	412243	477515	644603	730829	778121	674891	507410	597658	568684	446829	5838783
RW-RWANDA	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	:	0
	VALUE_EUROS	:	:	:	:	:	:	:	:	:	:	0
TH-THAILAND	QUANTITY_100KG	62	91	183	88	129	133	95	88	61	28	958
	VALUE_EUROS	19530	25995	57063	30045	43144	44802	34028	30585	22199	9719	317110
TZ-TANZANIA, UNITED REPUBLIC OF	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	2	2
	VALUE_EUROS	:	:	:	:	:	:	:	:	:	1026	1026
UG-UGANDA	QUANTITY_100KG	8	11	12	17	15	24	24	6	7	:	124
	VALUE_EUROS	1697	2632	2455	3674	2989	8536	8949	878	2168	:	33978
VN-VIET-NAM (incl. SOUTH ->1976)	QUANTITY_100KG	205	187	328	196	212	189	175	119	183	101	1895
	VALUE_EUROS	50510	42953	121954	70032	73022	69006	42260	44764	65863	35034	615398
ZA-SOUTH AFRICA (incl. NA ->1989)	QUANTITY_100KG	296	401	351	533	561	430	265	109	83	14	3043
	VALUE_EUROS	102776	137181	118629	159206	176313	148350	92225	39695	28002	4539	1006916

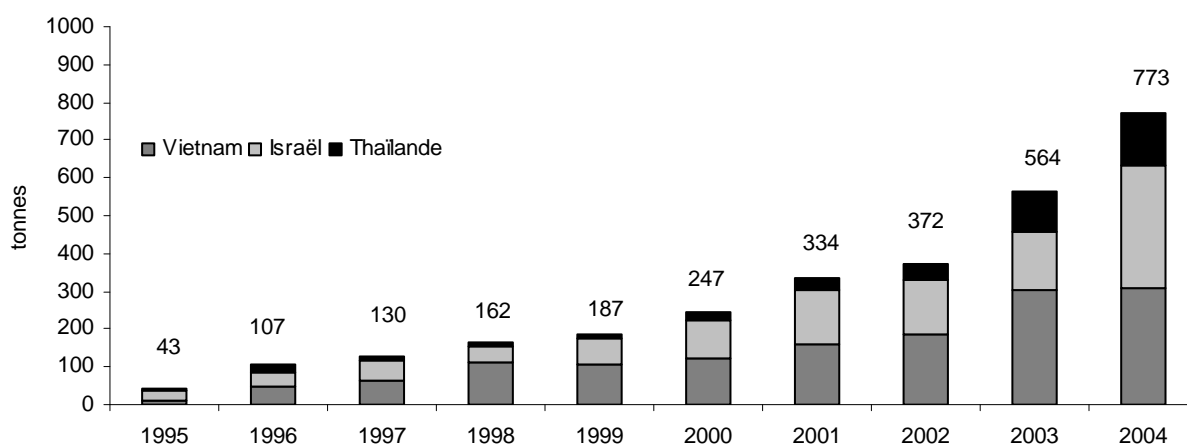
PARTNER / REPORTER	EU15-EU15 (AT, BE, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, NL, PT, SE)											
	QUANTITY_100KG	:	:	:	:	:	:	:	:	:	:	:
ZM-ZAMBIA	VALUE_EUROS	:	:	:	:	:	:	:	:	:	:	:
ZW-ZIMBABWE (RHODESIA ->1980)	QUANTITY_100KG	156	121	431	520	486	600	505	228	114	94	3255
	VALUE_EUROS	43806	34913	91469	92087	94726	108832	91098	39311	21131	16562	633935

Source : EUROSTAT , data only available through October.

COMPETITION

The latest CIRAD report compares the main dragon fruit supplier countries for the EU. All these countries have all been expanding their volumes, which indicates a growing overall market. There is also evidence that Thailand and Israel are starting to take market share from Vietnam. In our opinion this is due mainly to cheaper transport costs as a result of Thailand and Israel consolidating shipments with a wide range of other horticultural products in large volumes, and because of better packaging of the product.

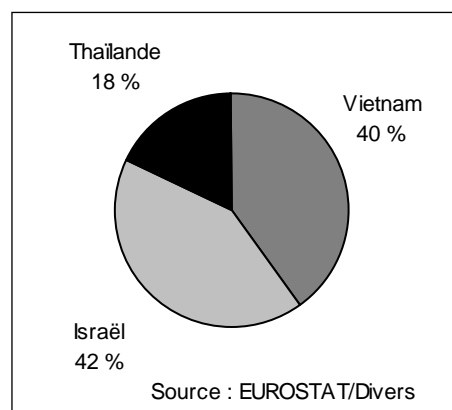
DRAGON FRUIT EU MARKET SHARE SPLIT BETWEEN 3 MAIN PRODUCER/EXPORTER COUNTRIES, 2004



Source : EUROSTAT pour Thaïlande et Vietnam, EUROSTAT et divers pour Israël

These figures do not show the volumes of dragon fruit coming into the EU from Colombia, Ecuador or Guatemala, all of whom are trying to expand their exports.

As well as expansion of production in Israel, USA, Australia, and Central America, there may also be increased volumes coming out of other regions such as South America due to donor supported development programmes. For example CIRAD France has several experts in their exotic fruit division who have been developing dragon fruit production for many years. They have recently received EU funding to do further work on a range of exotic fruits to help boost incomes in rural communities in S.American countries in the coming years. So competition between producing countries will become increasingly intense in the coming years, with growing



Source : EUROSTAT/Divers

market share going to those producers who maintain consistent shipments of quality product throughout the year, while keeping their costs low.

PRICING

Several years ago, when dragon fruit was considered as a real novelty and very small quantities were coming into the EU on an ad hoc basis, per unit prices were much higher than they are now. Although it is still not a well known product, supplies have increased significantly and seem to be reliable throughout the year. As a result, prices have dropped considerably as is demonstrated by the price history for Germany in the adjacent table.

Germany, wholesale prices, dragon fruit Euros/kg			
	2002	2003	2004
Israël	6,50-7,00	3,13-4,50	3,25-3,75
Thailand	8,00-8,50	4,30-4,70	3,60-4,70

Source MNS-Geneva

To summarize the current situation for pricing in this survey we note, country by country:

NETHERLANDS

Large importers are bringing product in for €1.60 per 3 kg box CIF. Thai product is only € per box for the same product. Israeli product, mainly yellow dragon fruit, is also priced at € per box. One wholesaler reported selling a box of dragon fruit to a retailer for €2 per box, which seems like a very high mark up, but is normal for products that are rather unique with ad hoc sales of one or two boxes at a time.

FRANCE

Most importers indicated that their import costs are between €4-15 per box of 3 kg CIF Roissy. Compare this to Israeli product which they are buying for €1.50/kg FOB Haifa, less than half the wholesale cost. Once product moves out of the importer and wholesale markets, dragon fruit sells in the Asian grocery stores in Paris for at least €/kg, and occasionally it is on promotion in the large multiples where the retail price is slightly cheaper, at €6.50 for a punnet of 6 pieces.

GERMANY

Importers are bringing it in at €15 per 3 kg box, CIF Hamburg. From their cold stores it can move on to speciality retailers for €23 per box. However it should be noted that some seafreight shipments that have been trialled, although unsuccessfully, with product selling at a landed cost of € per 3 kg box. Israeli product is available only for a window during the year at € per box. Some yellow pitahaya can be as much as €20 per box.

UK

Major importer buying from Vietnam at €16 per 4 kg box, so this is slightly cheaper than the prices on the continent. It is sold on the wholesale markets for around €4.50 per 3 kg box.

Please note the prices above are all for airfreight product, the **seafreight** product of course lands in Rotterdam at a much lower price. It is bought in Phan Thiet for \$1/kg, transported to HCM, seafreight is \$3200/container to Holland, and inland transport to the importer in Leipzig is €1600 for the container. This works out at around €1.68/kg CIF Germany which is about one third of the landed cost of airfreight product, but importing by sea is generally a much riskier business. Unfortunately the farmers in Phan Thiet are only paid 8000 dong/kg whilst the two seafreight exporters have done quite well. However work on Eurepgap certification and perhaps helping them obtain a Fairtrade label will help them obtain better prices.

TRANSPORT/LOGISTICS

Dragon fruit has been coming into Europe by both air and sea in recent years, and because import volumes are so small, it is typically in mixed consignments with other exotic products. Dragon fruit exports to Europe seem to be better suited airfreight rather than seafreight, due to small volumes and high price. However sales into the region (mainly China, Hong Kong, Singapore, Taiwan, Malaysia) go mainly by sea in reefer containers. A considerable volume of product is also exported by road to Thailand, where small quantities are consumed locally but most of it goes for re-export, labelled as being of Thai origin!

Vietnam Airlines are serving both Paris Roissy and Frankfurt four times per week using a Boeing 777 that has 10 ton cargo capacity. Airfreight costs on Vietnam Airlines range from \$3.10/kg upwards, depending on the quantity booked and the time of year. The produce exporters on this direct flight to Europe face stiff competition for space from Vietnamese textile exporters who can be more flexible since they have a less perishable commodity.

Recent best deals on airlines are as follows:

- Lufthansa to Munich, \$3.20-\$3.60/kg
- Air France to Paris, \$3.80/kg
- Singapore Airlines to Frankfurt, \$3.20/kg
- Cathay Pacific to Europe via Hong Kong, \$3.20/kg
- Japan Airlines to London via Narita, \$3.10/kg for over 1 tonne, \$3.20/kg for under 1 tonne.

Generally however for small quantities and irregular shipments we are looking at prices nearer \$4/kg for airfreight to Europe, and this is a serious constraint for exports to the EU, it means that in some cases the airfreight component of the total production cost can be as much as 85%.

In discussions with Bao Tanh Ltd, the largest airfreight exporter it was mentioned that an offer had been made by Cathay Pacific to organize a freighter to Europe for \$2.60/kg but they would need very large and consistent volumes. If it were possible to consolidate airfreight with the Vietnamese sea food exporters, this may be possible in future.

The closest competition, from Thailand, offers airfreight exporters \$2.50/kg from Bangkok to Europe on a daily basis, so this puts Vietnamese exporters at a considerable disadvantage.

Some seafreight of dragon fruit has been conducted by a Dutch company called Lehmann and Trost, who were bringing reefer containers of mixed produce into Holland, from Thailand and Vietnam. Although

L&T bought 25 twenty foot containers in 2003 (175 tonnes) they experienced numerous temperature related problems during the relatively long voyage, and there were many claims. In 2004 they bought only one container and the business has now stopped in 2005. The sea voyage excluding loading, unloading and clearing takes 26 days so the total transit time is going to be around one month. Cost for a twenty foot container (in which you can pack 7 tonnes of dragon fruit) from Vietnam to Europe is \$2 750 which works out at \$0.39/kg.

There is another company in former East Germany called Macoo GmbH based in Leipzig who are regularly importing dragon fruit by sea and who seem to have taken over this business from L&T. It would appear that with annual imports of only 168 tonnes of seafreight product the business is so small that there is room for only one importer in Europe and he does not want any further companies upsetting his sales into Germany and Holland. 80% of Macoo's customers are Vietnamese living in Germany and Holland. Macoo sell on to other wholesalers in Frankfurt and Munich in lots never more than 100 boxes at a time.

Mr Peter Timmer, the owner of Macoo, says he loses 20% of his imports due to product that has deteriorated over the long voyage, and has to be written off. He is hoping to set up his own collection centre in Phan Thiet in the future with his employee, Mr Nguyen Duc Dung.

There is also one company in Paris involved in seafreight imports of dragon fruit but no further details are available at present.

Even if sea transport can be fine-tuned to improve transport duration and temperature management, this is a small-volume niche product and importers have said they do not wish to see large volumes arriving simultaneously for fear that the market will become flooded overnight and that prices will crash.

CONSUMER APPEAL/BUYER BEHAVIOR

Mr. Le Bellec of CIRAD has been working on dragon fruit for many years, initially in Reunion and now in Guadeloupe. In 1999 he carried out detailed consumer research involving a taste panel comprising 200 people in Reunion. Consumer tastes in mainland Europe may be different, but it is not easy to find other research on this subject. The CIRAD findings indicate that 92.5 percent of those sampling dragon fruit liked it because it was a new product, and 95 percent said it was easy to eat. In addition, 60.5 percent of respondents said it was an attractive fruit visually, and 50.5 percent reported that it had a good flavor, comparing its texture and taste to kiwi fruit (65 percent) or figs (11 percent). However, 39 percent said dragon fruit was not sweet enough, and 22.5 percent indicated it was not aromatic enough. Ninety five percent thought it would be a good fruit for children. Other researchers report the taste can be considerably enhanced by adding lemon juice.

A test marketing exercise at the covered market in Tampon indicated that 82 percent of people would buy it and were prepared to pay a maximum of €1.50 per piece--and that was 6 years ago. CIRAD is continuing to do further research in Guadeloupe on dragon fruit and they have recently been granted EU funding to develop this fruit along with others to help boost incomes among rural communities in South America.

Le Bellec also carried out research on the nutritional value of dragon fruit and reported energy values for the white fleshed variety of 37.9 kcals/100g, and 41.7 kcals/100g for the red fleshed variety. This

compares favorably with similar exotic fruit such as papaya (32 kcals/100g), whereas some other products such as avocados (139 kcals/100g) have much higher energy values.

Further detailed analyses on nutritional and health benefits of dragon fruit has been carried out by the post harvest institute in Ho Chi Minh, and some exporters such as Long Hoa display this information on their labels.

In addition to the CIRAD research, feedback from buyers in this four country survey has been incorporated into a SWOT analysis below, showing how EU buyers and consumers position the product within the exotic fruit category:

<p>Strengths</p> <ul style="list-style-type: none"> • Attractive, aesthetic appeal • Easy to eat • Relatively long shelf life • No phytosanitary restrictions • Available all year round 	<p>Opportunities</p> <ul style="list-style-type: none"> • New • Occupies small niche but growing • Attractive to children and health conscious consumers • New research work by CIRAD and the Israelis will result in improved varieties and commercial cultivars coming onto the market in the future • Processing options
<p>Weaknesses</p> <ul style="list-style-type: none"> • Expensive due to low volumes, high freight rates • Not widely known outside Asian communities—expensive marketing campaign needed to boost product recognition • Bland taste 	<p>Threats</p> <ul style="list-style-type: none"> • Other countries (mainly Thailand, Israel and in the future China) with cheaper airfreight are able to provide a wider range of better tasting varieties • Yellow varieties with better taste • Traceability (EurepGAP) difficult from large numbers of small producers • Wide range of other exotic fruits for consumers to choose from

OPTIONS FOR THE FUTURE

Many buyers interviewed indicated a great deal of interest in increasing trade with Vietnam. They believe it is a country with tremendous horticultural potential and would like to source a whole range of products from them, as they are currently from Thailand. It will be difficult for Vietnamese exporters to follow the Thai model because they are relatively new to this business and do not currently have either the experience or investment potential to break into these markets. Another major constraint is the cost of shipping fresh product from Vietnam. If airfreight rates to Europe remain at \$3 per kg or more, export growth of fresh horticulture products, except for the highest value products, will be hindered. With prices paid for dragon fruit on a downward trend, improvements in quality and reduction in airfreight rates will be required to keep Vietnam in this niche market.

That said, importers interviewed for this study have specifically mentioned increased demand and insufficient supplies of pomelos, litchis, longans and mangoes. If Vietnam exporters can combine these products with shipments of dragon fruit, exporters will immediately be able to expand the range on offer. In addition, continued promotion of dragon fruit product at major European trade fairs such as SIAL in Paris, Fruit Logistica in Berlin, and AGF Total in the Netherlands will help raise the profile of dragon

fruit. Further work on marketing, such as segmenting dragon fruit as a product into red or yellow, mini, normal or large sizes, will help add consumer appeal and market value. Research indicates that dragon fruit is a very attractive product, with great aesthetic value. In addition the seasonal markets and holidays should be exploited, since sales of exotics are always better during these times, particularly in November/December in Europe. Unfortunately, this is exactly the time when cheaper Israeli competition arrives on the market!

Notes on meetings with 31 produce companies in four countries

HOLLAND

Rotterdam

HighLow Supermarkt B.V:

Specialist importer of exotic produce for the ethnic market. Has not dealt in dragon fruit up to now, but trades with most companies who do and helped put the visit programme together.

Advance Consulting:

Looking for new projects to propose for PSOM funding, where 50 percent of project cost is funded by Dutch Government, have already started a seed project in Vietnam and is looking for new opportunities. Dragon fruit exporters may qualify for this assistance.

Amsterdam Central Market (Amsterdam Food Center)

Vroegop-Windig:

Importing very small quantities of Vietnamese dragon fruit from Ticay, via “another Dutch importer.” Quality is average but quantities are only a few boxes per week, mainly for decoration.

Belimpex B.V:

Has a reliable source of dragon fruit from Thailand but only imports 2 or 3 boxes per month.

Jan de Geus N.V. :

Had 4 boxes of Vietnamese dragon fruit from Setira on display but were complaining they could not get rid of it and may have to dispose of it.

Leidschendam, Food Center, Den Haag

Heemskerk en Zn:

Importers and wholesalers for central Holland. Buys about 5 boxes per year, either from Malaysia, Thailand or Vietnam, often from Bud Holland. Sells on to retailers for €2 per box of 10.

Maasdijk

Bud Holland:

Meeting with Mr Peter Hobert, General Manager. This is one of the biggest importers of exotics in the EU, supplying both the domestic market and other produce companies in the EU. They had a turnover of

45 million Euros last financial year, and there are 6 private shareholders of whom Mr Hobert is one. There are currently 43 permanent employees. Bud Holland also own 65% of TFC, which also imports dragon fruit and is managed by Mr Van Bissen (ex FTK).

At the moment Bud Holland has a regular import order for dragon fruit from Mrs. Thanh of Bao Thanh Co Ltd (brand name Ticay), averaging around 500 boxes per week. These imports come into the EU via Roissy on Vietnam Airlines and are trucked up to Holland. They have been doing it without any hitches for the last 3 years.

Fifty percent of these imports remain in The Netherlands, while the remainder is re-exported to other countries in Europe such as Germany, Switzerland, France, Scandinavia by the famous Flying Dutchmen, or road transporters. Bud imports from Ticay cartons of 3.5 kg or 4 kg net, each containing 10 to 12 fruits, at a price of US\$14.5 to 16 per carton CIF.

Apart from the red skin white fleshed dragon fruit from Vietnam, Bud also imports from Ecuador and Colombia around 200 cartons per week of the yellow skinned white flesh variety. Their customers far prefer the taste of the yellow variety. From Guatemala Bud is buying on consignment the red skin/purple flesh variety, but it is only available for a very short time in the year, mainly November. They buy 250 cartons per week. Prices paid for the South and Central American imports are more or less the same as the Ticay product.

When asked about consumer appeal Bud mentioned that the yellow/white and red/purple varieties have superior taste characteristics, whereas customers often bought the red/white product for decorative reasons (they also mentioned it can be a good laxative!!!). Bud does not feel that the market would easily take increased volumes of dragon fruit, but was enthusiastic about sourcing other products from Vietnam, such as litchis, and pomelos (they currently buy pomelos from China but believe there are juicier varieties in Vietnam). They would like to see samples as soon as possible.

Visits were also made to Albert Heijn supermarket stores (the largest supermarket chain in the Netherlands), in both Rotterdam and Amsterdam, but there was no dragon fruit on display and the fresh produce managers explained that it was not a normal stock item.

In addition, telephone conversations were held with 2 companies who were not able to offer appointments, but who are actively involved in imports:

Exotimex:

Used to import yellow pitahaya from Colombia, but who have stopped now because volumes were so small.

TFC:

Part owned by Bud Holland. The company is run by Mr Van Bissen, ex FTK. They have been importing from Thailand on a regular basis, from 500 to 1,000 3.5 kg net cartons per week. The cartons are count 8, 9 or 10 and the exporter in Thailand is ITC. TFC are paying around €-10 per carton CIF Amsterdam. Ten percent of this stays within the Dutch market, the remainder is re-exported to other European markets. Peak import season is September to December, when they also buy the smaller red-fleshed dragon fruit from Israel at approximately € per carton.

FRANCE

Paris

Vietnamese Airlines in Roissy:

They operate four flights per week from Saigon into Roissy using a Boeing 777 which has 10 tonnes of cargo carrying capacity as well as a full passenger load. Arrival days are Tuesdays, Thursdays, Fridays, and Sundays. Most of the cargo is composed of textiles, around 70 percent of total, and the remainder is sold to exporters of perishable products at \$3/kg upwards. The cargo manager mentioned that there were a dozen or so importers of dragon fruit, but some inconsistent. Two of the largest were Tang Freres, who import from Saigon Veg Fruco Co/Vitaco, and New Thai (105 Rue Tolbiac) who import from Trung Nhan Co Ltd.

Tang Freres:

This company appears to be one of the largest importers of dragon fruit from Vietnam, supplying eight of their own supermarkets in the Paris area. They dominate the “Supermarche de L’Asie” business in France. Dragon fruit was on display in their supermarket at 168 Avenue de Choisy, but the main buying is done from their head office at Vitry sur Seine Tel: 01-49-60-56-78. It was not possible to get an appointment with their buyer.

Visit to Paris Store, 21 Avenue d’Ivry, a supermarket very similar to the Tang Freres chain (but smaller), with a lot of dragon fruit on display

COLEACP, Rungis:

COLEACP is a liaison committee advising mainly ACP exporters on how to access EU markets with exotic produce. They mentioned that dragon fruit had been displayed frequently at recent produce trade fairs such as AGF Rotterdam, and SIAL Paris. They had met with Thai investors who wanted to relocate to Vietnam and start new export businesses since production costs were becoming too high in Thailand.

Exofarm, part of Groupe Compagnie Fruitiere:

Probably one of the largest importers and re-exporters in France. At the moment they are regularly importing dragon fruit from Thailand and building up a close trading relationship with a company called Union Prestige Agro (from whom they also buy rambutans, mangosteens, and mangoes). Exofarm import around 100 boxes (3 kg net, count 5-7) per week on Thai Air. If they need smaller pitahayas, they buy Vietnamese product from Drevin who usually has cartons of count 10-12. Exofarm particularly like buying the red fleshed Israeli product, but it is only available for a very short window in November/December, when they buy 200 boxes per week. The company also buys around 150 boxes per week of the yellow pitahayas from Colombia (Don Jose/Ocati) and Israel (Carmel/Agrexco).

YELLOW DRAGON FRUIT FROM ISRAEL (LIGHT BLUE BOX) AND FROM COLOMBIA (PINK/ORANGE BOX)



The Israeli product comes in by sea through Marseille. Exofarm feels that the buying trend is moving more towards the yellow pitahaya, which has superior taste and higher brix. The red product is very attractive but often bought only for decoration. They want to build up their sources in Thailand and Israel, from where they can find a range of other products, and will only do spot buying from Vietnam. Prices: buying Thai dragon fruit for €4.50/kg CIF Roissy, whereas the Israeli product is €1.50/kg FOB Haifa. It will obviously land in France at less than half the Thai product. When asked about distribution of their products in the French market, they said that about half went to other wholesalers and retailers in the Paris area, and half to the big cities in the rest of France. From time to time, especially towards Christmas, the large multiples such as Carrefour, Leclerc, Monoprix, Auchan, may hold one week promotions on exotic fruits, which would push demand up temporarily. Punnets containing 6 dragon fruit were on sale in Carrefour on special promotion in May at €6.50 each!

On the subject of standards and regulatory issues, Exofarm said none were in force. Of course they are impressed if the exporter can demonstrate adherence to the EurepGAP protocols, but it was not

obligatory. Occasionally they sent samples of imported product to a local laboratory, CERECO, for testing for pesticide residues.

Exotics Garden:

Founded by Mr Thomas Dang, a Vietnamese national who came into the import business in Rungis while working for Drevin in 1989. Eighteen months ago he set up his own company, and now imports dragon fruit directly from Vietnam from a company called Saigon Agriculture Incorporated (SAI)

They import about 300 cartons (3 kg net) per week from SAI and pay between US\$3.30 to US\$3.70/kg for airfreight, including clearance. Shipments come in either on Vietnam Airlines or Singapore Airlines. They did try importing using Air France but it worked out at over US\$4/kg. Mr. Dang sells about half his imports in the Paris area and the balance goes to a select group of exotic fruit importers in other EU countries. In Holland he sells to Bud Holland, FTK and TFC, in Belgium to Starfruits and Special Fruits, in Spain to Cultivar and CMR both in Barcelona, in Italy to Garletti in Bergamo and Amatrade in Milan, and in Germany to Zimmerman in Frankfurt.

Exotics Garden sells the product on for €15-17 per box to wholesalers, having bought it for €14 per box (this is the FOB price plus the airfreight and clearing). His main problem is that he is losing market share because Thai quality is better and it is cheaper. Also the Vietnamese exporters mainly want to sell FOB and will not take the risk to cover airfreight, and their quality is not consistent because it comes from a large number of small producers. He believes that in the future China can become a major supplier of dragon fruit, and if they could organize sufficient airfreight so could Laos, since there is large production there.

Drevin S.A., Rungis:

Another of the largest importers of exotic fruit into France. They currently buy around 300 to 400 boxes of DF per week. Of this 20 percent is sold to wholesalers and retailers in the Paris area, 40 percent goes to customers in the rest of France, while 40 percent is re-exported mainly to Spain and Holland. The product comes in by air from Vietnam on either Air France or Vietnam Airlines, and they have two main suppliers:

Vegetesco, a state owned company, that sells FOB Saigon and are slightly cheaper using more old fashioned packaging although they are trying to modernize their image.

DRAGON FRUIT FROM SAI IN VIETNAM IMPORTED BY THOMAS DANG INTO RUNGIS



Bao Thanh Ltd (brand name Ticay):

A privately owned company, modern and dynamic, who supply CIF Roissy. Eighty percent of the dragon fruit that Drevin buy are mini, which are packed as count 12's in a 3 kg net box. The remainder are normal size, packed 8-10 pieces in a 5 kg net carton. Sales are small but regular over the whole year except for November/December time when they can triple. Quite often the large multiples such as Carrefour will carry out special promotions on exotic fruit in February, when there are good opportunities to supply large orders, but this is not consistent year round business. It is mainly perceived as a festive product, also consumed in large quantities over Chinese New Year.

Drevin:

Also buy dragon fruit from Israel when they can during the very short production window in November to February. They are the red fleshed variety which their customers find far better tasting, although the

external appearance is less attractive. And they are much cheaper, landing at Roissy for €6 per 4 kg carton.

The company also buys dragon fruit from Thailand, but only when they start having quality problems from Vietnam. The buyer is positive about increasing business with Vietnam, if the exporters are able to offer a larger range of products like the Thais. In particular he mentioned rambutans, litchis, mangosteens by air, and pomelos by sea since they are more of a volume product currently supplied by China, Malaysia and Thailand. On the subject of receiving dragon fruit by sea, the shelf life would easily accommodate a 3 week journey, and one week sales period, but the buyer mentioned that since it was such a niche product, receiving large volumes at once would just flood the market.

Ad hoc visits were then made to the main Asian trading areas in Paris, particularly Choisy and Ivry and the following is a list of retail outlets selling dragon fruit, and prices:

- YWA, Alimentation Exotiques, 3 Avenue de Choisy, €7.5/kg
- Europe-Asie, Marché Asiatique, 13 Avenue de Choisy, €7/kg
- Exo Store Supermarket, 52 Avenue de Choisy, €8.50/kg
- Dong Nam, 64 Avenue de Choisy, €7.20/kg

GERMANY

Hamburg

Weichert and Co KG:

One of the largest exotic fruit importers in Germany, with a turnover of 30 million euros last financial year and 80 employees. Since they are also linked with Fyffes most of their business is in bananas, and the main countries from which they import are Ecuador, Chile and Brazil. Weichert believes they are the biggest dragon fruit importer in Germany and buy around 300-400 boxes per week from Bao Thanh Co Ltd (Ticay). The product comes into Frankfurt by air and is then trans-shipped on Lufthansa to Hamburg. They are paying €15 per 3 kg carton. Some of this product goes into the Hamburg wholesale market next door, where it sells for €23 per carton, some goes to other wholesale markets in Germany, and some is re-exported to Scandinavia, mainly Denmark and Sweden. Weichert has also tried to import some dragon fruit by seafreight, through a Dutch company called Lehmann and Trost, who were bringing in one container per week of mixed produce from Vietnam and Thailand. Unfortunately there were always quality problems with these shipments because of the long voyage, and incorrect temperature control, even though the landed cost, €8 per carton, was far cheaper than any airfreight product. So they have now stopped, and do not believe dragon fruit is suitable for seafreighting.

They also buy yellow dragon fruit from Ecuador, around 50 boxes per week, but this is very small fruit packed as count 12's in only 1.5 kg cartons. It arrives in Hamburg by air at €7 per box CIF and they sell it onto the wholesale market for €8 per box. Weichert also buys yellow dragon fruit from Israel, where it is much cheaper, at €6-8 per box CIF Hamburg. Israel also supplies the red fleshed variety, H.Polyrhizus, which has a very short production season in November/December, and which they buy for €10 per box CIF Hamburg. They have also tried a new variety from Israel which is pink fleshed and called Bilu, the appearance is good but no real improvement in taste on what already exists.

Trofi Tropenfruchtimport GmbH:

Another of the largest tropical fruit importers in Germany. A large part of their business is grape and berry imports from Chile, baby pineapples from South Africa, vegetables from VegPro Kenya, and onions and apples from New Zealand. They import around 30 boxes per week of dragon fruit from Pisitichi Ltd. in Thailand as part of a mixed consignment of other products which include litchis, banana leaves, lemon leaves, lemon grass, although the buyer believes that some of this product originates in Vietnam. It comes into Frankfurt by air at €13.20 CIF per 3 kg carton. When asked about certification Trofi stated that they had asked the Thai exporter to follow EurepGAP guidelines, and needed supporting documentation. Random phytosanitary inspections were carried out at Frankfurt airport, and Trofi also performed spot checks for pesticide residues on all products coming into their Hamburg warehouse. They have in the past arranged some special imports to support short promotions in the supermarkets, but these were not successful and they have not been repeated. Of the 30 boxes per week they import, small quantities are re-exported to wholesalers in Switzerland and Austria, while most goes to other German wholesalers such as AZ Frucht Import in the new Frisch Centrum at Frankfurt Hanau. Some is sold to the catering industry who use dragon fruit mainly as a decorative product. In the past they used to import around 10 cartons per week of yellow dragon fruit from Colombia, but the business was so small and stagnant they have now discontinued. Trofi occasionally buy Israeli dragon fruit from Dutch importers.

Cobana Fruchtring GmbH:

Another Hamburg based importer of exotic fruit, dealing mainly in mangoes, avocados, melons. They have been buying dragon fruit, but via TFC in Holland, in small quantities: 30 boxes per week of dragon fruit at €6.50/18.50 per 3 kg box of count 9-12. They have also bought 2 boxes per week of yellow pitahaya which is more expensive at €20 per box and they have been having quality problems. Fruchtring talked about a company in Denmark called IMAS from whom they buy carambolas, who also imports dragon fruit directly from Thailand and Vietnam.

Fruchtservice, GmbH:

Another of the largest exotic fruit importers in Germany, mainly involved with bananas, have heard of dragon fruit but consider it too much of a niche product to warrant dealing in it, and would just buy from their neighbours Weichert if they needed it.

UK

London area and Cambridge

Wealmoor Ltd:

A £40 million turnover fresh produce import company specializing in exotic fruit. The managing director had tried test marketing dragon fruit in the past but very soon dropped it because of the minimal volumes, he said he doubted if the whole of the UK consumed more than a pallet per week.

Utopia Ltd:

The largest importer of dragon fruit in the UK. They import around 35 tons during December to September from Vietnam (Bao Thanh Co Ltd) and Thailand. The purchase price is \$20 per 4 kg net carton, containing count 12's. During October and November they import from Israel because the product

is better tasting and cheaper. Utopia supply two large UK multiples, Waitrose and Marks and Spencer. They have approached Tesco but cannot get any interest. Utopia believes the only other serious importer in the UK is Minor Weir and Willis, who supply J.Sainsbury with about 15 tons per year of dragon fruit from Thailand. Utopia do not feel there is much scope for expansion citing high cost and weak taste as the main problems. The yellow dragon fruit from Israel is considered far superior in taste.

Jimmy Pan Impex:

Importer of a wide range of tropicals in New Spitalfields. He has tried dragon fruit in the past, but volumes were so small he has dropped it. He would however be interested in any new products coming out of Vietnam.

Kong Ming Veg and Fruit Ltd:

Specialize in Asian imports. They occasionally sold a few boxes of Thai dragon fruit, but would be interested in sourcing new products from Vietnam. In particular they mentioned ung choi, kow choi, sweet basil, holly basil, lime leaves.

JT Produce:

They were displaying 3 cartons of Vietnamese dragon fruit from Bao Thanh Co Ltd (brand name Setira) which they had bought through Geest Holland, and we selling for £10 per box of 10. Sales were sporadic and they only usually ordered from Geest when their customers had pre-ordered.

C and C Produce:

Also in New Spitalfields, had several cartons of Bao Thanh Ltd (Ticay brand) product on display. There had been some quality problems of overheating on the aircraft which led to breakdown and onset of moulds. C and C also import dragon fruit from Thailand from Kamphaeng Saen Ltd through Saturnalia Ltd UK, this was also selling at £10 per box.

Tropifresh Ltd:

Import exotics from Africa and Thailand. The owner Peter Durber knew about dragon fruit but considered it too marginal a product to stock.

John Hinge Ltd:

Also in New Spitalfields, had two boxes of Setira brand dragon fruit on display, but the salesmen were unaware from where they had come, and said they were sold mainly as decorative products to the catering trade.

Saturnalia UK Ltd:

One of the largest importers of speciality exotics. They were importing 100 kg per week from their exporter in Thailand (Kamphaeng Saen Ltd), in 2 kg boxes. Each fruit is individually shrink-wrapped, and the box sells to wholesalers for £9. The business was only 20 kg per week two years ago, so it has grown, but Saturnalia still consider it a marginal item not worth investing further time and money sourcing. They propose that as a product it is not all suited to UK consumers.

LIST OF PERSONS CONTACTED AND ADDRESSES

HOLLAND

- HighLow Supermarkt B.V., Dorchtselaan 167, 3081 BN Rotterdam, tel: 31-10-4849361, email: hilo@chelo.nl
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- Vroegop-Windig, Food Center Amsterdam, Mr Poelstra, tel: 020-6061818
- Bel Impex B.V., Food Center Amsterdam, Jan Van Galenstraat 4, Hal 5-7, 1051 KM Amsterdam, tel: 31-20-6815205, email:sales.amsterdam@belimpex.nl, www.belimpex.nl. Contact: Mr Ernst Delgman
- Jan de Geus N.V., Hal 5-7, Amsterdam Food Center
- Heemskerk en Zn, FoodCenter, Dinkel 76, 2491 CH Den Haag, tel: 31-70-3178280, contact: Mr Andre Heemskerk
- Mr Peter Hobert, General Manager, Bud Holland, Transportweg 67, 2676 LM Maasdijk, tel: 31-174-535353, email: p.hobert@bud.nl
- Exotimex, Waraksveen, tel: 31-180-454654, email: pim@exotimex.nl, contact: Mr Pim Vos
- TFC, Transportweg 49, Maasland, www.TFC-Holland.com, contact: j.vbissen@TFC-Holland.com, tel: 31-174-525710
- Albert Heijn Supermarkets, Rotterdam/Amsterdam

FRANCE

- Vietnam Airlines, 26 Rue des Voyelles, Roissy, tel : 01-48628471, mobile : 06-15770579, contact : Mr Nguyen Dinh Nam, cargo manager. The Vietnam Airlines head office in the centre of Paris is at 5th Floor, 9 Rue de la Paix, tel: 01-44553990
- Tang Freres, 168 Avenue de Choisy, 75013 Paris, tel : 01-44240672
- Paris Store, 21 Avenue d'Ivry, 75013 Paris, tel : 01-45822015
- Philippe Bardet, independent consultant on the Rungis market, tel: 06-78653143
- Coleacp, 5 Rue de la Corderie, F-94586 Rungis Cedex, tel : 01-41800210, contact : Denis Felicite Zulma, project officer.
- Exofarm (Groupe Compagnie Fruitiere), 3 Avenue du Viaduc, Bat B3 Fruileg, 94594 Rungis Cedex, tel : 01-41804630, contact : Cyrille Raineau, import manager, email : c.raineau@fruitiere.fr, website : www.exofarm.com
- Exotics Garden S.A.R.L., 54A Rue de Perpignan, Fruileg 387, 94632 Rungis Cedex, tel : 01-56704414, contact : Mr Thomas Dang, managing director, email: exoticsgarden@wanadoo.fr

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GERMANY

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- Trofi, Tropenfruchtimport GmbH, Lippeltstrasse 1, D-20097 Hamburg, tel: 49-40-30709613, contact: Mrs Heidi Raack, email: Heidi_Raack@trofi.de
- Cobana Fruchtring GmbH and Co KG, Lippeltstrasse 1, 20097 Hamburg, tel: 49-40-30305212, contact: Mr Jurgen Boruszewski, General Manager, email: bo@cobana-fruchtring.de
- Fruchtsservice GmbH, Grossmarkt, 20097 Hamburg, tel: 49-40-3258220, contact: Stefan, sales manager
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UK

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- Utopia Ltd, Spalding, Lincolnshire, tel: 07860-359950, contact: Derek Cull, procurement manager
- Jimmy Pan Impex, Stand 56 New Spitalfields Market, 1 Sherrin Rd, Leyton, London E10 5SJ, tel: 020-85581665, mobile: 07860-427260, contact: Mr Jimmy Pan, owner
- Kong Ming Veg and Fruit Ltd, Stand 31, New Spitalfields Market, Leyton, London E10 5SJ, tel: 020-8558-8888, contact: Emin Mehmet, sales manager
- J.T.Produce Ltd, Stand 25, New Spitalfields Market, London, tel: 0181-5563228, contact: Phil Snellgrove, admin manager, or James, sales manager.
- C&C Fruit Co Ltd, Stand 21, New Spitalfields Market, London, tel: 020-85586000
- Tropifresh Ltd, Stand 40, New Spitalfield Market, London, tel: 020-85586760, contact: Mr Peter Durber, owner
- John Hinge Ltd, Stand 33. New Spitalfields Market, London, tel: 020-85569050
- Saturnalia Ltd, 1 Pier Rd, Feltham, Middlesex, tel: 0208-9354000, contact: Colin Bugler, procurement manager

OTHER IMPORTERS NOT INTERVIEWED BUT KNOWN TO BE INVOLVED IN IMPORTS OF DRAGON FRUIT

France

LACASSAGNE

2 rue d'Angers Fruileg 703 - 94584 Rungis - France

tel+33-1-45-60-65-16

lacassagne-pierre@wanadoo.fr

Germany

AZ Fruchtimport

Josef Eicher Strasse 10, 60437, Frankfurt am Main

Tel: 49-69-94415983/4

UK

Minor, Weir and Willis

241, Wellington Rd, Birmingham

tel: 44-121-3444554

IV. SPS REQUIREMENTS FOR THE ENTRY OF VIETNAMESE DRAGON FRUIT INTO THE UNITED STATES

John Thaw, Independent Consultant for Abt Associates

This report is divided into the following sections:

- I. Assignment to the Consultant
- II. Materials Prepared
- III. Basic Itinerary
- IV. Explanation of Topics Covered in Presentations
- V. Observations
- VI. Sequence for Acquiring Market Access for Dragon Fruit
- VII. Consultant Recommendations
- Appendix 1: Daily Schedule
- Appendix 2: Electronic Copy of Material Left With MARD in Hanoi
- Appendix 3: Electronic Copy of PowerPoint Presentations

I. ASSIGNMENT TO THE CONSULTANT

As the US/EU Entry Requirements specialist, it was my assignment to assist RSPS/VNCI team in educating stakeholders in the Dragon Fruit Project about SPS-related entry requirements for fresh fruits into the United States. The focus of the discussions was to be on APHIS-related Pest Risk Analysis (PRA) requirements and the rulemaking process, with additional attention given to issues related to traceability, the new Bioterrorism regulations, European phytosanitary and EUROGAP requirements, and competition from other countries. I was asked to present lectures in several venues, in HCMC, two dragon fruit growing provinces, and Hanoi. The talks were to be tailored to the various audiences, which included provincial, Ministry, and other government officials, donor project officials, growers, packing house operators, exporters, researchers, and processors. I was also to leave behind a copy of the PowerPoint presentations, source material on the US entry requirements, and a trip report with an outline of a strategy for industry to sequentially deal with SPS issues to gain market access for dragon fruit into the US market.

II. MATERIALS PREPARED

I prepared PowerPoint presentation material for each of the intended audiences. These presentations were developed to allow them all to clearly understand the issues Vietnam will face in trying to gain access to the US market for dragon fruit. The presentations were divided into five sections:

1. Basic plant quarantine concepts, including internationally accepted definitions and standards housed in the World Trade Organization (WTO).
2. The pest risk assessment process where the actual risk of transporting shipments of dragon fruit to the US is determined.
3. The pest risk mitigation process whereby APHIS and MARD, with input from industry, develop a workable program to lower the pest risk to an acceptable level and allow trade to proceed.
4. The rulemaking process whereby the US modifies its regulations to allow the importation of commercial shipments of Vietnamese dragon fruit.
5. Other issues, including the impact of bioterrorism regulations, EU requirements, traceability issues, marketing issues, and competition from other countries.

III. BASIC ITINERARY

Fly to Ho Chi Minh City (HCMC), Vietnam. Confer with Vietnam Competitiveness Initiative (VNCI) project personnel. Provide 4 workshops:

- one to mainly exporters, government officials, and growers in HCMC
- one to Southern Fruit Research Institute (SOFRI) researchers, growers, exporters at the SOFRI building in My Tho City, Tien Giang Province
- one to Ministry of Agriculture and Rural Development (MARD) officials, growers, and exporters in Hanoi
- and one to growers and exporters in Binh Thuan Province
- see Appendix I; Trip Report - Daily Account

IV. EXPLANATION OF TOPICS COVERED IN PRESENTATIONS

1. Current status of effort to export dragon fruit to the US - I outlined the process Vietnam, like any other country, will have to follow to gain market access for the fruit. They have completed Step 1, which is to formally request access. I also outlined whom the key APHIS people were who will help guide the market access process.

2. Step 2 is doing the Pest Risk Assessment (PRA). To make this step understandable, I talked about some basic plant quarantine concepts and how those concepts relate to WTO and the future dragon fruit program. I told each audience about the two Vietnamese people currently being trained to do PRAs in North Carolina and basically what a risk assessment looks like, how the components are derived, and why this is such a fundamental, important step toward their goal. I indicated some of the pests (fruit flies, mealy bugs, and scale insects) that will likely be of concern.

3. Step 3 is deciding, once the high risk organisms have been defined by the risk assessment, how to mitigate those risks. I talked about the different mitigative options available for various quarantine pests. I talked about the options available for fruit flies, scale insects, and mealy bugs, the likely pests of concern for Vietnamese dragon fruits. Two treatments, irradiation and vapor heat, are probably the main options available, and we discussed some of the issues surrounding each treatment. APHIS PPQ and MARD officials, with significant input from farmers and exporters, will have to craft a program that will lower the pest risk sufficiently to allow dragon to safely enter the US.

4. Step 4. Once APHIS and MARD develop an outline of the export program, APHIS staff writers will begin the process of changing the US import regulations. I briefly outlined the entire rule-making process so all understood the process and why it will take at least a year to a year and a half to complete. I briefly mentioned that as the rule-making process is proceeding, additional requirements will have to be fulfilled to set up a pre-clearance program. And either a vapor heat treatment facility or the irradiation facility will have to be inspected and certified by APHIS. There are a number of potential treatment issues that may become barriers, and these are issues APHIS and MARD will have to confront and deal with as the program evolves. I did not cloud the discussions with those issues.

5. In addition to the US phytosanitary market issues, I briefly touched on:

- the current phytosanitary requirements of the European Union, and how their system is different from the US system
- competition they may get from Israel for European markets, and Central America for the US market
- the importance of traceability systems as part of their effort to satisfy EUROGAP standards and emerging bioterrorism concerns in the US

V. OBSERVATIONS

1. It seems curious that until 10 years ago, most Vietnamese did not eat dragon fruit. It is more prized for its beauty and as an appropriate offering at religious shrines. It is an attractive fruit with a light flavor. The taste will depend on when it was picked and how long it has been stored. The fruit commands a low price in Vietnam because of competition from other, more favored fruits. It will be interesting to see how it is marketed in the US and how well it will be received.

2. The plants appear to be relatively easy to propagate and grow. They have very little pest problem and take little maintenance. If lucrative markets, such as the EU and the US open up or expand, the farmers should be able to meet demand, even during the low production months. The farmers are fairly desperate for export markets besides their current markets with their Asian neighbors.

3. On Tuesday, May 31, 2005, after the first workshop, we traveled to the Binh Tan District of HCM City to talk with the director of Son Son Company and look at their irradiation facility. At present they are only irradiating frozen shrimp for shipment to the US. It's a \$10 million facility with plenty of unused capacity. It employs US technology and looks as if it would meet US certification. They are eager to use the facility to irradiate fruit. They have not tested dragon fruit to ascertain tolerances.

4. On June 6 and 7 we visited several packing facilities. All of the facilities use mainly hand labor for the entire process, although one facility was installing a washing and drying line. The process of picking, collecting, grading, washing, cleaning, and packing the fruit varies from one packer/exporter to the next.

One packer picks only from approximately 60 farmers who only deal with him. Another has about 20 farms only he picks from and may buy from an additional 80 farms, probably depending on price. Another sends a collector who buys from anyone with a good price. There is no standard methodology so traceability to the farmer level, if needed, is going to be difficult without modification.

5. All four of the workshops were very well attended, with a good diversity of attendees. All four generated lots of very good questions and the presentations appeared to be on target for their concerns and very well received. VNCI is to be commended for the exceptionally well organized meetings and for inviting the right people to attend. The translations of the PowerPoint presentations and at the meetings were also very professionally done. As a former trainer, and director of an APHIS training center, I was most impressed.

6. There are a lot of unknowns that need further study:

- No one could say how the fruit would hold up to various levels of irradiation exposure. Research should be done for 150 greys and 400 greys under various temperature and moisture levels.
- We heard significantly varying shelf life predictions after periods of cool storage. The Israelis have a different storage scheme than practiced by the Vietnamese. Research should be conducted to determine the optimum storage scheme for the fruit, possibly tailored to the condition of the fruit or the time of year it is picked.
- The Australians and the Japanese are interested in promoting a vapor heat treatment program for the fruit. It's possible they have a vested interest in promoting that particular type of treatment. MARD needs to investigate whether Japan and Australia would accept irradiated fruit.
- If irradiation is selected as the desired treatment for fruit flies, Vietnam will also have to have a regulation accepting irradiation as a quarantine treatment for fruits and vegetables from the US. I was told that is the case, but did not see a copy of a law that would support that statement. MARD may need to clarify this issue.
- If irradiation is selected as the desired treatment, information should be compiled on the actual effect of the treatment on the fruit and precisely how that effect impacts the safety of the fruit for human consumption. The biotechnology industry has done an exceptionally poor job of relating to the public's fears and concerns, and it would be a significant mistake to not be prepared to deal clearly and truthfully with fears and concerns the public, exporters, brokers, etc may have. It might also be good to start calling the technology X-ray treatment or Electronic Beam treatment to lessen the fears surrounding the word "irradiation". There is probably a significant education component to this market access effort.

VI. SEQUENCE FOR ACQUIRING MARKET ACCESS FOR DRAGON FRUIT

1. Formally request market access for dragon fruit.
2. Complete the Pest Risk Assessment and gain APHIS approval.
3. Work with APHIS and industry to select mitigations to lower the pest risk to an acceptable level.

4. If X-ray irradiation is selected, work with APHIS headquarters to complete the Framework Agreement. If Vapor Heat (or X-ray Irradiation) is selected, work with APHIS headquarters to determine all tasks necessary to have treatment facility inspected and certified.
5. APHIS will then begin the rule-making process to write and publish the Proposed and later Final Rules.
6. Work with APHIS headquarters to set up pre-clearance program.
7. Have APHIS certify treatment facility.
8. Work with APHIS headquarters to complete the workplan for the program.
9. Once market access is gained with publication of Final Rule, contact APHIS to arrange APHIS personnel to arrive to begin pre-clearance for export of first shipment.

VII. CONSULTANT RECOMMENDATIONS

1. MARD should immediately appoint a person to be in charge of the dragon fruit export program. That person should immediately convene a meeting with industry and other government people to decide which treatment option they expect to use for the export shipments. The pros and cons of both vapor heat and x-ray irradiation should be thoroughly explored. This consultant thinks x-ray irradiation has tremendous advantages over vapor heat for a number of reasons, and strongly recommends it.
2. The same issues should be discussed in depth with the APHIS PPQ Trade Director (currently Ms Jeanne Van derSal) in the Riverdale, Maryland headquarters. Additional APHIS headquarters personnel who should become part of the project include: Ms Donna West, APHIS PPQ Import Specialist; Paul McGowen, APHIS IS Preclearance Director; and Russ Caplan, APHIS IS Trade Policy Director. In addition, Dr. Ned Cardenas, APHIS IS in Manila, Philippines should become aware of all progress being made. Considerable time and effort will be needed by both APHIS and MARD to accomplish the Framework Agreement, the development of the Pre-clearance program and the Work plan, and the certification of the treatment facility.
3. The MARD dragon fruit program leader should, if appropriate, work with industry to determine the x-ray irradiation dosage tolerances for dragon fruit and the optimum storage options available for cold/cool storage of the fruit for various periods of time.
4. As soon as the Pest Risk Assessment for dragon fruit is satisfactorily completed, MARD should begin the exact process for longans, litchee, and mangosteens, especially if x-ray irradiation is to be used. Pre-clearance programs are expensive to run and additional volumes of additional fruits significantly lower the average program costs.
5. All marketing issues must be thoroughly researched to ensure the fruit receives an appropriate reception in the US.
6. Throughout the entire process, the MARD dragon fruit program leader should be in frequent contact with the involved APHIS people, especially Jeanne Van derSal, the Trade Director.

VIII. DAILY ACCOUNT OF TRIP ACTIVITIES

FRIDAY-SATURDAY; MAY 27-MAY 28

Fly to Ho Chi Minh City (HCMC), Vietnam.

SUNDAY; MAY 29

AM: Rest

PM: Met for dinner with John Bowman, Development Alternatives Inc. Specialist in charge of the USAID RAISE SPS Project. Discussed with him many of the plant quarantine issues associated with gaining market access for dragon fruit.

MONDAY; MAY 30

AM: Met with John Bowman and Ms Nguyen Phuong Thao, the industry coordinator with the Vietnamese Competitiveness Initiative (VNCI) group. We discussed the objectives and parameters for each of the scheduled workshops, who would be involved, the travel arrangements, our presentations, etc.

PM: Reviewed the presentation material with Ms. Thao to finalize preparations for the following day's workshop. Met additional VNCI personnel.

TUESDAY; MAY 31

AM: First workshop; In HCMC, with approximately 50 people from the Ministry, exporter groups, growers, researchers, Steve Parker from USAID/STAR Project, Dr. Pham Thi Thu Hang from the Vietnam Chamber of Commerce and Industry, and others. Ms Thao gave a brief introduction about what VNCI is trying to accomplish. I spent the next two hours discussing the most important phytosanitary issues associated with their desire to gain access to the US market for their dragon fruit. We had a spirited question and answer period. Mr. Bowman followed with a short discussion of the RAISE SPS Project and how it relates to the issues I had discussed.

PM: Ms Thao, John Bowman, and I traveled to the Binh Thuan District of HCMC to visit the Son Son Co., LTD, a company with a state-of-the-art x-ray irradiation facility. We met with the President and Vice-President of the Board, the Facility Manager, and the Chief Researcher, and discussed the possibility of treating dragon fruit, as well as other tropical fruits. We also discussed transportation, storage, and safeguarding issues. The facility employs US technology and appeared likely to be able to meet APHIS certification requirements.

WEDNESDAY; JUNE 1

AM: Traveled to the Southern Fruit Research Institute (SOFRI) in My Tho City, Tien Giang province. The audience for workshop #2 had approximately 45 people and was composed mainly of growers, exporters, and SOFRI researchers. The question and answer period had to be significantly extended to accommodate the very engaged participants.

PM: After lunch we toured the research facility and grounds with the Director Chau and the Chief Entomologist, Dr. Lai and discussed the research projects occurring relating to dragon fruit and other potential export fruits.

THURSDAY; JUNE 2

AM: Visited the annual Asian Fruit Exposition at the Exhibition Center in HCMC to see many of the fruit exhibits. Quite well done.

PM: Flew to Hanoi.

FRIDAY; JUNE 3

AM: The audience for workshop #3 had about 50 people, with many from the Ministry, as well as representatives from the Ministry of Trade, GTZ, FAS, exporters, lots of media, and some growers. Again, the presentations on the SPS issues were well received and elicited numerous questions.

PM: After lunch Ms. Thao presented Dr. Tru, Deputy Director General of the Plant Protection Department with a binder containing all of the SPS/ Plant Quarantine reference material I had compiled to support the presentations. Later we flew back to HCMC.

SATURDAY; JUNE 4

Day off.

SUNDAY; JUNE 5

PM: Drive three hours to Phan Thiet in Binh Thuan province.

Monday; June 6

AM: The audience for workshop #4 numbered approximately 47 people, mainly dragon fruit growers, packers, and exporters from Binh Thuan province, and some media. Again, the question period had to be extended until finally we had to quit to go to lunch.

PM: Traveled to the Hoang Hau Dragon Fruit Farm to look at dragon fruit growing in the field. Dr. Beth Mitcham, a postharvest specialist and professor from the University of California, Davis had joined the rest of the team and led the discussions with the growers.

TUESDAY, JUNE 7

AM: Visited two additional packing facilities in Binh Thuan province. Dr. Mitcham again led the discussions. Each farmer had slightly different ways in which they gathered and cleaned the fruit.

PM: Drove back to HCMC.

WEDNESDAY; JUNE 8

Fly back to the United States.

V. CUSTOMIZED TRAINING AT APHIS FACILITIES IN NORTH CAROLINA USA FOR VIETNAMESE PHYTOSANITARY OFFICIALS

Dr. John Bowman, DAI

In September 1999, the Ministry of Agriculture and Rural Development of Vietnam (MARD) implemented a new program for the development of vegetables, fruits and flowers for the period of 1999-2010. The main objective of this effort was to raise the value of all horticultural exports to US\$ 1 billion by 2010. Of eleven fruits that were given high priority status for export, dragon fruit was given the highest priority. Dragon fruit has played an important role in small farmer horticulture in Vietnam for about 20 years, mainly as a cash crop for domestic markets. Serious interest in export markets was initiated by some enterprising farmer groups around 2000, but export potential has been constrained since most small farmer production techniques in Vietnam do not comply with international sanitary and phytosanitary (SPS) requirements. For that reason, several donors (USAID, AusAID), MARD, and dragon fruit supply chain stakeholders joined forces and implemented a collaborative effort to improve small farmer access to export markets through attainment of group EUREPGAP certification. To date, the project has organized fast-tracked pilot farmer groups that achieved EUREPGAP certification by the end of 2006; formed a viable exporting cooperative; trained over 200 farmers on EUREPGAP protocols; conducted marketing research work in Europe; developed a new national dragon fruit standard; and provided capacity building activities in SPS awareness, pest risk assessment, and post-harvest handling techniques geared to the U.S. market.

VI. CAPACITY BUILDING IN POST HARVEST HANDLING AND PACKHOUSE MANAGEMENT FOR THE EXPORT OF VIETNAMESE DRAGON FRUIT

Prof. Elizabeth Mitcham, University of California – Davis, Independent Consultant to DAI

The Consultant traveled to Vietnam June 3 through 11, 2005 to work as a packinghouse expert with growers and packers of dragon fruit to provide advise on improvements in postharvest handling to increase postharvest life and compliance with EuropGAP and USGAP requirements. Much of the work occurred in the dragon fruit growing area of Binh Thuan Province near Phan Thiet city. In addition to holding training workshops with dragon fruit farmers and packhouse operators, the main deliverable was the development of a customized manual on post harvest procedures and packhouse operations for export quality dragon fruit. This manual is presented in the Annex B of this report.

SUMMARY OF TRIP ITINERARY

- Sunday, June 5** Traveled to Phan Thiet
- Monday June 6** Attend workshop by John Thaw on APHIS requirements for entry into US market in the morning. Visited Hoang Hau and Long Hoa dragon fruit farms to observe and discuss fruit handling. They were not packing fruit at Long Hoa during that time.
- Tuesday, June 7** Visited Taiwan Company (Hsin Gou International Co. Ltd.), Duy and Kieu Nga dragon fruit packing facilities. Also observed dragon fruit plants in the field. Worked with scientists from the Postharvest Institute (SIAEP) to finalize our presentations for the workshop beginning the following day.
- Wednesday, June 8** Workshop for approximately 50 dragon fruit growers and packers. Most of the audience was growers. I gave a presentation about postharvest physiology and quality assurance for dragon fruit. The staff from SIAEP spoke about integrated pest management, postharvest technology of dragon fruit and described the new fruit washing system they have developed. I developed a self-assessment survey for use during Thursday's workshop (attached).
- Thursday, June 9** The workshop continued with my presentation on Good Agricultural Practices. Following a break, the audience was divided into seven groups with at least one

packing house person in each group. The groups worked on the self assessment to evaluate their operations and how well they were doing in harvest, receiving, washing, packing and cooling operations. There was some confusion regarding the assignment. The audience thought they were to indicate how important each factor was, not whether they were doing a good job in each area. For this reason, Ms. Thao led the group through the survey beginning with receiving the fruit and asked how they thought they were doing overall on each factor. The assessment from the general audience is indicated in bold on the attached self assessment.

Before returning to Ho Chi Minh City, we went back to the Hoang Hau packing facility because the fruit washing machine had been installed and they were going to do some of the initial testing. We observed the washing and packing of several bins of fruit.

Friday, June 10 Visited with Nguyen Ngu, Ngo Van Binh, Nguyen Tho, and Nguyen Due Truong at the Postharvest Institute (SIAEP) in Ho Chi Minh City. We had a round table discussion about their research activities with dragon fruit and future needs and had a tour of the facility. Ms Thao participated in this visit and translated, as needed.

Saturday, June 11 Travel back to the United States.

OBSERVATIONS

HARVEST AND TRANSPORTATION TO PACKING AREA

We did not observe harvest operations, but learned that many growers pick according to the number of days post flowering. Some also use skin color as a guide to the proper harvest maturity. Many recognized that fruit harvested later after flowering had better flavor, but may have a shorter postharvest life. Harvest occurs between 28 and 32 days after flowering. Harvest at 28 to 30 days gives longest shelf life. Eating quality is better at 32 to 35 days. Fruit are harvested early and late in the day to avoid the sun and when it is not raining. Some felt that treating fruit with gibberellic acid (GA3) would delay fruit ripening and increase the number of days from flowering to harvest, but this was not generally agreed upon and should be clarified. GA3 is used to thicken the fruit skin and reduce ethylene production, thereby extending the fruit's postharvest life. This would agree with results with other fruit such as sweet cherries. Fruit are often harvested by "collectors" who are employed by the packing facility. The collectors clip the fruit from the plant, grade them in the field, and place them into wicker baskets which are transported by a variety of means to the packing facility, generally attached to motor bikes.

Packing operations

The packing operations were similar in the facilities we toured. Fruit were often received in a covered area where the fruit were weighed and sorted by size. The number and size of fruit was recorded for each collector. During this operation, fruit were often unloaded onto a dirty floor before being placed into hard plastic field containers. Fruit were sorted into two grades for the European and Asian markets based on size, skin color and physical defects. Taiwan wants fruit larger than 500 grams, Europe wants small fruit.

Fruit Cleaning and Washing. All fruit were cleaned by scraping flower parts and other materials out of the “nose” (blossom end) of the fruit. Fruit were then rinsed with plain water, and then dipped in either electrolysed oxidized (EO) or chlorinated water. This washing step was accomplished in various ways. In some operations, the entire fruit was dipped into a bucket of sanitized water and then wiped with cloths moistened with the sanitized solution. In other operations, only the nose was dipped in the sanitized water and then the fruit were wiped with wet cloths. This water and the cloths were often very dirty. At Long Hoa packing facility, a series of three large tubs were used. The first tub contained plain water for an initial fruit rinse and the second and third contained EO water. The fruit were held in the first EO water for 15 minutes and rubbed with cloths. After the final EO water dip, fruit were dried by fan on open mesh tables. In many operations, the wiping of the fruit with damp cloths was the only drying that occurred. In many instances, we observed that the fruit were still wet in places when placed into the bag.

New Fruit Washing System. The Hoang Hau packing facility had just installed the new fruit washing system developed by SIAEP and we were able to observe the initial operation during our visit. This system eliminates the use of cloths to wipe the fruit. On the first run of the unit we noticed the fruit had not been completely cleaned or dried. The system has not been fully tested and may require slight modification before performance is optimized. I think this system has the potential to reduce fruit injury and increase sanitation so long as it is able to completely clean the fruit and eliminate the need for the cloth wiping. In all of these washing systems, the use of non-sanitized water as the first step is a concern. This has potential to spread pathogens from fruit to fruit. This water system should also be sanitized or should use water only once.

Packing. Packing was accomplished by hand in all operations observed. Fruit were placed into plastic bags of various types and place packed into cardboard boxes. We also learned that some buyers in Europe prefer the fruit not be packed into bags. In this case the fruit are packed single layer in the box and shipped by air at 6 to 10°C. For most operations, fruit for the Asian markets (Taiwan, Singapore, China) were packed into bags with approximately nine large holes. The main purpose of these bags was to reduce water loss. For the European market, nylon bags with 0.5mm holes (16 holes for 0.5 kg and 20 holes for 1 kg fruit) were used to modify the atmosphere within the bag. This helps to reduce further fruit ripening, maintaining the green appearance of the scales, reduces decay, and reduces development of chilling injury at the low storage temperatures used, in addition to reducing water loss.

Sanitation. There are a number of areas of concern regarding the typical packing operation used for dragon fruit. The most critical is related to sanitation. The packing area in most operations was very, very dirty on the floors and all surfaces, giving the impression they had not been cleaned for a long time. Fruit were often placed on the floor during receiving and packing operations. In one facility, the fruit were placed onto rugs or cloths that were themselves very dirty. One operation had invested in short, stainless steel tables with short 4-inch legs. These tables could easily be cleaned and sanitized, but during the packing operation, workers placed their bare feet on the table where fruit were handled and the floor under the tables was very dirty. Waist high tables would reduce the temptation to put your feet on the tables. Workers could either sit at stools or stand when working.

Fruit were cleaned with EO water in most facilities, although one facility was using sodium hypochlorite solution. The EO water produces mostly hypochlorous acid (chlorine) with a small percentage of reactive oxygen species. This water solution is generated on site and diluted 1 to 5 with water. In some operations, the chlorine level in the EO water was checked when first made and a concentration of 50ppm was recommended. It did not appear that any subsequent monitoring of the effective concentration was done.

This appears to be an effective sanitizer system for small scale operations; however, I recommend that the oxidation reduction potential (ORP) or the ppm of chlorine be measured periodically during use of the water to maintain at least 25 to 50ppm chlorine.

COOLING AND TEMPERATURE MANAGEMENT

Most packers reported using a storage and transit temperature between 4 and 5°C. According to the available literature and results with this species in Israel, it is thought that the fruit cannot tolerate long term storage at temperatures below 10°C. More than two weeks at 6°C resulted in damage to the fruit developing after the fruit were transferred to 20°C for marketing. It is possible that the growing conditions in Vietnam led to fruit that are more tolerant to low temperatures. Alternatively, the fruit may be cooling to the storage temperature very slowly as there was no pre-cooling practices observed and the coolers available at the packing facilities are very small and generally over-loaded with product. The packing of each fruit in a plastic bag together with elevated temperatures in the cold room would result in a minimal amount of cooling before fruit were loaded into the marine container. The lack of bottom and top venting on the boxes will also reduce cooling of the fruit in the marine container. All these factors together may be reducing the exposure of the fruit to temperatures in the 4 to 5°C range and thereby preventing chilling injury. In addition, storing the fruit under modified atmospheres will reduce the development of chilling injury symptoms.

It was difficult to confirm if the quality of the fruit was carefully monitored over a period of time at 20°C following cold storage experiments to assure the quality was maintained during the shelf life period. Chilling injury symptoms do not usually manifest themselves until after the fruit is transferred to room temperature. It would be informative to use some fruit temperature probes to monitor actual fruit and air temperatures from packing to arrival at the destination market. This is the only way to know the actual temperatures fruit are being exposed to and the fruit's tolerance to these low temperatures.

Improvements in temperature management could be made by increasing the size and capacity of the cold storage facilities and designing boxes with top and bottom venting to better cool during marine transport. However, without a clear sense of the chilling sensitivity of the fruit, it may be risky to do so as improving the cooling could result in fruit damage at 4 to 5°C.

TRANSPORTATION TO MARKET

The main export markets are Taiwan, China, Singapore and Europe (Holland, UK, Germany). Fruit are generally shipped by truck or by sea. The reefer container comes to the packing facility to pick up the fruit. The distance to the European market is greatest, especially since the ships appear to go around the tip of Africa rather than through the Suez Canal. Personnel from Maersk Sealand have expressed an interest in the dragon fruit market in Vietnam and indicated that their ships could transport the cargo through the Suez Canal, significantly reducing the transit time. This mode of shipment should be pursued.

UNITED STATES AS A MARKET

As we heard from the APHIS expert, a quarantine treatment will be required for dragon fruit to be shipped to the US to control fruit flies. A hot air or vapor heat treatment is currently being investigated in New Zealand. Because of the susceptibility to water loss, the success of this approach is tenuous. Irradiation at the facility in HoChi Minh City is a potential treatment that should be pursued. A project

must be initiated to determine the tolerance to irradiation of the dragon fruit. It would also be useful to meet with a US specialty crops importer, such as Frieda's Finest or Melissa's, to determine the potential for dragon fruit in the US market and how its marketing can be facilitated.

CONCLUSIONS

To extend the postharvest life and increase the quality of Vietnamese dragon fruit, the growers and packers should focus on improving their sanitation practices by cleaning the fruit handling facilities and modifying the fruit surfaces so that they are easy to clean and sanitize. Additional studies on fruit tolerance to temperatures between 4 and 6°C should be conducted, and fruit and air temperatures should be monitored from packing to destination for several trial shipments to determine the temperatures experienced by the fruit during commercial handling. The potential to marine ship fruit through the Suez Canal should be pursued to shorten the shipment time for fruit going to Europe. There may be an opportunity for this through Maersk Sealand. The tolerance of dragon fruit to irradiation at the dosages needed to control fruit flies should be tested in the immediate future to determine if irradiation treatment could provide the quarantine security needed for the US market. Finally, a group should make contact with some of the specialty crop importers in the US to determine the best market strategy for dragon fruit and its market potential in the US.

SELF ASSESSMENT TOOL FOR GROWERS AND PACKERS OF DRAGON FRUIT

This tool was developed in-country in close consultation with the dragon fruit growers and packers.

	Good	Needs Improvement	Poor
Harvest			
During rain or not	x	x	x
Harvest maturity			
Adjusted based on target market	x	x	x
Adjusted when GA3 used	x	x	x
Harvest containers clean and non-abrasive	x	x	x
Avoid sun exposure and delays in fruit transport	x	x	x
Worker hygiene (sanitary facilities and hand washing)	x	x	x
Transportation to packing area			
Avoid sun exposure and dust	x	x	x
Do not overfill containers	x	x	x
Transport by truck, not scooter	x	x	x
Drive gently over smooth roads	x	x	x
Do not stack containers of fruit.	x	x	x
Packhouse operations			
Receiving area			
Shaded area	x	x	x
Sufficient space	x	x	x
No fruit on floor	x	x	x
Clean tables, scales and floor	x	x	x
Expedite fruit sorting, packing and cooling	x	x	x
Sorting area			
Clean surfaces and floors	x	x	x

	Good	Needs Improvement	Poor
Well lighted	x	x	x
Fruit off the floor	x	x	x
Sort into clean containers	x	x	x
Sanitary facilities (toilets and hand washing area)	x	x	x
Washing			
Sanitizer in any water systems			
monitor effective	x	x	x
concentration routinely	x	x	x
change water when looks slightly dirty	x	x	x
Use clean and sanitizer cloths to avoid abrasion and contamination	x	x	x
Eliminate the use of cloths and use fruit washing system or similar	x	x	x
Avoid placing fruit on dirty surfaces or in dirty baskets, especially after cleaning	x	x	x
Trimming			
Regularly clean and sanitize trimming tool in sanitizer	x	x	x
Train workers not to cut stem too short and damage fruit body	x	x	x
Packing			
Use bags to reduce water loss	x	x	x
Use MAP bags for shipments over 5 to 7 days	x	x	x
Dry fruit with fans not cloths before placing in plastic bags	x	x	x
Fold top of bag over to close top...	x	x	x
Place fruit gently into cardboard box..x	x	x	
Cooling			
Place packed boxes quickly into cold room or cold reefer	x	x	x
Space boxes within cold room to speed cooling	x	x	x
Use boxes with top and bottom vents for sea shipment to allow cooling in transit	x	x	x
Marketing feedback			
Ask customers for feedback on fruit so can adjust process if needed	x	x	x

Bold "x" indicates the assessment from the audience in general

POSTHARVEST MANUAL FOR THE HANDLING OF VIETNAMESE DRAGON FRUIT

This manual includes information to assist growers, packers and other handlers of dragon fruit to maintain the highest fruit quality for the consumer. The information contained within comes from a variety of sources. It was developed primarily by the Consultant in close consultation with scientific staff at SIAEP in Ho Chi Minh City. Electronic and hard copies were left behind for use by all stakeholders in the dragon fruit supply chain

HARVEST OPERATIONS

Harvest maturity is a primary consideration for postharvest quality of the fruit. Fruit picked too early (immature) will not develop good flavor quality and fruit harvested too late (over-mature) will have a short postharvest life. It is generally recognized that fruit harvested at 28 to 32 days after flowering have the longest postharvest life, but fruit harvested at 32 to 35 days have the best eating quality. The harvest maturity should be decided based on the distance to market and the requirements of the buyer. Preharvest treatments with gibberellic acid (GA3) to thicken the skin and reduce ethylene production will extend postharvest life, but may also increase the time required for the fruit to mature after flowering.

Harvest should occur early or late in the day to avoid the hottest part of the day, and should not occur when it is raining. Fruit should be kept out of the sun after harvest to keep the temperatures cool and prevent sunburn. Fruit should be carefully clipped from the plant, avoiding cutting the body of the fruit. If desired, some grading can occur in the field before fruit are placed into containers for transport to the packing area. The fruit containers should be clean and non-abrasive on the inside. Do not overfill the containers to avoid compression damage to lower fruit. Do not stack containers unless the container walls can support the containers above, not the fruit within the container. For long transport, cover the fruit to prevent sun exposure. Select smooth roads and drive gently to the packing area. Gentle handling of the fruit to avoid damage to the skin or the bracts is critical to maintain good fruit appearance and extend the postharvest life.

PACKING OPERATIONS

Receiving and sorting the fruit at the packing area should occur in a shaded area to keep the fruit cool. Provide clean, elevated surfaces for counting, weighing and sorting the fruit. Do not place fruit on the floor or any other dirty surface ((Figure 1). All equipment used for fruit handling or weighing should be clean and sanitized. The sorting area should be well lit with overhead lights.

Washing the dragon fruit is important to improve fruit appearance, removing dust, honeydoo and sooty mold (Figure 2) from the skin. Remnants of flower parts are removed from the blossom end (nose) of the fruit to improve appearance and prevent decay. Take care to avoid damaging the body of the fruit when removing flower parts. During the washing process, the green bracts on the fruit should be protected from damage and sanitation of washing solutions must be assured to prevent contamination of the fruit with microorganisms during the washing process. Various sanitizers could be used in the wash water, including liquid bleach (sodium hypochlorite) or electrolyzed oxidized (EO) water. The level of free chlorine and the pH should be monitored using test strips or electrodes every few hours and records kept during use of the water. PH should be between 6 and 7.5 and a minimum level of 5 ppm free chlorine is required for water sanitation. A calibrated oxidation reduction potential sensor can also be used to determine the amount of free chlorine. The sensor reading should be maintained within the range 725 to 750 millivolts.

The washing process can occur by hand (Figure 5) or with specialized machinery containing brushes such as the unit recently developed by SIAEP (Figure 6). When the process occurs by hand, it is essential to rinse cloths frequently in a sanitizer to remove soil and kill microorganisms and change the wash water at the first sign of discoloration. The cloth must be soft and clean during use on the fruit (Figure 5). Any water contacting the fruit should be clean and sanitized adequately to prevent the spread of microorganisms (fruit pathogens or human pathogens) from fruit to fruit in the water. An initial rinse with fresh single-use water can be used to remove some dust and dirt, but this water should not be re-used without filtration and sanitation.

Once fruit have been cleaned, they should be placed onto clean tables for drying. Fan drying is very effective and non-damaging if the fan is turned off once the fruit are dry to prevent water loss. Ensure that the air in the drying area is clean and dust-free. Drying with cloths is risky due to the potential to re-contaminate or damage the fruit, and cannot dry the inner blossom area. It is important to completely dry the fruit before placing into bags for packing.

Packing is accomplished by hand (Figure 7), with a similar size and grade packed in the same box. Pack the fruit into individual plastic bags to reduce water loss during transportation and marketing. For Asian markets, pack the fruit into bags with approximately nine large holes. For the European market or other markets more than 5 to 7 days distance, pack the fruit into nylon bags with 0.5mm holes (16 holes for 0.5kg fruit and 20 holes for 1 kg fruit). This bag reduces water loss and also modifies the atmosphere around the fruit. This atmosphere maintains the green scales and reduces fruit susceptibility to chilling injury. Fold the top of either bag over to reduce air exchange through the open end. Dividers within the box to separate and immobilize the individual fruit are beneficial (Figure 8). Take care not to overfill the boxes with fruit as this can result in fruit compression.

Cooling of the fruit should occur shortly after packing, either in a cold storage facility or by loading fruit into a container for sea transport. Research by SIAEP indicates that storage and transport at temperatures of 4 to 6°C are optimum, maintaining fruit quality for up to 42 days. The cardboard boxes should have 5% of each side vented for adequate cooling. When the cooling occurs in a sea container, the venting should be on the top and bottom of the box to take advantage of bottom air delivery in such containers, and therefore a specialized box should be used for sea shipments as opposed to truck shipments or air shipment. Oblong vents are more effective than round vents. The internal dividers should be designed to allow air flow through the box.

Investment should be made in an accurate thermometer for the cold room and a fruit probe thermometer to monitor product temperatures throughout handling. In the cold room, the thermometer should be placed away from the door for best accuracy.

TRANSPORTATION

Transportation can be by truck, sea container or air. For truck and sea container, be certain that the thermostat is set to the correct temperature (4 to 6°C) during shipment. Some shipping companies can ship to Europe through the Suez Canal rather than around the tip of Africa. While this may be more expensive, it would significantly reduce the shipment time and could result in better arrivals for the European market.

SANITATION IN FIELD AND PACKING AREA

Sanitation is critical in all steps of fruit handling from the field to the consumer. Microbial safety is important to maintain the health of the fruit by preventing contamination by fruit pathogens and to protect consumers who eat dragon fruit by preventing contamination by human pathogens. These steps in sanitation will be required by most of your buyers in the near future.

Many of the preventative measures are the same for both risks. For human pathogens, we must be particularly concerned with worker sanitation, as many human pathogens are found in human and animal feces. Providing toilets and hand washing facilities in the field and packing area are essential, as is developing a culture where hand washing is required of all workers after eating or using the toilet. Some plant and human pathogens are found in the soil. Therefore, you should never place fruit on the ground or onto dirty surfaces. Handle fruit on elevated tables made of easily cleaned and sanitized materials. Clean and sanitize all fruit containers and table tops on a regular basis. Control the entry of animals and birds into the field and packing area whenever possible.

MARKETING

Work with your buyers to match their desires to the requirements of the commodity. Ask for feedback on the arrival of your product so that you may adjust your practices to improve fruit quality if needed.

RECOMMENDED EQUIPMENT

QA Supplies

<http://www.qasupplies.com>

Thermometers

Cold room wall thermometer
Fruit flesh probe thermometer

Refractometer

to measure soluble solids

Sanitation

Free chlorine test kit
Oxidation reduction sensor (ORP meter)

OTHER RESOURCES

University of California Davis Postharvest
Technology Research and Information Center:

<http://postharvest.ucdavis.edu>

International Maximum Residue Limit Database:

<http://mrldatabase.com>

US Government Food Safety Information:

<http://www.foodsafety.gov>

<http://www.jifsan.umd.edu/gaps.html>



Figure 1: Do not place fruit on the ground. Make sure fruit containers are smooth and clean on the inside.



Figure 2. Sunken spots on dragon fruit skin from abrasion injury during handling at harvest.



Figure 3. Sooty mold on surface of fruit at harvest. Must be removed before marketing.



Figure 4: Make sure fruit containers are clean, especially after washing; keep containers off the floor and feet off tables.



Figure 5: Manual washing operation. Keep sanitized solution and cloths clean.



Figure 6: Automated washing machine developed by SIAEP.

VII. BROAD-BASED SPS SUPPORT TO VIETNAM THROUGH RAISE SPS

In addition to the trade capacity building activities focused on the dragon fruit sector, RAISE SPS also made several related contributions to Vietnam's agricultural sector which provided expertise on SPS issues in a broader sense. Firstly, RAISE SPS, as part of a World Bank Team assessing nationwide agricultural health and food safety issues, provided expertise on the role (readiness) of the private sector to meet SPS requirements in advance of Vietnam's accession to the WTO. Secondly, as part of another World Bank Team, RAISE SPS provided additional expertise focused on Vietnam's strengths and weaknesses in "plant health management" – this assessment was closely related to needs in the fruit sector. And thirdly, RAISE SPS conducted a broad assessment of Vietnam's legal compliance to the WTO SPS Agreement, which touched upon important "readiness" aspects of Vietnam's agricultural sector prior to WTO accession. These three assessments are presented below.

A. THE ROLE AND IMPACT OF THE PRIVATE SECTOR ON SANITARY AND PHYTO-SANITARY (SPS) ISSUES IN VIETNAM

Richard Dee Clingman, DAI

OVERVIEW

A World Bank-led mission visited Vietnam from October 18-27, 2004 to (i) define the scope of eventual World Bank support to the Government of Vietnam (GOVN) in the preparation of their Food Safety and Agricultural Health Strategy and Action Plan; and (ii) provide support to the Ministry of Agriculture and Rural Development in their preparation to meet sanitary and phytosanitary (SPS) requirements for the proposed WTO accession. The mission team was composed of Mr. Cees de Haan of the World Bank and Mr. Dee Clingman of USAID's RAISE SPS Project, with Mr. de Haan serving as Team Leader. This report documents the findings of Mr. Clingman which, pursuant to his terms of reference, were focused on the role of the private sector in Vietnam's SPS efforts. Mr. Clingman's participation in the scoping mission was fully funded by the RAISE SPS Project.

Early into the mission, time was spent with the World Bank Vietnam staff and the Vietnam Government's Ministries of: Agriculture and Rural Development (MARD), Science and Technology, Multilateral Trade Policy Assistance Programme (MUTRAP), Health, and Fisheries. Additional meetings were held with the French and New Zealand Embassies as well as with the Danish International Development Agency (DANIDA) food support program to determine their food safety roles in Vietnam. Later in the mission, interaction with business and industry (private sector) was conducted.

Two key local participants, Mr. Nguyen Dzung of the World Bank Vietnam office and Ms. Tu ttong Anh, Interpreter, supported the success of the mission. Both provided essential internal and local guidance. The overall support of senior Vietnam World Bank executives Mr. Klaus Rohland, Country Director and Mr. Laurent Msellati was also appreciated.

THE CHALLENGE OF FOODBORNE ILLNESS CONTROL

The World Health Organization (WHO) cannot accurately estimate the incidence of foodborne illness worldwide. This is due to inaccurate or non-existent reporting mechanisms for foodborne illnesses in much of the world. Quantifying deaths from illnesses associated with foods are difficult due to the same reasons. Even in the United States where reporting mechanisms for foodborne illnesses are well developed, the best results are “qualified” estimates.

For a perspective view, foodborne illness continues to present a public health challenge in the United States (U.S.). The Centers for Disease Control and Prevention (CDC) estimates that, in the U.S. each year, 76 million people become sick, more than 325,000 people are hospitalized, and 5,000 people die from foodborne illness. The estimated economic cost of foodborne illness in terms of pain and suffering, reduced productivity, and medical expenses is substantial-in the range of \$10-83 billion each year. Foodborne illness is associated with a range of foods.

Each year, unsafe food makes at least 2 billion people ill worldwide, or about one third of the global population. Yet five simple prevention techniques could significantly reduce this burden of disease. On the occasion of the Second Global Forum of Food Safety Regulators, WHO launched its 5 Keys Strategy – a series of five simple actions which people can undertake at home or at work while preparing and consuming food. These are: keep hands and cooking surfaces clean; separate raw and cooked food; cook food thoroughly; keep food stored at safe temperatures; and use safe water and raw ingredients. WHO has produced a basic training manual to ensure that Member States can use and disseminate effectively the information contained in the 5 Keys Strategy. It is meant for food safety professionals, teachers and interested organizations to use in training selected target groups (including food handlers and school children, for example). Field testing of the publication “Bring Food Safety Home – How to use the WHO 5 Keys to Safer Food” is now starting around the world.

Even though the actions are applicable everywhere, WHO recognizes that the way food is prepared and the type of food which is eaten varies enormously across and within countries. The 5 Keys Strategy consequently does not set out prescriptions, and the implementing manual is a reflection of globally validated best practice, emphasizing five main messages, which Member States are encouraged to apply to local conditions. WHO regional offices are working to produce more specific versions of the 5 Keys Strategy and the manual. The five main messages are being translated into over 25 languages.

Produce (fruits and vegetables), a significant export in Vietnam and with great potential for export growth, is recognized as an important component of a healthy diet because it is a source of vitamins, minerals, fiber, and antioxidants. Produce can play an important role in weight management as well. Because most produce is grown in a natural environment, it is vulnerable to contamination with pathogens. Factors that may affect the occurrence of such contamination include agricultural water quality, the use of manure as fertilizer, the presence of animals in fields or packing areas, and the health and hygiene of workers handling the produce during production, packing, processing, transportation, distribution, or preparation. The fact that produce is often consumed raw without any type of intervention that would reduce, control, or eliminate pathogens prior to consumption contributes to its potential as a source of foodborne illness. The persistence of foodborne illness associated with fresh produce may be attributed to a number of factors, but many cases are preventable. Given the importance of produce consumption and its central role in a healthy diet, it is imperative that the incidence of foodborne illness cases associated with produce be reduced throughout the world.

The growth in the globalization of food trade also adds to the international public health significance of the food safety work of WHO and its Member States. The globalization of food trade increases the potential to disseminate foodborne hazards around the world and can be the source of major outbreaks. Concerns regarding the likely contamination of food with chemicals such as chloropropanols, pesticide and veterinary drug residues, BSE prions and microbial hazards have in recent times resulted in the European Union, the USA and other countries banning the import of food products from several countries in the Western Pacific Region. This has resulted in millions of dollars of lost export earnings to those countries. However, there are also benefits in the growing trade in food. It contributes to safe and nutritious diets and provides food-exporting countries with foreign exchange indispensable for economic development. The Food and Agriculture Organization of the United Nations (FAO), the WHO and the WTO, supported by the links between the SPS Agreement and Codex, work together to balance these risks and benefits.

The World Health Organization states that despite food safety's significance for public health and economic development, in Vietnam and areas of Southeast Asia national food safety policies, plans of action and legislation have not been drafted or implemented; risk management practices, including the development and enforcement of standards, are neither risk-based nor in accordance with Codex guidance; foodborne disease surveillance is commonly not undertaken or is at a very early stage of development; and food safety education and training for consumers and food handlers is poorly developed.

EXPORT REVIEW

Vietnam has an agriculture-based economy with nearly 80 percent of its population engaged in agricultural activities that generate 30 percent of gross domestic product. The export of agricultural products including rice, coffee, tea, cashews, pepper and seafood, account for 40 percent of the country's total export turnover. With the push to export more agricultural and aquatic products and the growth of the domestic packaged foods sector, the food processing, packaging, and preserving industry plays an ever more important role in the country's plans for economic growth.

Leading players in this sector include the Ministry of Fisheries, the Ministry of Agriculture and Rural Development, the Ministry of Trade, state-owned enterprises, cooperatives, and private companies.

The need to reduce post-harvest loss and to move up the value-added chain is driving the food industry in Vietnam to focus on food handling, food processing, packaging, and cold chain equipment. However, financing remains a problem. State-owned enterprises may rely on state budget allocations for capital equipment upgrades. A certain amount of Official Development Assistance (ODA) has also funded projects in this sector. But private companies in Vietnam often find it difficult to access bank finance, and thus may have to rely on internal financing to import equipment. The photo to the left illustrates food-processing equipment in need of repair with damaged food contact surfaces that cannot be effectively cleaned and sanitized. Compounding the food safety risk is damaged flooring contributing to the potential harborage and growth of pathogenic bacteria like E.coli and Listeria.



According to data from the Ministry of Science, Technology and Environment, most of the technology and machinery/equipment in this profitable industry is outdated and often in poor condition. Although the

demand for machinery and equipment in the industry is huge, the domestic machinery industry cannot satisfy the internal demand because (despite some skill in copying and reverse-engineering) it has proven poor in design and quality. For the most part, domestic equipment is used in medium and small scale processing factories. Larger food processing enterprises and even smaller firms producing high quality products must rely on imported machinery and equipment.

In addition to deficiencies in food processing and packaging, Vietnam must also upgrade facilities for the storage and transportation of fresh and processed food. The photo at the left illustrates the simplicity of foodstuffs coming from the farm or going to the local or domestic market. Cold chain infrastructure is only beginning to emerge in Vietnam. It is now seen to play an important role in the food and foodstuff industry, especially for export products. There are around 35 major companies, both foreign and domestic, in Vietnam that specialize in cold storage services.



Exports include internationally competitive products such as rice, seafood, processed pork, coffee, pepper, fruit and cashew nuts. These are marketed both at home and abroad. Vietnam is the world's second largest rice exporter and the third largest coffee bean exporter, but poor post-harvest handling and lack of processing limit the value of these exports. For all products in this category, there is strong pressure to upgrade quality through improved handling and value-added processing prior to export.



While it is inevitable that Vietnam will rely heavily on commodity-based, low value food exports for at least the medium term, there is widespread recognition at the national, municipal, and enterprise levels of the need to improve handling and increase value added through processing.

The U.S. has become the largest foreign buyer of Vietnamese seafood and aquaculture products. This trend is expected to continue. Phyto-sanitary standards and market expectations of packaging quality will drive exporters in this area to upgrade technology and equipment. The photo at the left is a shrimp factory of one of the leading companies in shrimp processing and export in Vietnam and illustrates the level of complexity and thoroughness of comprehensive quality assurance and HACCP programs. It will be essential that the private sector develops and supports the development of stricter quality and food safety controls for the growth of food exports from Vietnam.

SCOPE OF PRIVATE SECTOR PARTICIPATION

During this scoping mission a limited number of private sector participants were selected. Some were recommended by the Ministry of Agriculture and Rural Development and others by the Principal Consultant. Not all private sector participants were sole proprietorships as some were co-operatives partly owned by the Vietnam government. One industry trade association was also a participant in this mission. Participants included:

- **Dong Giao Foodstuff Export Company:** This company is a cooperative business with the Vietnam Government and began in 1955. Prior to 1975 its business was mostly coffee production and processing. Since 1975 pineapples have been the main processed product. Over 5,000 hectares (\approx 12,400 acres) are owned by the company with over 2,000 hectares in pineapples. The company has three processing plants for juice, canned fruit, and frozen products. Canned cucumbers and

sweet corn are their major vegetables processed. They export juice to the European Union (EU) and United States (USA), canned products to the EU and frozen products to the USA. They utilize 30 quality inspectors in their rural farm growing program. They state that they have a Hazard Analysis Critical Control Point (HACCP) program in place in the processing plants. They do limited laboratory testing on raw ingredients and finished products mostly for the presence of pesticides and some microbiological analysis. They conduct annual nutritional analysis. The Ministry of Health sets the food safety standards they must comply with; however, many buyers of their products have much stricter standards than national standards. Most buyers' sample and test products produced before the buyer takes ownership. A factory tour of pineapple processing was given. Contact: Mr. Vu Dac Khang, Vice Director.

- **Animex Saigon:** The Vietnam government previously owned 100% of Animex but now only holds a 20% ownership. They are a \$20 million dollar (USD) business with \$5-\$6M in export sales. Rice is their major export with 400,000 tons going to Iraq and the Philippines. They export pepper to the USA and the Netherlands and 32 tons of cashew nuts (22 varieties/grades) to the USA. Of their total exports only 20% go to the EU and USA. They feel that coffee and pepper have the greatest export growth potential. They produce a limited amount of pork and beef for export to Russia. They feel that there are problems with animal exports from Vietnam due to poor breeds, poor production methods and inconsistent production volume. Contact: Mr. Dang Hong Ky, Deputy General Director.
- **Vegetexco HoChiMinh City:** They are a smaller processor of \$10-\$12 million dollars (USD); however, only \$500,000 goes to the domestic market the remaining to export markets. They export to 24 markets, the largest being USA, Japan, EU, China, Singapore and Malaysia. In the EU, France and Germany are the largest buyers. Their main export products are pineapples and lychee. They export fresh fruit via air. They require all their farmers to place an identification tag on their products for tracking. However, there is no tracking system for processed canned foods. Contact: Mr. Dinh Van Huong, Director.
- **Vina Fruit:** This is a trade association for fruit growers, processors and exporters. They provide trade, marketing and technical information to their sixty company members. They deal in raw materials, trading and export. Due to inefficient handling, technology deficiencies and the lack of controls, they estimate that of the 5.6 million tons of fruit harvested in Vietnam each year, over 2.3 million tons, are wasted and destroyed. Contact: Ms. Vo Mai, Ph.D., President.
- **Amanda Foods:** One of largest processors and exporters of aquaculture shrimp in Vietnam. They have one of the most comprehensive and detailed quality assurance programs in the food industry in Vietnam. They excel in food safety practices in their procedures and processes. They have over 600 farmers who raise aquaculture shrimp (Black Tiger) with strict controls on farmers. Every farmer and every pond is identified, and that identification number carries through processing and packaging. They limit farmers to one pond per hectare. They employ 20 Field Quality Control personnel to inspect the farms, ponds and shrimp. They only buy directly from their approved farmer base. They require that all ponds test negative for antibiotics before harvest. They employ 5 Agents for sales and 90% of sales are on a Purchasing Contract basis. The quality assurance systems and food safety practices they execute command a 3-4% higher price for their product than market standard. Factory employees receive over 2-3 times the Vietnam minimum wage; some receive housing, transportation to work and on-site medical care. A factory tour of shrimp

processing, testing, packaging and distribution procedures was given. Contacts: Mr. Paul Andriesz, President and Mr. Emmanuel Anton, Deputy Managing Director.

- **Metro Cash & Carry Vietnam:** Metro is a German-owned, retail consumer-based company. A similar USA equivalent would be a Wal-Mart Super Center or Costco Warehouse Club, but with more variety in soft goods. They are a \$64 billion dollar (USD) business and are the largest electronics company and the largest wholesaler of seafood in Europe. They have recently entered into Vietnam with two units in Ho Chi Minh City and one unit in Hanoi. As a modern “supermarket” they are unique, differing from Vietnam’s small family owned storefront food businesses. They have a “pilot” license with the Vietnam government to set up their own standards and systems and have been given a non-competitive protection agreement over the next several years. They are 100% privately foreign owned. In November 2004, Metro plans to open an export business in Vietnam. They employ 6 quality assurance people and provide “certification” of 100% of Metro branded products and bi-annual certification of non-branded food products. Approximately 50% of sales volume goes to restaurants, hotels and the institutional market. A tour of the retail operation was given. Contacts: Mr. James Scott, Managing Director; Ms. Nguyen Duc Huong, Public Relations Manager; Ms. Thai Hong Xuan Nguyet, Supply Chain Manager; Ms. Le Thi Minh Trang, Quality Assurance Manager; and Mr. Vo Van Nam, An Phu Store Manager.
- **GMRI, Buying Company, Darden Restaurants:** This is a purchasing arm of the restaurant chain that owns Red Lobster, The Olive Garden, Smokey Bones and Bahama Breeze in the United States. As the largest publicly owned dinner house chain in the world their need for seafood products is significant. They purchase large quantities of seafood throughout Southeast Asia including Vietnam (mostly shrimp). They have their own purchasing specifications for quantitative and qualitative factors. Food safety concerns are for antibiotics, pesticides, microbiological contamination, decomposition and other chemical or physical hazards. Contact: Ms. Chulintorn Chulpongsatorn.

HAZARD ANALYSIS

It is somewhat difficult to evaluate all potential food safety hazards and phyto-sanitary (SPS) issues on this short mission, considering the limited contacts with government and private sector groups. Additionally, the “selection” of key personnel to talk with and companies interviewed had potential bias, even if unintentional. However, some major food safety concerns continued to surface in many conversations with both government regulatory personnel and business and industry (private sector). It is these issues that are important to discuss and qualify since they may have impact on Vietnam’s international trade and future export successes.

Listed below are the principal food safety and phyto-sanitary (SPS) issues that were generally and uniformly agreed upon by both government and the private sector. They are not listed in any particular order of importance or severity.

- Pesticide and herbicide use on farms for animals, seafood, fruits and vegetables and their residual presence in foods was a significant concern. Indiscriminate use of pesticides and the lack of training and controls complicated the problem. The presence of pesticide residuals causes significant limitations on exports. Many feel that habitually unsafe farm practices cause the abuse of pesticides, especially the need for a quick kill and early harvest and fruit that has visual appeal. According to the fruit industry association, citrus receives the greatest abuse of pesticides, but since

so little is exported it goes unnoticed and unchecked while the product enters and passes through the domestic market. According to DANIDA IPM officials, unknown and illegal pesticides are widely used. Foodstuffs coming from border areas with Cambodia, Laos and China can be “loaded” with pesticides according to DANIDA.

- Conversely, the ineffective use of pesticides also enables certain pests to flourish without adequate controls. This was especially a concern for the fruit fly (*Dacus dorsalis*) population that infests certain products like dragon fruit and causes import and buyer rejections. Dragon fruit is the largest fruit export to Asian countries, but Japan and the USA will not allow it to be imported due to fruit fly presence. Insect fragments and filth are also a concern in the frozen shrimp market. Insect populations are inadequately controlled which leads to decomposition of fruits and vegetables and poor quality.
- Antibiotic use, especially in shrimp aquaculture, is an ongoing cause for import rejections and import restrictions in the EU, Japan and USA. Multiple antibiotics have been implicated.
- Vietnam’s tropical climate makes aflatoxin control a necessity. This is especially a concern for the large nut export sector. An association between high aflatoxin levels in foods and hepatocellular cancer has been noted in Southeast Asia. Many importing countries have very low tolerance levels for the presence of aflatoxin.
- Microbiological contamination in harvest, processing, packaging and distribution of foods is an ongoing concern. Concerns for disease causing enteric bacteria like *E.coli*, *Salmonella*, *Shigella* and *Staphylococcus* need to be continually addressed at all levels in the supply chain. Microbiological populations of non-pathogens are of concern as well due to degradation of product quality and shortening of shelf life. This is also extremely important to the domestic market and the provision of “wholesome” food products to Vietnamese consumers. MARD estimates that 80% of fruit and vegetable production is for the domestic market.

CONTROL POINTS

Laboratories

One of the basic fundamentals in food science and food protection programs is the reliance upon scientifically based laboratory analysis. Within Vietnam the resounding need for more laboratory testing was stated by government, trade associations, the private sector, affiliated food safety support organizations and foreign embassies. Each may have had their own interests for requesting higher levels of laboratory capacity, but all had valid reasons for such enhancements. Government saw the need to have better geographic coverage for analytical results and faster testing methods. The need for more accurate testing methodologies and analytical equipment were also seen by government as needed improvements. Laboratory supplies, additional personnel resources and training were also critical.

The private sector supported the same interests since slow laboratory turn-around times held food products in abeyance while samples were taken, shipped, tested and released. The additional costs for storage (refrigerated, frozen, and dry) are significant to the private sector. Storage delays awaiting laboratory analysis can take 2-4 weeks from the time the product was originally produced. The further the foods that needed to be tested were from major cities the longer the delays. Costs associated with refrigerated or frozen storage can be significant based upon power costs and warehouse storage, all of

which adds unnecessary export costs to the product. A major shrimp supplier visited during this mission indicated that on any given day \$.5 million to \$1.5 million of frozen shrimp can sit in storage awaiting testing results.

Some of the larger food processors have their own onsite laboratories or use private off-site laboratories to enable them to have more immediate microbiological and chemical analysis of their products. This photo illustrates an onsite laboratory at Amanda Foods in Ho Chi Minh City. Amanda produces raw and cooked shrimp for export. Modern laboratory equipment, professional and certified testing methodologies and highly educated and trained laboratory personnel are in use seven days a week at Amanda Foods. Metro Cash & Carry is currently planning on opening an internal laboratory as well.



Additionally, the potential for enhancing laboratory availability and coverage is restricted because there is no “certification” program for laboratories in Vietnam. If such a program did exist then the highly qualified private sector laboratories could be accredited for use in approving and releasing products directly into export. This certification or accreditation program for laboratories may be best managed under Vietnam Standards Centre (VSC), the Ministry of Science and Technology (MOST). The process would involve confirming laboratories meet ISO and CODEX applicable standards for laboratory management and methods. An ongoing monitoring system and verification procedure would be part of the process to ensure private sector laboratories meet current and future standards. A licensing fee system could be established to pay for the cost of program management.

A significant part of this laboratory certification process would be employment of program managers and District and/or Provincial personnel to implement this program. Initial and ongoing training and development expenditures would also be needed. The establishment of such a laboratory certification program would meet the immediate needs of government and the private sector for more laboratory capacity and faster result turnaround times. As laboratory capacity is increased, more food products can be tested and released more expeditiously, resulting in higher quality and safer fresh products entering into the export market.

MONITORING AND VERIFICATION OF COMPLIANCE

Representatives of the Ministry of Agriculture and Rural Development (MARD) indicated that their main food safety concerns were the following:

- Need to control the use and abuse of pesticides at the farm level.
- Pesticide and aflatoxin testing is done at the end of the supply chain. If testing was closer to the farm level, better food safety controls could be achieved. Currently MARD provides no residue testing on a routine basis for fruit.
- The difficulty of “trace back” of defective or contaminated foods to the specific grower.
- Need to improve surveillance at the farm and distribution levels.
- Need to improve data base resources and more effective information technology management systems.

The Ministry of Fisheries had similar viewpoints; however, their main concerns in terms of “contaminated” product were the use of antibiotics in aquaculture and microbiological pathogens in seafood.

- The private sector had the following concerns and needs for increased food safety and recommended improvements for additional exporting:
- Better control and monitoring of pesticides at the farm level.
- Research and evaluate new methodologies (ultraviolet, irradiation, ozone, reverse pasteurization using chilling, etc.) for the control of the fruit fly on fruits that have the greatest potential for export (dragon fruit).
- Training of farmers on food safety and emphasizing the relationship to better production results will obtain higher prices for their harvests.
- Buyers, traders or exporters need to set quality standards and enforce them on farmers before buying. The private sector needs to take some accountability to grow the export business sector – this should not be the main responsibility of the government.
- Limited post harvest technology is available.

Many of these issues have been solidly addressed by one of the private sector businesses we visited. Amanda Foods in Ho Chi Minh City had exceptional controls that provided internal monitoring and verification. Their systems may be considered as a model for other exporters and food processors. Amanda Foods internally provided for:

- Laboratory analysis for chemicals and bacteria on every farmer’s shrimp production pond.
- A tracking system for all shrimp production from the specific pond harvested, through processing, and final coding onto the pack-out cartons.
- A unit of Buying Agents that approves shrimp growers and provides financial incentives to produce safe and higher quality products.
- A field team of quality control inspectors that works with and trains shrimp growers and provides on-site monitoring.
- Control of distribution requirements for every shipment of shrimp from the farms to the processing plant.
- Thorough and comprehensive information technology reports and data management systems that follow the product from the farm through distribution, processing, packaging, storage and export.
- Thorough and comprehensive quality assurance controls in the processing factory with a hazard analysis critical control points (HACCP) program in place and routinely verified.

The food safety and quality assurance principles practiced by Amanda Foods can be applied to any and all foodstuffs intended for export. Unfortunately, the size of the buyer or exporter may limit such participation even though it is warranted and needed. The solution may lie in the establishment of third party certification companies which will audit food safety parameters.

Third party certification companies have been around for many years, with American Institute of Baking (AIB) being a pioneer in the field. Over the last ten years, third party food safety and quality auditing companies have grown at a fast pace. This has resulted from a number of factors:

- An increased need for better food safety controls.
- A need to minimize food safety risks and subsequent liabilities and litigation.
- Longer distribution supply chains that occur worldwide.
- Globally produced and processed food products from all parts of the world with varying or unknown food safety controls.
- A need for food processors, foodservice, and institutional buyers to have monitoring and verification systems without employing large internal quality staff.
- The acceptance of reciprocity of inspection to keep costs low (i.e., group certification schemes). For example, if Buyer “A” required producer “B” to be inspected by a third party auditor, a smaller buyer “C”, if approved could utilize those inspection results at no additional costs.

In Vietnam, international companies already exist such as SGS, Ecolab, etc. that already have third party food safety auditing businesses within their corporate structure. Other reputable third party auditing companies in the United States (e.g., Silliker Laboratories) have expressed an interest in providing services in Vietnam. So it is entirely conceivable that with some initial funding and government support the private sector can benefit from these services as well as provide increased employment for Vietnamese workers. The resultant action would increase the quality and safety of exports as well as bringing more food products to export that have been plagued with lack of adequate quality controls. In addition, District and Provincial government employees would have an increased role in monitoring these auditing systems.

EDUCATION AND TRAINING

Education is an essential part of enhancing food safety at all levels. Many foodborne illness outbreaks and other food safety issues are the result of the ignorance of “not knowing”, as well as “knowing but not doing”. The recommendations provided earlier in this report assist with the “not doing” factor.

Government Ministries that have District and Provincial personnel discussed the role they provide in training the farmer, grower, or producer. There appeared to be as many different training systems, procedures, materials, etc. as there were Provincial employees. Lack of uniformity often distracts from education as much as it is intended to support it. The Ministry of Fisheries in 1999 conducted a HACCP management-training program for their seafood factory general managers with much success. With private sector support NAFIQACEN conducted multi-day seminars in Ho Chi Minh City and trained and certified their factory managers in the US Food and Drug Administration’s Seafood HACCP training program. Those completing the course received FDA Certification. This activity was a leadership project, with Vietnam being the first country to complete this program by their seafood industry.

Similar training and certification (examination based) would be a valuable food safety criteria in the fruit, vegetable, meat and seafood industry in Vietnam. If properly positioned and managed, Vietnam could be a world leader in this type of private sector training. These Manager Food Safety Training and

Certification programs could begin on a voluntary basis and be reviewed in later years as a pre-requisite to do business. Financial support to develop course content, certification requirements, train the trainer materials and on-site training are just some of the needs to begin this type of program.

This same concept can be taken to the farmer level as well; or into the food processing factories. While needing to be much more focused on the critical control points of the food being produced, the training and certification concept works at this level too. In time, buyers, traders and exporters can make such certification a requirement for their purchases from the farms. Respective Ministries would need to play a major role in providing structured training courses and also provide continuing education if an ongoing re-certification program was implemented. At this level, simplicity of training is critical. The development of food safety icons, similar to those below, would be critical to this level of training based upon language skills and literacy of the workforce.



These types of training and certification programs, once developed, can be self-supporting over time with participants paying a registration fee. It is essential to involve and gain support of the private sector when considering these programs and give them a role in the development of course content, promotion and fee structure.

CONCLUSION

The role of foodborne illness prevention is not just the government’s responsibility but involves the participation of the entire food industry from farm to consumer; even if the consumer is thousands of miles away from the point of harvest. Education, training, monitoring, verification, and laboratory analysis play critical roles in ensuring safe food. The private sector stands to gain great benefit from supporting these values and Vietnam stands to gain worldwide leadership in sanitary and phyto-sanitary (SPS) standards resulting in safer, more profitable exports.

PARTICIPANTS CONSULTED DURING SPS SCOPING MISSION

TABLE 1: PARTICIPANTS IN SPS SCOPING MISSION

ORGANIZATION	PERSON	TITLE
World Bank	Cees DeHaan	Mission Leader
	C. Dee Clingman	Consultant
	Klaus Rohland	Country Director
	Laurent Msellati	Rural Sector Coordinator
	Nguyen The Dzung	Operations Officer
	Riikka Rajalahti	Agriculture Specialist

ORGANIZATION	PERSON	TITLE
	Marianne Grosclaude	Agriculture Economist
	Tu ttong Anh (Pinky)	Interpreter
	Dao Thi Thuy Dung	Mission Itinerary Director
MARD	Hoang Thi Dzung	Deputy Director General
	Tran Van Cong	Program Officer
	Dam Quoc Tru	Plant Deputy Dir. General
	Ngo Tien Dung	Coordinator National IPM
	Bui Quang Anh	Director General
	Bui Thi Cuc	Vice Chief of Planning
	Carole Ly	Technical Advisor, MISPA
STAMEQ	Nguyen Thu Ha	Deputy Director
NAVIQVET	Nguyen Tiep	Deputy Director
MUTRAP	Tran Thi Thu Hang	Project Director
MINISTRY HEALTH	Chu Quoc Lap	Deputy Director
DANIDA	Jorgen Karlsen	Senior Advisor
NZ EMBASSY	Martin Welsh	Deputy Head of Mission
FR EMBASSY	Francois Cotier	Conseiller Commercial
	Beatrice Tauziede	Attachée Commercial
O'CONNOR CO.	Paolo R. Vergano	Consultant/Lawyer
DONG GIAO EXPORT	Vu Dac Khang	Vice Director
ANIMEX SAIGON	Dang Hong Ky	Deputy General Director
VEGETEXCO	Dinh Van Huong	Director
VINA FRUIT	Vo Mai	President
AMANDA FOODS	Paul Andriesz	President/Director
	Emmanuel Anton	Deputy Managing Director
METRO	James Scott	Managing Director
	Thai Hong Nguyet	Supply Chain Manager
	Nguyen Duc Huong	Public Relations Manager
	Le Thi Minh Trang	Quality Assurance Mngr.
	Vo Van Nam	Au Phu Store Manager
GMRI-DARDEN BUYING CO.	Chulintorn Chulpongsatorn	Sr. Seafood Specialist

VII – B. ASSESSMENT OF VIETNAM’S SPS CAPACITY IN THE AREA OF PLANT HEALTH MANAGEMENT

Don Husnik, Abt Associates

1. INTRODUCTION

Plant pests present a serious barrier to market access for Vietnamese products destined for the United States and other countries. The importing country has the authority within the SPS framework and implementing guidelines to establish phytosanitary measures to lower the risk of introducing alien pests. The Pest Risk Analysis (PRA) process identifies the pests of concern, the risk of introduction and measures needed to reduce the risk to an appropriate level based on the best scientific information available. The importing country is responsible for conducting the PRA; however, many countries will accept PRA’s conducted according ISPM No.2 “Guidelines for Pest Risk Analysis” and the implementing guidelines of the country. Scientists from the Ministry of Agriculture and Rural Development (MARD) have been or are being trained in Australia and the United States to conduct PRA’s.

Fruit flies are serious pests of a wide variety of fruit and vegetable crops grown for fresh

food markets and are of major economic importance. For example, *Bractrocera dorsalis* (Hendel) has been identified as attacking over 117 hosts. Infestation levels can reach 100 percent of the fruit in a given area of high populations. Fruit fly larvae can survive in picked fruit and therefore are likely be present in fruit packed for export. As fruit fly eggs are laid internally, infested fruit are not likely to be detected during sorting, packing and inspection procedures. It is likely that fruit fly larvae would survive storage and transportation due to their ability to tolerate cold temperatures and the availability of an ample food supply. Adult flies cannot survive more than a few days without feeding and do not pose a significant phytosanitary risk.

The overall probability of entry, establishment and spread and the consequences of introduction of new fruit fly species into a country with suitable hosts and climate are generally considered high. Major markets; Australia, Japan and the United States, consider most of the fruit flies found in Vietnam as pests subject to phytosanitary measures. The European Union allows importations of fresh fruits and vegetables from Vietnam based on phytosanitary certification and inspection for pests of quarantine significance.

A survey program conducted at various sites throughout Vietnam during the 1999-2000 growing season identified 30 species of fruit flies.¹ The most important fruit flies to market access are *Bactrocera dorsalis*, *B. correcta*, *B. cucurbitae*, however, any other fruit fly specie determined during the PRA process as presenting an unacceptable risk to the importing country may also require mitigation measures.

¹ Results of Fruit Fly Project in Vietnam Code TCP/VIE/8823 (A) 1999-2000, MARD/FAO

The following table summarizes the results of the surveys for seven fruit flies found in Vietnam and considered to be of most concern to market access.

Fruit fly species	Host
Bactrocera dorsalis (Hendel)	Annona, carambola, cashew nut, Citrus spp, Clausena lansium, custard apple, dragon fruit, fig, guava, java apple, jujube, litchi, luffa, mango, melon papaya, peach, pear, persimmon, plum, pomelo, sapodilla, rose apple,
Bactrocera correcta (Bezzi)	Barbados cherry, carambola, Coccinia sp., dragon fruit, guava, Java apple, jujube, luffa, mango, peach, plum, rose apple, sapodilla,
Bactrocera pyrifoliae (Drew & Hancock)	guava, luffa, peach, pear
Bactrocera cucurbitae (Coquillett)	bitter gourd, bitter melon, Coccinia sp., cucumber, Cucurbita sp., guava, luffa, melon, pomelo pumpkin
Bactrocera tau (Walker)	bitter gourd, bitter melon, chayote, cucumber, Cucumis melo, guava, luffa, lucuma, papaya,
Bactrocera latifrons (Hendel)	Capsicum spp., chili, egg plant, Java apple, lucuma, persimmon, Solanum spp
Bactrocera carambolae (Drew & Hancock)	java apple
Bactrocera calophylli (Perkins & May)	jujube

2. ASSESSMENT OF PLANT HEALTH RISK MANAGEMENT OPTIONS FOR VIETNAM

Risk management options may vary by country and commodity based on the PRA. The result of the pest risk management procedure will be either that no measures are identified which are considered appropriate, in such cases, prohibition may be the only option available or the selection of one or more management options found to lower the risk associated with the pest(s) to an appropriate level. These management options form the basis of phytosanitary regulations or measures.

Pest Free Areas, Places of Production and Production Sites

ISPM² No. 4 “Requirements for the Establishment of Pest Free Areas” defines “pest free area (PFA)” as “an area in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained”. The PFA should be adequately isolated in relation to the biology of the pest. Delimiting and detection surveys, phytosanitary regulations on the movement of host material out of the infested area to the uninfested area to prevent spread of the pest, and ongoing monitoring surveys would be required for this type of PFA. The establishment and use of a PFA by a National Plant Protection Organization (NPPO) provides for the export of plants, plant products and other regulated articles from the exporting country in which the area is situated to the importing country without the need for application of additional phytosanitary measures. Thus, the pest free status of an area may be used as the basis for the phytosanitary certification of plants, plant products and other regulated articles with respect to the stated pest(s).

ISPM No.10 “Requirements for the Establishment of Pest Free Places of Production and Pest Free Production Sites” uses the concept of “pest freedom” to allow exporting countries to provide assurance to importing countries that plants, plant products and other regulated articles are free from a specific pest or

² International Standard for Phytosanitary Measures, International Plant Convention, FAO, Rome

pests and meet the phytosanitary requirements of the importing country when imported from a pest free place of production. In circumstances where a defined portion of a place of production is managed as a separate unit and can be maintained pest free, it may be regarded as a pest free production site. The use of pest free places of production or pest free production sites is dependent on the use of criteria concerning the biology of the pest, the characteristics of the place of production, the operational capabilities of the producer, and the requirements and responsibilities of the National Plant Protection Organization (NPPO).

There are currently no fruit fly free pest free areas, production areas or production sites in Vietnam that are officially designated by the NPPO. Identifying and maintaining these areas is generally resource intensive for both the public and private sector. Resources required for establishing pest free production areas and sites are generally predominately borne by the private sector.

Generally infested area

Clear visual signs of infestation may not be present in the infested fruit, therefore, visual inspection of the fruit or vegetable alone is not considered to be an appropriate risk management option. ISPM No.11 “Pest Risk Analysis for Quarantine Pests, including Analysis of Environmental Risks and Living Modified Organisms” provides details on the identification and selection of appropriate risk management options and notes that the choice of measures should be based on their effectiveness in reducing the probability of introduction of the pest.

Post harvest disinfection treatments

The following post harvest treatments are known to reduce the risk associated with fruit flies to an appropriate level of phytosanitary protection for the importing country:

1. cold disinfestation treatment
2. vapor heat treatment
3. hot water immersion
4. ionizing radiation
5. methyl bromide fumigation
6. combination of cold treatment and methyl bromide

Additional research may be needed on specific commodities to verify treatment efficacy and impact on quality. New Zealand recently completed research on a post harvest vapor heat treatment schedule for *B. dorsalis* and *B. correcta* in dragon fruit³. After review, the proposed treatment may also be accepted by Australia and the United States. However, no approved commercial vapor heat chambers are currently operational in Vietnam. Japan is conducting additional post harvest treatments for dragon fruit and other fruits of interest to Japan.

Ionizing radiation has been accepted by the IPPC as well as Australia, New Zealand and the United States as an approved quarantine treatment for fruit flies. Ionizing radiation could also address the risk posed by

³ Workshop on Development of Protocols to Overcome Quarantine Concerns for Vietnamese Fruit Exports, March, 2005, Southern Fruit Research Institute, Vietnam

other quarantine pests such as fruit borers, mealy bugs and soft scales.⁴ Only one commercial irradiation facility capable of meeting international standards is currently operational in Vietnam.

Systems Approach

ISPM No.14 “The Use of Integrated Measures in a Systems Approach for Pest Risk Management” provides guidelines for the development and evaluation of integrated measures in a systems approach as an option for pest risk management.

Systems approaches could provide an alternative to single measures to meet the appropriate level of phytosanitary protection of an importing country. They can also be developed to provide phytosanitary protection in situations where no single measure is available. A systems approach requires the integration of different measures, at least two of which act independently, with a cumulative effect. Systems approaches range in complexity. The application of critical control points in a systems approach may be useful to identify and evaluate points in a pathway where specified pest risks can be reduced and monitored. The development and evaluation of a systems approach may use quantitative or qualitative methods. Exporting and importing countries may consult and cooperate in the development and implementation of a systems approach. The decision regarding the acceptability of a systems approach on discrimination, equivalence, and operational feasibility lies with the importing country, subject to consideration of technical justification, minimal impact, and transparency. A systems approach is usually designed as an option that is equivalent to but less restrictive than other measures. This approach is very complex and resource intensive to both the NPPO and the private sector.

Additional Risk Management Operating Procedures

To ensure the appropriate level of risk, importing countries often require one or more of the following operational procedures to ensure that risk mitigation measures are being met and maintained:

- registration of export orchards and packing houses,
- orchard control programs,
- pre-export inspection by the NPPO,
- packaging and labeling compliance,
- phytosanitary certification by the NPPO,
- approved treatment facilities,
- specific conditions for storage and movement; and
- on-arrival inspection by the NPPO of the importing country.

Compliance with these procedures is primarily the responsibility of the private sector. Additional phytosanitary measures may be required if other quarantined pests are found upon inspection by the importing country.

⁴ Corcoran and Waddell (2003), “Ionizing Energy Treatments for Quarantine Disinfection,” Horticulture Australia Ltd

Uncategorized pests

If an organism is detected that has not been evaluated during the PRA process, it will require assessment to determine its quarantine status and to determine if phytosanitary action is required. The detection of any pest of quarantine concern not already identified in the analysis may result in a review of trade to ensure that the existing measures continue to provide the appropriate level of phytosanitary protection for the importing country.

3. ASSESSMENT OF VIETNAM'S AGRICULTURAL HEALTH SAFEGUARDING SYSTEM

The global marketplace has made country borders largely irrelevant and dramatically increased the risk of introducing alien plant and animal pests and diseases. For the purposes of this review, four basic assumptions are made:

1. Countries sharing a common ecosystem⁵ in geographic proximity to one another with extensive land borders to protect must work together to harmonize their sanitary and phytosanitary programs. The risk of natural migration of pests and diseases and the risk of artificial movement of pests and diseases from surrounding countries is significant. It is impossible to prevent the spread of pests and diseases across a region without natural barriers and a resource intensive border quarantine program. The ability to protect adjoining countries from pest and disease invasions is largely contingent on the ability of the surrounding countries with a shared ecosystem to provide creditable sanitary and phytosanitary services. Protecting a multi-country ecosystem is only as good as the weakest country's safeguarding program.
2. A strong import quarantine program is vital to preventing the introduction of alien agricultural pests and disease which can adversely affect the country's agricultural production and its ability to export agricultural commodities.
3. Delivering creditable sanitary and phytosanitary services is contingent on the inspectors performing the services knowing what to inspect for, how to inspect for it, having the tools to inspect for it and knowing what to do when they find a pest or disease. Further the knowledge, skills, inspection techniques, laboratory equipment, operational manuals, scientific literature, access to data bases, and inspection facilities are common to both import and export activities.
4. Pest risk mitigation at point of origin is the most viable approach to pest exclusion and mitigation. Foreign certification of high - risk germplasm and inspection and pre-clearance of commodities at origin are examples of this approach.

Protecting an agricultural economy from alien agricultural pests and diseases should be viewed as a seamless integrated safeguarding system. A safeguarding system is composed of a complex network of risk based programs, decisions, and actions focused on preventing the entry and establishment of alien agricultural pests and diseases utilizing a series of interventions at critical control points: international activities, ports of entry, detection/surveillance and response (eradication/control).

⁵ A common ecosystem is a complex of organisms and their environment, interacting as a defined ecological unit (natural or modified by human activity, e.g. agroecosystem), irrespective of political boundaries. [ISPM No. 3, 1996]

FIG. 1 AGRICULTURAL HEALTH SAFEGUARDING SYSTEM INTERVENTION POINTS



International activities and port of entry activities focus on preventing pests and diseases from entering the country. Detection and surveillance focus on rapid detection and diagnosis of alien pests and diseases and response focuses on mitigating the impact of established alien pests and diseases through eradication or control programs.

ALIEN PLANT PEST INTRODUCTIONS

Vietnam reported that during the last 10 years several alien plant pests⁶, with high potential for spreading and causing damage have become established. Recent examples include; the coconut beetle (*Brontispa longissima*), Udbatta disease of rice (*Balansia oryzae*), sugarcane white grub (*Alissonotum impressicolla*), powdery scab of potato (*Spongospora subterranea*), and a burrowing nematode (*Radopholus similis*) on fruit trees.

The **coconut beetle** was first detected in Dong Thap province in 1999. The beetle attacks coconut palms and several other cultivated and wild palms. Coconut provides food and income to small producers directly from coconut products, and indirectly as an important component of the landscape. In the absence of natural antagonists, coconut beetle has become a very serious and devastating pest.⁷ By 2002, the beetle had spread to 30 provinces infesting over 5.6 million coconut trees.⁸ Production and tree losses in the infested areas of Vietnam are approaching 50% production loss with an estimated 10 million infested or dead trees.⁹

Traditional pest management approaches and strategies based on insecticide use have not been able to stop the spread and damage. Experiences from countries in the Pacific that were invaded years earlier, as well as information from the country of origin of the insect, demonstrates that the insect can be effectively and sustainably contained using classical biological control.

Udbatta disease causes significant yield losses in areas where it is endemic, but its occurrence is generally sporadic and of minor importance. No loss data is available for Vietnam but it could be a major disease depending on the cultivars planted and environmental conditions. Infection rates vary from 9 % in India to 20% in China. In years when the infection level is severe, losses up to 11 percent are common in susceptible varieties; however, the overall economic importance is considered to be low.¹⁰ It should be

⁶ Alien plant pests are any species, species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products.

⁷ "The Current Status of Coconut Beetle Outbreaks in Asia Pacific Region," P. Rethinam and S.P. Singh

⁸ "The Major Invertebrate Pests and Weeds of Agriculture and Plantation Forestry in Southern and Western Pacific," D.F. Waterhouse, ACIAR, 1997

⁹ personal communication with Deputy Director General, PPD, MARD

¹⁰ Crop Plant Protection Compendium, CABI

noted the Japan and the US prohibit importation of paddy rice, rice hulls and rice straw from countries with this disease.

Sugarcane white grub damages sugarcane by feeding on roots and underground stems. The first symptom is a yellowing of the leaves. This is usually followed by stunted growth, dense browning, lodging, plant uprooting and death in heavily infested areas. White grubs are considered to be serious pests in most sugarcane growing areas. The potential impact of this pest in Vietnam is unknown.

Powdery scab in potatoes was reported as being observed in Vietnam during 2001-2003. Powdery scab is a soil-borne disease that seriously reduces tuber quality and marketability and is a major concern to potato growers worldwide. Spores can survive in the soil for years. Contaminated propagation material is unusable. There is no effective chemical or cultural treatment and all cultivars are susceptible to some degree.¹¹ Losses vary widely depending on potato varieties and environmental conditions.

Burrowing nematode may be the most important nematode pest on fruit crops in the tropics. *R. similis* attacks 350 known hosts; including most of the banana and plantain cultivars, citrus, coconut, ginger, palm, avocado, coffee, Hibiscus sp., prayer plant, black pepper, sugarcane, tea, vegetables, ornamentals, trees, grasses and weeds.¹² *R. similis* causes "Blackhead" or toppling disease of bananas. The root system is reduced and weakened so that tree falls under weight of fruit or in the wind causing total crop loss. Reductions in citrus fruit yields in Florida have ranged from 50 to 80 percent for grapefruit, and from 40 to 70 percent for oranges. Millions of black pepper trees have been lost in Indonesia (approx. 90% of the crop) to "Yellows disease" caused by *R. similis*.¹³ *R. similis* is likely to cause similar losses in Vietnam.

ALIEN PLANT PEST THREAT

Vietnam currently lists 61 insects, diseases, nematodes and weeds of economic importance that do not occur or are not widely distributed in the country.¹⁴ Organisms may be added or deleted as a national pest surveillance program and pest risk assessment procedures are fully implemented.

As international trade increases, the risk of new alien pest and disease introductions is likely to increase. These breaches of the safeguarding system illustrate the need to strengthen the critical intervention points ensuring adequate capacity for international activities, port of entry inspections, detection/surveillance and responding with eradication or control of the most important pests.

A strong central government organization, in cooperation with provincial governments and the private sector, must be in place to:

- safeguard agricultural and natural plant and animal resources from alien pests and diseases;
- secure safe admission of an increasing amount of goods and travelers; and,
- facilitate agricultural trade in compliance with international obligations and standards.

¹¹ American Journal of Potato Research, Nov/Dec 2004 by Qu, Xinchun, Christ, Barbara J

¹² <http://www.fao.org/docrep/v9978e/v9978e05.htm>

¹³ Crop Plant Protection Compendium, CABI

¹⁴ Decision 117/2000/QD/BNN-BVTV, November 2000

The private sector will play an increasing role in supporting efforts to strengthen the safeguarding system and to increase market access by supporting agricultural health awareness programs, providing import and export inspection facilities, implementing good agricultural practices and IPM programs, assisting with pest and disease surveillance, providing accredited testing laboratories, and providing post harvest handling and treatment facilities. The private sector may also contribute through the payment of user fees for certain phytosanitary services.

PROTECTING PLANT HEALTH

The Ministry of Agriculture and Rural Development (MARD), Plant Protection Department (PPD) is the National Plant Protection Organization (NPPO)¹⁵ charged with overseeing the agricultural plant safeguarding system.

Draft PPD Mission Statement¹⁶

To become a highly effective, efficient and professional NPPO with the capacities and competencies to protect the nation's plant health status and biodiversity and promote market access for plant and plant products in compliance with international agreements and standards.

Vietnam is a contracting party to the International Plant Protection Convention (IPPC). In operating a plant health safeguarding system, the NPPO has a number of responsibilities. These responsibilities are identified in Articles IV, V and VII of the IPPC relating to imports and exports, including surveillance, inspection, issuance of phytosanitary certificates, disinfestation or disinfection, the conduct of pest risk analysis, and training and development of staff. These responsibilities involve related functions in areas such as: administration; audit and compliance checking; action taken on non-compliance; emergency action; authorization of personnel; and settlement of disputes. In addition, contracting parties may assign to the NPPO other responsibilities, such as regulatory development and modification. There are also requirements for international and national liaison, documentation, communication and review. Sufficient NPPO resources are needed to carry out these responsibilities and functions.

Plant health functional responsibilities in Vietnam are delegated to two primary PPD Divisions: Plant Quarantine (PQ) Division and Plant Protection (PP) Division. The PQ network consists of 3 plant health technical centers, 9 regional plant health sub-departments and over 30 Plant Quarantine stations located at 21 land border crossings, 2 airports, 5 seaports, and 2 rail road crossings. The PQ network is a direct line organization with approximately 300 headquarters and field employees responsible for the importation and exportation of plants and plant products. Each of the field stations is staffed with 3 to 5 Plant Protection Inspectors (PPI). PPIs hold basic university degrees in plant protection or related disciplines. The national network also provides guidance, training and general oversight to employees of the 64 provincial sub-departments who perform plant quarantine duties at lower risk locations, mainly land border crossings. The PQ network is compliant with provisions of the IPPC, especially as they related to the issuance of phytosanitary certificates.

¹⁵ Official service established by a government to discharge the functions specified by the IPPC, FAO 1990

¹⁶ Phytosanitary Capacity Development Strategic Plan, 2004-2009, Draft, Socialist Republic of Vietnam, Ministry of Agricultural and Rural Development, Plant Protection Department

The Plant Protection Division is delegated the functional responsibility for conducting pest detection and surveillance activities, providing monitoring and forecasting services, guiding the control of major plant pests and, in cooperation with provincial authorities, proposing to the Minister of MARD to issue or cancel decisions on plant pest outbreaks. PP operates through 4 Regional Plant Protection Centers and its functions are integrated into the 64 provincial plant health stations and 534 plant protection stations. PP has direct supervisory authority over approximately 100 employees and provides technical guidance to about 3,500 employees working in the provincial administrative structure. PP provides policy guidance, coordinated national planning and continuity to their functional areas. PP does not have direct supervisory control over pest surveillance and emergency response activities within the Provinces and subordinate entities.

PROVINCIAL GOVERNMENT

Several activities within the safeguarding systems are carried out by or supported by the provincial government and their subordinate entities. Provincial, district and local entities are units or branches within the body of the administrative structure of Vietnam. These administrative units are governed and controlled by an elected body, the People's Council, and they are managed by the Peoples Committee as installed by the People's Council. Provincial bodies are a valuable resource and play a crucial role in implementation and support of pest surveillance and pest response initiatives. However, the decentralized structure requires greater coordination and collaboration between the national and provincial authorities in implementing national programs. Resources, priorities and the ability to exchange information and data may vary considerably between the various Provinces and the PPD. It is crucial that the PPD work closely with the Provinces to clarify roles, set resource priorities, build plant health awareness, and develop human resources to effectively carry out a national pest surveillance program.

Historically, pest surveillance programs have mainly focused on supporting IPM programs for a relatively small number of readily observable endemic pests. Most of the data collected is used to monitor pest population levels to determine appropriate interventions. The survey requirements contained in ISPM No.6, *Guidelines for Surveillance*, are significantly different requiring a much higher level of planning and coordination, survey methodologies, diagnostic skills and data collection, storage and retrieval. The infrastructure developed for IPM programs can be used to capture pest information to meet international standards for pest status determinations. However, PPD and provincial decision makers need to understand that the resources and training required to meet the international standards for pest surveillance operations are substantial and a concerted effort needs to be made to optimize and integrate the operations of all entities.

Decree No. 58/2002/ND-CP Chapter II, Article 7. 4. directs individuals to report organisms that may cause harm to plant resources immediately to the nearest plant protection and quarantine body. The Decree largely deals with developing pest outbreaks and sets the conditions that must exist before central authorities take the lead in responding to an outbreak. The establishment of an alien pest may result in serious economic consequences to domestic production and access to foreign markets. It is not clear what authority and procedures exist for PPD, MARD to rapidly respond to newly detected alien pests.. An Emergency Response Command Network (ERCN) under the direct control of PPD in collaboration with the provincial administrative units is needed to effectively respond to alien pest outbreaks.

PHYTOSANITARY CAPACITY EVALUATION

In 2001, MARD/PPD, with the assistance of New Zealand Agency for International Development (NZAID) under the sub-regional Cambodia, Laos PDR, Myanmar, Vietnam (CLMV) project, undertook a Phytosanitary Capacity Evaluation (PCE) initiative to provide the PPD with a long term direction for plant protection. NZAID provided technical assistance using the computer-based FAO Phytosanitary Capacity Evaluation tool. The tool is based largely on the capacity of the NPPO to carrying out provisions of the SPS Agreement and the IPPC. The assessment identified capacity gaps which established the basis for identifying key strategic issues in support of a PPD strategic planning effort. A strategic action plan consisting of goals, objectives and activities was developed.¹⁷ The PCE assessment and subsequent needs assessments on diagnostic capacity¹⁸ provide a sound basis for moving forward with specific capacity building initiatives. However, more in-depth reviews of legislative authority, analytical and diagnostic laboratory capacity; specifically, the national Plant Quarantine Laboratory and the two Post Entry Quarantine stations, and inspector training are needed to identify specific training, equipment and facility needs. The capacity gaps identified in this intensive assessment effort are recharacterized in the context of the plant health safeguarding system approach. Several of the activities identified in the action plan are underway with the assistance of donor agencies.

OVERARCHING SAFEGUARD SYSTEM ISSUES

Overarching issues cut across the plant health safeguarding system. A discussion of these issues will be followed by a discussion of the critical intervention points in the safeguarding system.

Phytosanitary Legislation

The results of the PCE indicate that Vietnam's legislative framework is generally consistent with the requirements of the IPPC and international standards. A more thorough review of current legislation by the FAO is planned. Special attention should be given to the following to assure that they are adequately addressed:

- authority to prohibit high risk products based on scientific evidence and supporting pest risk analysis (ISPM No.20) Currently, PPD must find a quarantine pest on a commodity to take action. Some pests of importance to Vietnam can not be found based on inspection
- authority to require an import permit for unprocessed plants and plant products (ISPM No.20)
- authority to establish pest free areas in compliance with IPPC Article IV 2.(e) (ISPM No.8 and ISPM No.10)
- authority to control the importation of genetically modified organisms (ISPM No.3)

¹⁷ Phytosanitary Capacity Development Strategic Plan, 2004-2009, Draft, Socialist Republic of Vietnam, Ministry of Agricultural and Rural Development, Plant Protection Department

¹⁸ Needs Assessment in Taxonomy of Arthropod Pests of Plants in Countries of Southeast Asia: Biosystematics, Collection and Information Management (2002) AusAID Needs Assessment in Taxonomy and Biosystematics for Plant Pathogenic Organisms in Countries in Southeast Asia (2002) AusAID

- designate the NPPO with the responsibility for reporting to the Secretariat of IPPC (IPPC Article IV 4
- codification of the concept of minimum impact when implementing phytosanitary measures (ISPM No.1)
- authority for the national government to take emergency phytosanitary measures, including eradication programs, against newly established alien pests.

Risk Based Management

One of the most important emerging roles of government is the regulation of risk. Regulatory agencies intervene in the global marketplace to protect the public from undue risks such as the entry and establishment of alien plant pests. To prevent regulations from impeding international trade, they must be based on scientific principles, justified by risk assessment, and provide an appropriate level of protection. Analysis of risk must, therefore, be incorporated into all regulatory decisions and policies. The challenge for regulatory agencies is to develop methodology to adequately, consistently, and transparently assess, manage, and communicate all risk factors so that decisions are fully justified and legally defensible. Through this process, potential pest entry routes are identified and both economic and environmental impacts are estimated. PRA can be used to evaluate and predict high or low risk pests, pathways and commodities, and can estimate and chart changes in the levels of risk posed. Extensive PRA work is needed in Vietnam to assure scientific justification for its list of regulated pests, support its application of phytosanitary import measures, and effectively utilize its available resources.

The NPPO has limited capacity or competencies to undertake PRA to international standards. Fourteen technical staff have received various levels of training. Four technical staff from PPD and National Institute for Plant Protection (NIPP) are currently scheduled for training in the United States. An intensive PRA training effort by outside sources, short term awareness building and training programs for senior staff, (NPPO, NIPP, agricultural universities), computer assisted tools for PRA, and improved access to basic PRA information resources are needed in the short term. Establishing a core group of trained risk assessors with the needed disciplines composed primarily of PPD and NIPP specialists could serve as the focal point for this work in the longer term. Further, concentrating this specialized expertise in a Center for Plant Pest Risk Assessment would allow for more effective use of resources and create a more collaborative work environment. The Center would apply state-of-the-art research and science-based processes to the plant health safeguarding system. Risk management decisions would remain the responsibility of PPD. Establishing a PRA curriculum at a university to increase the availability of basically qualified risk assessors would help to assure the long term sustainability of this critical need

Plant Pest Diagnostics

The PCE assessment examined this issue and concluded that the NPPO has some capacity to undertake pest diagnosis in most disciplines except virology and weed science. The technical staffs employed by the NPPO are largely basic degree holders working mainly in entomology. Further, advanced training is required for staff in most disciplines especially in the use of modern rapid diagnostic methods. This is particularly true when inspecting high risk plant material imported for propagation at the two post-entry quarantine stations and in support of a national pest surveillance program. Documented systems need to be developed and a computerized management information system would better enable technical personnel to coordinate laboratory activities.

Follow up needs assessments by AusAID concluded that a high level of technical disciplines exist outside of the NPPO in National Institute for Plant Protection (NIPP), Hanoi Agricultural University and the Rice Institute. The Institute of Ecology and Biological Resources (IEBR) also, has taxonomic capacity and maintains the largest arthropod collection in Vietnam but there seems to be little coordination between the various institutions. The NIPP and Hanoi Agricultural University have additional capacity to undertake pest diagnosis, although a number of the scientists would benefit by further training and exposure to the international network of plant health scientists. New technology using high definition digital imaging systems is available for transmitting digital pictures of insects and pathogens via the e-mail to taxonomists located throughout the world . All strategic options for providing highly specialized taxonomic diagnostic services including utilizing taxonomic expertise located outside Vietnam should be analyzed before committing to a long term course of action. Nevertheless, sufficient diagnostic capacity within Vietnam is needed to effectively deal with the more immediate demands of the import, export and surveillance programs.

There appears to be a real willingness to build capacity in plant health generally and in the quarantine program, but this is not reflected in the resources allocated to building the fundamentals, for example, an arthropod collection and disease herbaria on which plant health safeguarding system and market access initiatives depend.. A commitment to develop a state-of-the-art arthropod collection and disease herbarium would be the first step in addressing the deficiency. This could be followed by action to harness national expertise to populate the collection and herbarium, including national and regional surveys for plant pests. Assistance from donor agencies to establish a national collection and herbarium will need to include funding for adequate facilities, ancillary laboratory equipment and other resource material, including scientific literature.

International Standards for Phytosanitary Measures (ISPMs)

ISPMs are adopted by contracting parties to the IPPC through the Interim Commission on Phytosanitary Measures. ISPMs are the standards, guidelines and recommendations recognized as the basis for phytosanitary measures applied by members of the World Trade Organization under the SPS Agreement. Thus far, contracting parties to the Convention have adopted 21 ISPMs and more are in the developmental process. ISPM's are primarily directed at the international movement of plants and plant products and have little or no direct impact on domestic trade.

Current policy of the PPD is to adopt ISPMs to the extent possible as Vietnam national standards.

ADOPTION OF ISPMs BY VIETNAM

ISPM No.	TITLE	STATUS
1	Principles of Plant Quarantine	A
2	Pest Risk Analysis	A
3	Exotic Biological Control Agents	X
4	Establish Pest Free Areas	P
5	Glossary of Phytosanitary Terms	A
6	Guidelines for Surveillance	P
7	Export Certification System	PL
8	Pest Status in An Area	P
9	Pest Eradication Programmes	PL
10	Pest Free places of Production	P

ISPM No.	TITLE	STATUS
11	PRA for Quarantine Pests	P
12	Phytosanitary Certificates	P
13	Notification of Non-Compliance	P
14	Systems Approach for Risk Mgt	PL
15	Wood Packing Material	PL
16	Regulated Non-Quarantine Pests	PL
17	Pest Reporting	P
18	Irradiation	X
19	List of Regulated Pests	P
20	Import Regulatory System	PL
21	PRA for Regulated Non-Quarantine Pests	PL

* Status code

A - Adopted

P- Pending Adoption

PL - Planning Adoption

X - Can not comply at this time

As ISPMs are adopted as national standards, it becomes necessary to assess the implications of those standards to the operational capacity of the country. Five basic capacity needs should be examined:

- need for revising implementing regulations,
- need for developing revised operational procedures and guidelines,
- a training program for managers, supervisors and Plant Quarantine and Plant Protection inspectors,
- the equipment, tools and supplies needed to implement the national standards, and
- a process for monitoring effectiveness.

For example, conducting pest risk analysis has been identified as a strategic need in MARD. ISPM No. 2, Guidelines for Conducting Pest Risk Analysis, has been adopted by Vietnam as a national standard. Training for senior PPD officials has been completed. Training of pest risk assessors by donors is in the planning stages or is already underway. Operational guidelines, computer software, access to scientific literature and databases, still need to be developed.

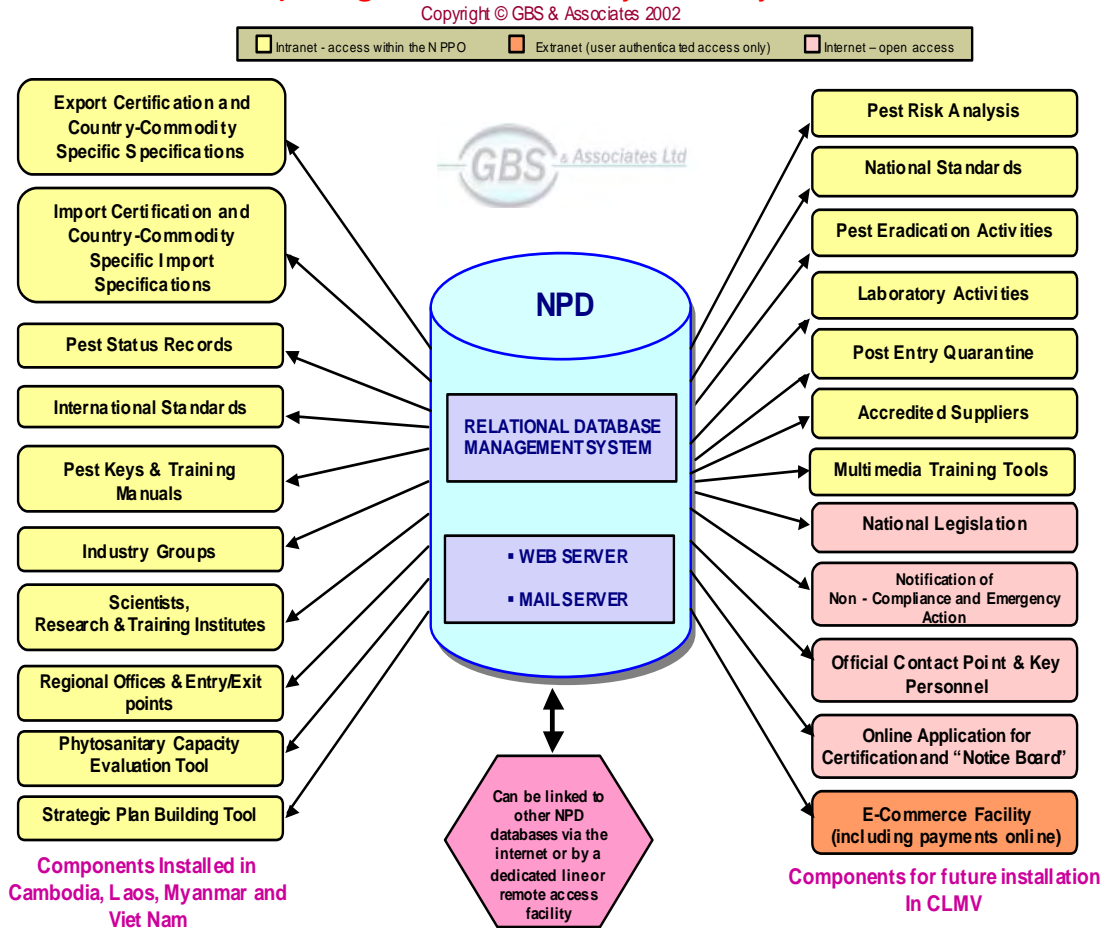
Information Management Systems

Information is an essential component in the success of a safeguarding system. To function effectively, the NPPO needs accurate and timely information for informed decision making and the capability to deliver information and guidance to the appropriate organizational units. Plant Quarantine and Plant Protection work are conducted at widely dispersed locations by both centralized and decentralized units.

The PCE assessment identified significant information gaps in PPD's capacity to meet international standards. Import inspection, phytosanitary certification of agricultural commodities and pest surveillance are major activity areas for PPD. Most of the front line work is undertaken by staff employed by the 9 regional Plant Quarantine sub-departments and the 64 Provinces. To meet international and national standards, nationally consistent systems need to be developed by the NPPO, including documented

systems on all processes and procedures relating to inspection activities, record keeping systems, certification systems, pest surveillance activities, etc. Because inspection, certification and pest surveillance activities are undertaken at various regional offices, land border ports, airports, and seaports and Provincial stations reliable information exchange between the NPPO central office and field offices is often lacking or cumbersome. The NZAID-ASEAN Phytosanitary Capacity Development program has devoted considerable resources over the past four years to develop and install a server based integrated database developed by GBS & Associates, NZ called the National Phytosanitary Database (NPD).

Concept Diagram - National Phytosanitary Database



NZAID provided funding support for the procurement of servers, PC's and software required to establish a local area network at NPPO headquarters. Stand alone versions of the NPD were also installed in Ho Chi Minh City sub-department offices. The NPD can provide the platform for a national plant health information management system. Efforts should continue to develop the software information modules, expand geographical installation to field work stations and provide connectivity through a wide area network.

CRITICAL INTERVENTION POINTS

International Activities

Countries sharing a common ecosystem in geographic proximity to one another with extensive land borders to protect must work together to harmonize their sanitary and phytosanitary programs. The risk of natural migration of pests and the risk of artificial movement of pests from surrounding countries is significant. It is impossible to prevent the spread of pests across a region without natural barriers and a resource intensive border quarantine program. The ability to protect adjoining countries from pest invasions is largely contingent on the ability of the surrounding countries with a similar ecosystem to provide creditable phytosanitary services.

PPD has been actively involved in various IPPC Committees and working groups and the Asian Plant Protection Commission (APPC). Ongoing ASEAN sub region (Cambodia, Laos, Myanmar and Vietnam, CLMV) capacity building programs with the assistance of AusAID and NZAID, regional phytosanitary harmonization efforts, and bilateral agreements, and preclearance programs, are indicative of international pest mitigation efforts. Negotiating skills and technical expertise are essential to effectively protecting Vietnam's interests in the international arena.

Port of Entry

Exclusion is the cornerstone of the safeguarding system. Pest exclusion relies on quarantine laws and regulations as the authority to keep alien plant pests from entering and becoming established, the capacity to deliver creditable phytosanitary inspections and voluntary compliance by the traveling public.

Import Permit System

An import permit system provides a mechanism for controlling the importation of regulated articles and is an integral part of the safeguarding system. Permit applications should be subject to pest risk analysis to justify the appropriate phytosanitary measures to be applied to the potential importation. The introduction and establishment of the Golden Apple Snail (*Pomacea canaliculata*) is an example of the failure to adequately assess pest risk before allowing importation of this organism. In 1988, the Golden Apple Snail was allowed entry into Vietnam to be farmed as a food item. It subsequently escaped or was released into the environment. It is now considered a serious pest of rice. A pest risk analysis prior to importation would have identified the level of risk and likely resulted in denying or restricting the importation of this organism. PPD has an import permitting system, but it lacks the expertise, staff and resources to issue permits based on international standards for PRAs.

Import Inspection

In an effort to improve crop varieties in Vietnam, large amounts of seed and other plant material for propagation are imported. PEQ Station 1 tests about 300-350 varieties annually. Personal communications indicate that higher volumes of plant material are imported through PEQ station 2 but quantitative data on importations and pests found was not available. Germplasm and plant material for propagation present a high risk of introducing alien pests, especially plant pathogens and viruses. Vietnam requires virus free certification from accredited foreign laboratories for importation of certain types of high risk germplasm. Imported seed and other plant material for propagation are subject to inspection based on small samples and post entry quarantine.

During the last 10 years, Post Entry Quarantine Stations have intercepted alien pests on imported plant materials for propagation: yellow mosaic on pea from India, apple scab on apple from France, white leaf on sugarcane from Taiwan, powdery scab on potato from China, coconut beetle on ornamental palms, Udbatta disease on paddy rice from China, and burrowing nematode infesting fruit tree seedlings.

Additional resources are needed to improve current facilities, equipment, and staff training in analytical protocols and methodologies. An in-depth assessment is needed of the entire process for handling imported plant material for propagation--from the PRA supporting the import permit decision to final release of the material for field planting.

Creditable inspection is contingent on the inspector performing the inspection knowing what pests to inspect for, how to inspect for them, having the tools to inspect for them and knowing what to do when they find a pest. Imported plant material is inspected based on a relatively small sample taken by the inspector and examined in the Plant Quarantine laboratory. It is not known if the rate of sampling and the type of sampling is adequate to provide an appropriate level of quarantine security based on perceived risk. The capacity to conduct high quality inspections is critical at all inspection points and especially critical at the two post entry stations inspecting high risk germplasm and post entry plant material for propagation.

To help determine an appropriate level of inspection of various types of commodities and avenues of entry, it will be necessary to conduct pathway¹⁹ analyses. Local trade in agricultural products across land borders is considered by PPD to present a low risk for introducing alien pests. Priority attention should be given to analyzing the local land border points of entry and those cargo importations that are potential hosts for regulated pests. China poses a special challenge because of its increasing amount of trade with countries around the world and the increasing volume and variety of agricultural products crossing its border with Vietnam. The likelihood of alien pests entering Vietnam from China should be a high priority for pathway analysis.

Since the completion of the 2001 PCE; ISPM No. 20 *Guidelines for a Phytosanitary Import System* and ISPM No. 21, *Pest Risk Analysis for Regulated Non-Quarantine Pests* have been adopted

ISPM No. 20 describes the essential components of phytosanitary import regulatory program at ports of entry. The objective is to prevent the introduction of quarantine pests or limit the entry of regulated non-quarantine pests with imported commodities and other regulated articles. An import regulatory system consists of two components: a regulatory framework of phytosanitary legislation, regulations and procedures; and an official service, the NPPO, responsible for operation or oversight of the system.

The NPPO should employ or authorize personnel who have appropriate qualifications and skills and ensure that adequate and sustained training is provided to all personnel to ensure competency in the areas for which they have responsibility. The PPD technical and inspection staff have at least a basic degree related to plant protection or the biological sciences.

The NPPO should, as far as possible, ensure that adequate information is available to personnel, in particular: guidance documents, procedures and work instructions as appropriate, the import regulations of its country, information on its regulated pests including; biology, host range, pathways, global

¹⁹ Any means that allows the entry or spread of as pest FAO, 1995

distribution, detection and identification methods, and treatment methods. The NPPO should ensure that adequate equipment and facilities are available for inspection, sampling, testing, surveillance and consignment verification procedures.

ISPM No.21 provides guidelines for conducting pest risk analysis for regulated non-quarantine pests. It describes the integrated processes to be used for risk assessment and the selection of risk management options to achieve a pest tolerance level.

A specific capacity assessment should be done to assess the creditability of the import inspection program. Particular attention should be given to inspection procedures, training, and equipment and facility needs at point of entry Plant Quarantine Stations.

An initial review indicates that identified gaps can be integrated into the existing strategic plan.

PEST SURVEILLANCE

A nationally coordinated plant pest surveillance program increases the probability of detecting alien pests before they reach an unmanageable size. Effective pest survey programs serve a number of functions; providing up to date information on pest status, (including; distribution, prevalence, economic significance) in the country, providing a means of detecting new pests introduced early enough so prompt action can be taken on eradication or control, and providing basic input into the pest risk assessment process.

Detection of alien plant pest incursions may occur by two disparate means, passive detection and active surveillance. Passive detection of invasive plant pests occurs during other scientific field work, such as crop surveys, population studies, faunal or biodiversity surveys, endemic species inventories, incidental reports from the general public, and other such activities. Passive surveys establish presence only. Active surveillance documents the presence or absence of pest species, generates information that assists international trade, and provides input into the risk analysis process.²⁰ The SPS Agreement stipulates that scientific means must be employed to establish pest-free status. Exporting countries claiming freedom from a pest must provide the necessary evidence regarding geographic distribution, epidemiology, eradication or control programs, inspection, sampling and testing methods to objectively demonstrate these claims to the importing country. Only active surveillance using scientifically valid methods produces results that can be used to statistically infer the absence of pests. Active surveillance is target-specific and requires basic knowledge of invasive plant pest threats and pathways, as well as an effective detection methodology.

The PCE assessment concluded that there is a well-established national and provincial structure with a substantial number of staff involved in survey operations at the provincial level. Most of the effort, however, has been focused on rice. Current pest information is highly fragmented among a number of institutions and the information is often undocumented and thus unreliable when being used for technical justifications for implementing phytosanitary measures. There is a need to ensure that the survey design is consistent with international standards and reliable information exchange systems on pest survey activities are developed between the various provincial sub-departments, NIPP and NPPO. Specialized surveys by researchers, university studies, and IPM also need to be built into the system.

²⁰ ISPM No. 6, Guidelines for Surveillance, FAO, Rome

Historically, survey programs have mainly focused on supporting IPM programs for a relatively small number of readily observable endemic pests. Most of the data collected was to monitor pest population levels to determine appropriate interventions. The survey requirements contained in ISPM 6 are significantly different requiring a much higher level of planning and coordination, survey methodologies, diagnostic skills and data collection, storage and retrieval.

Never the less, the infrastructure developed for IPM programs can also be used to capture pest status information to meet international standards for pest status determinations. However, PPD and provincial decision makers need to understand that the resources required to meet the international standards for pest surveillance operations are substantial and every effort needs to be made to optimize and integrate the operations of all entities.

A clearly defined, comprehensive, and coordinated alien plant pest detection program within Vietnam is of the utmost importance to agricultural industries and the nation as a whole. Early detection of alien plant pests that pass through exclusion barriers increases the likelihood of timely eradication, if feasible, or the initiation of cost effective mitigation measures. Coordinated detection initiatives at the provincial and national levels are essential to assure that detection objectives are properly defined and executed in a timely manner

An extensive pest surveillance action plan²¹ has been developed by PPD. Implementing an effective national surveillance program is a major initiative and very resource intensive over the long term. However, regardless of the long term nature of this initiative, several of the action items should continue in the short term as identified in the PPD action plan. PPD identified the need for a concept or background paper for formulating a “National Project on Strengthening Plant Pest Surveillance systems” in Vietnam. The concept paper should include the need for a comprehensive review of the plant pest surveillance systems, capabilities and strategic options for Vietnam to meet its international standards. Also, to meet PRA data needs in support of market access requests, PPD should continue to design and implement commodity specific surveys.

NZAID has provided leadership in this area with development of the NPD with a pest data component. NZAID has provided technical support but is no longer financially supporting geographical and database expansion and full implementation of this database. AusAID SPS and ACIAR are currently leading an initiative to develop a “Survey toolbox for plant pests – a practical manual for surveillance of agricultural crops and forests”. It is likely that significant donor assistance will be needed to roll out and institutionalize these initiatives. Adopting the PPD action plan for further participation by donor organizations is recommended.

RESPONSE

A rapid response to invading alien pests can significantly reduce the cost of control programs, the direct economic losses resulting from phytosanitary restrictions and adverse impacts on natural ecosystems.

²¹ Phytosanitary Capacity Development Strategic Plan, 2004-2009, Draft, Socialist Republic of Vietnam, Ministry of Agricultural and Rural Development, Plant Protection Department

Effective response activities are designed to react to any breach of the pest exclusion effort. *This critical intervention point was not addressed in the 2001 PCE assessment.*

Rapid detection and diagnosis are critical for eradicating or mitigating the effects of newly introduced plant pests. A new pest may be brought to the attention of PPD through a variety of sources, including other parts of MARD, Provincial sub departments, the extension service, agricultural researchers and others. A determination is made as to whether the pest is an imminent threat, and whether or not the pest meets the definition of a quarantine pest. If the pest meets the definition of a quarantine pest, a risk analysis should be conducted to identify appropriate mitigation measures. A clearly defined system for screening, identifying and reporting to Plant Protection plant pests detected by passive detection and active surveillance is needed.

If eradication is the risk management option selected, then the capacity to respond in a timely manner is crucial. Ordinance No. 11/2001/L-CTN and Decree No. 58/2002/ND-CP define the roles of the central and provincial governments and the plant resource owners in the prevention and elimination of harmful organisms. It does not clearly authorize the central government to lead and coordinate an emergency response to a newly detected alien pest. A clearly defined plant pest emergency response capability does not currently exist in Vietnam.

An Emergency Response Command Network (ERCN) provides an operational framework for confronting plant health emergencies such as the introduction or outbreak of plant pests, threats to domestic agricultural production and international trade, or market access and food security in Vietnam. The ERCN should include an overall response organizational structure that defines the functions, roles, and responsibilities for each position in the command and general staffs. In addition, ERCN should integrate best practices in dealing with emergencies within a comprehensive ERCN framework to maximize efficiency and effectiveness in responding to agricultural emergencies.

Essential components of an effective rapid response capacity are:

- an early detection capability,
- a national plant pest identification and reporting system,
- a supporting data base,
- taxonomists trained to identify foreign organisms,
- adequately equipped diagnostic laboratories,
- risk management based alien pest decision making protocol,
- a rapid response cadre, and
- a unified command structure.

MARKET ACCESS

Plant pests present a serious barrier to market access. A strong plant health safeguarding system facilitates market access for fresh agricultural products by excluding alien pests or when alien pests breach the borders by detecting and responding to pest invasions in a timely manner. The importing country has the authority within the SPS framework and implementing guidelines to establish phytosanitary measures to

lower the risk of introducing alien pests. The PRA process identifies the pests of concern, the risk of introduction and measures needed to reduce the risk to an appropriate level based on the best scientific information available. The importing country is responsible for conducting the PRA and establishing the import requirements. The exporting country is responsible for providing a list of endemic pests established in their country and likely to be associated with the product of concern. The pest surveillance action plan, when fully implemented, will produce this critical information. Until that time, the continued use of ad hoc targeted surveys of commodities with export potential will provide the needed data.

PHYTOSANITARY INSPECTION

The intended purpose of the phytosanitary certificate is to expedite the entry of plants or plant products into a foreign country. The NPPO certifies to the foreign plant protection service that the shipment has been inspected and was found to conform to the phytosanitary import requirements of that country. In addition, the NPPO attests that the shipment is free from quarantine plant pests and is practically free from other injurious pests. Not all countries, for example the United States, require phytosanitary certificates for all commodities as a condition of entry. For some types of lower risk products the United States relies on inspection at the port of entry. Phytosanitary certification is not mandatory but is a service providing by the NPPO.

In obtaining a phytosanitary certificate the exporter is responsible for:

- requesting inspection and certification,
- making the shipment available for inspection,
- providing for any required treatments, reconditioning, or other actions to meet the import requirements of the foreign country,
- exporting only those plants or plant products that have been properly inspected,
- exporting within the prescribed timelines that countries require pertaining to the time of certification and export,
- safeguarding the certified shipment from infestation between the date the shipment was certified and the actual shipping date, and
- complying with Vietnam export control regulations.

The private sector plays a major role in producing a high quality product, instituting good agricultural practices, building packing houses and, when required to access markets, providing approved commercial post harvest treatment facilities.

Post harvest irradiation treatment for quarantine pests is accepted by most developed countries. Private irradiation facilities already exist and could be approved for post harvest treatment. No commercial facilities currently exist in Vietnam for other types of approved post harvest treatments, i.e. vapor heat and hot water dip.

Delivering creditable sanitary and phytosanitary services is contingent on the inspectors performing the services knowing what to inspect for, how to inspect for it, having the tools to inspect for it and knowing what to do when they find a pest. PPD issues over 200,000 phytosanitary certificates annually. PPD

officials indicated that there have been instances with fresh vegetable shipments to the European Community where certified shipments were found infested with live pests.

It is difficult to determine the reason for these breakdowns. They could be attributed to faulty inspections by PPD, exporters substituting a different product for an inspected product, or a combination of the two. Nevertheless, these situations reduce the creditability of Vietnam's phytosanitary inspection and certification activity and could result in destruction of the product, increased costs to the exporter or the loss of an export market.

PESTICIDE RESIDUES AT THE FARM LEVEL

Although not a phytosanitary concern, it is recognized by both the private and public sector that concerns about pesticide residues on plant products for consumption play an important role in foreign market accessibility. Domestic markets will also be affected as the Vietnamese consumer becomes more aware of health impacts of the more toxic pesticides.

Studies²² have shown that industrialized and less industrialized countries have similar lists of banned chemicals and similar registration procedures for new pesticides. However, the level of monitoring was less in the second group of countries, and the percentage of samples with residues above the permitted limit was generally higher. This was partly because farmers had less knowledge about applying chemicals and less efficient spraying equipment. It is also partly because a thorough national monitoring system for pesticide residues is expensive, and takes a long time to establish.

The use of pesticides had been an important strategy in ensuring food security in Vietnam, but the contamination of produce and the environment is hampering agro-industry development, and damaging human and environmental health. In managing pesticide use, there are four steps at the farm level that can help reduce the impact of residues:

- minimize pesticide input,
- contain the pesticide to the application site,
- use pesticides with minimal environmental impact, and
- develop and implement an effective and inexpensive means of monitoring residues by analysis of produce.

Vietnam has a well established national IPM program with an objective of minimizing the use of chemicals to control endemic pests. It is important to build farmer understanding and confidence in the underlying reasons for IPM so that production and trade is managed in a knowledgeable and informed manner and compliance draws on personal responsibility as well as external auditing systems. Farmer Field Schools create an understanding among farmers for the need for safer pesticide practices. Continued expansion of IPM programs with increased private sector support will increase farmer awareness of proper use of pesticides and the impact of pesticide residues on product marketability.

Research has provided new, cost-effective options for measuring and managing pesticide residues. In many countries the capacity to monitor contamination and to provide remediation is limited because of

²² Food and Fertilizer Technology Center, 1999, Taiwan

inadequacies in regulatory mechanisms, infrastructure support, laboratory facilities, or the availability of trained personnel.

Vietnam has an adequate legislative and organizational infrastructure in place to carry out pesticide regulatory responsibilities. However, the availability of rapid field tests, sufficient laboratory capacity to conduct chemical tests, and an adequate number of trained personnel are major constraints to a creditable pesticide enforcement program at the farm level.

PPD, MARD has functional responsibility for regulating pesticides and implementing pesticide residue control for agro-forest products. There are four central units involved in pesticide regulatory activities: Pesticide Division, Legislative Inspection Division, Northern Pesticide Control Center and the Southern Pesticide Control Center. The two central laboratories are internationally accredited and process about 2,000 plant residue samples for 40 active ingredients annually. Vietnam has approved 329 active ingredients for use. Approximately 80 staff years at the central level are devoted to pesticide regulatory functions. Additionally, it is estimated that 5-10 inspectors per province are involved in pesticide enforcement activities as part of their normal duties.

Incomplete data for 2004 show that pesticide inspectors reported 33 violations of banned or restricted use pesticides in the southern provinces. A small data set from one province in the south consisting of 411 farm product samples resulted in 180 samples free of residue, 197 samples below MRLs and 34 samples (8 percent) above MRLs. No information was obtained on the breakdown by commodity or the active ingredients detected. An in-depth analysis of all available residue data is needed. Until more complete data are obtained, one can only speculate if this small sampling is indicative of the extent of the plant product residue problem in Vietnam. It is noteworthy, however, that the Public and Private Sector Food Safety Workshop and numerous interviews with policy makers identified pesticide residues as a major food safety and market access issue.

It is generally accepted in developed countries that providing a safe food supply to consumers should be a total farm to table effort. In Vietnam, several Ministries have responsibilities in assuring a safe food supply. Clarification of roles, communications between Ministries, strengthening laboratory capacity and coordinating the effective use of laboratory capacity are challenges to a comprehensive food safety action plan. Traditionally, MARD has had the lead role at the farm level and should remain responsible for a pesticide residue control program at the farm.

The Taiwan pesticide residue program²³ is frequently used as model in Asian countries. It is based on reliable data on pesticide violations, farmer education, field monitoring, laboratory analysis at the market level, and destruction of or compensation for products determined to be in violation of pesticide laws.

Pesticide Violations

Pesticides that create the most serious problems may differ from crop to crop. Generally speaking, however, cheap generic compounds as well as some synthetic pyrethroids and some fungicides tend to be the biggest problem. Legally admitted chemicals are not likely to cause residue problems, provided farmers follow the manufacturer's instructions about when and how to apply the chemical. The label on the bottle or package should give application methods and precautions in clear, simple language which

²³Food and Fertilizer Technology Center, 1999, Taiwan

farmers are able to understand. A residue monitoring program should be based on the analytical results of both the toxicity and quantity of chemicals found to be common contaminants of produce. An analysis of available violation data should help focus the residue monitoring effort in Vietnam.

Education

Education of farmers is believed to be the quickest way to solve the problem of pesticide residues. Education should be based on reliable data concerning the violation of national pesticide laws. Vietnam has a viable IPM and extension infrastructure in place that, with additional training, could provide enhanced farmer awareness programs.

Field Monitoring

In Asia, the marketing and distribution of vegetables and fruit are rapid. Usually it is completed only one or two days after harvest. When produce is tested for chemical residues, the results must be available quickly if exporters and consumers are to be protected from contaminated shipments. For vegetables and fruits, for which freshness is a vital quality, residue analysis should be carried out on standing crops. This will discourage farmers from bringing suspect produce to market. It will also help farmers to time the harvest of their crops so as to avoid violations.

Quick Test²⁴

Most developing countries lack a monitoring system to detect chemical residues in fresh produce. The main constraint is the cost. Chemical analysis is very accurate but very expensive, yet it is not generally available in production areas. Quick Test is cheaper than chemical analysis, but it is still fairly costly for developing countries to use. Quick Test offers a quick, lower-cost method of detecting the presence of chemical residues on agricultural produce on the farm or at the market. Ideally, quick test should be backed by a system of chemical testing. Quick Test is best used as a way of screening large numbers of samples for the presence of residues, while the more accurate chemical testing is best for monitoring residue levels.

Enforcement

Standing crops or produce on the market containing the residues of banned pesticides are destroyed. The farmer, if identified, who is responsible is penalized. If standing crops contain residues of registered pesticides over the maximum tolerated limit, the farmer will be informed of the fact and instructed to postpone harvesting his crop until it is safe. Farmers are encouraged to voluntarily submit samples for testing in advance of harvesting.

In Taiwan, quick test stations are established in production areas. There is also one in each of the wholesale markets in the three largest cities. Quick Test is cheap enough to allow these three wholesale markets to test 1% of the produce they receive every day. In this way, every supplier is checked at least once every three months. At one wholesale market, quick test is supported by immediate chemical analysis.

²⁴ Food and Fertilizer Technology Center, 2002, Taiwan

In the long term, the best way of solving residue problems is to teach farmers how to use pesticides in a safe and responsible manner.

4. Assessment of Vietnam's Future Needs in Plant Health Management: Recommendations for Short and Long Term Measures

LEGAL, DATABASE, AND DIAGNOSTIC STRENGTHENING

Strengthen Phytosanitary Legislation

The results of the PCE indicate that Vietnam's legislative framework is generally consistent with the requirements of the IPPC and international standards. However, in light of the latest ISPMs and the need for PPD to respond to emergency pest outbreaks, there may be legislative deficiencies that should be corrected.

Short Term Measure: Conduct a legal review of existing phytosanitary legislation to ensure legislative compliance with all the international agreements (SPS, IPPC), ISPMs, and the authority for PPD to take emergency phytosanitary measures, including eradication programs, against newly established alien pests.

Expand National Phytosanitary database

Information is an essential component in the success of a safeguarding system. To function effectively, the PPD needs accurate and timely information for informed decision making and the capability to deliver information and guidance to the appropriate organizational units. To meet international and national standards, nationally consistent systems need to be developed by the PPD, including documented systems on all processes and procedures relating to inspection activities, record keeping systems, certification systems, pest surveillance activities, etc. Because inspection, certification and pest surveillance activities are undertaken at various regional offices, land border points of entry, airports, seaports, and provincial stations by widely dispersed centralized and decentralized units, reliable information exchange between the PPD central office and field offices is often lacking or cumbersome.

The NZAID-ASEAN Phytosanitary Capacity Development program has provided funding support to develop and install the basic components of a server based integrated information system. They provided funding for the procurement of servers, PC's and software, and training required to establish a local area network at PPD headquarters. Stand-alone versions of the NPD were also installed in Ho Chi Minh City sub-department offices. The NPD can provide the platform for a national plant health information management system.

Short Term Measure: Continue to develop the software information modules, expand geographical installation to field work stations and provide connectivity through a wide area network.

Strengthen Plant Pest Diagnostic Capacity

PPD has some capacity to undertake pest diagnosis in most disciplines except virology, bacteriology and weed science. The technical staff employed by PPD is composed largely of basic degree holders in entomology. A higher level of technical disciplines exists outside of PPD in the NIPP, Hanoi Agricultural University and other institutes and universities. The NIPP and Hanoi Agricultural University have additional capacity to undertake pest diagnosis, although a number of the scientists would benefit by further training and exposure to the international network of plant health scientists. The Institute of

Ecology and Biological Resources (IEBR) also has taxonomic capacity and maintains the largest arthropod collection in Vietnam, but there seems to be little coordination between the various institutions.

Advanced diagnostic training is needed for staff in most disciplines, especially in the use of modern rapid diagnostic methods. This is particularly true when inspecting high risk plant material imported for propagation at the two post-entry quarantine stations and in support of a proposed national pest surveillance program. Documented systems need to be developed and a computerized management information system would better enable technical personnel to coordinate laboratory activities.

Plant health safeguarding systems and market access initiatives are dependent on a high quality arthropod collection and disease herbarium to serve as a reference source to identify organisms and validate the pest status of a country. Currently, collections are scattered among various institutions and are generally housed in inadequate facilities and the collections are generally in poor condition.

Short Term Measure: Analyze all strategic options for providing specialized virology and bacteriology taxonomic diagnostic services including centers of taxonomic expertise located outside Vietnam.

Medium term Measure: Provide advanced training for PPD and NIPP staff in most taxonomic disciplines; including weed science, and especially in the use of modern rapid diagnostic methods.

Provide modern diagnostic equipment including video microscopes for transmitting digital pictures of insects and pathogens via the internet to taxonomists located throughout the world.

Develop a documented information management system to increase coordination and collaboration between diagnostic laboratories.

Long Term Measure: Rehabilitate the NIPP reference collections or establish a new national center for arthropod and pathogen reference collections including climate controlled facilities, data basing, modernized taxonomic methodologies, diagnostic software, etc. to support plant quarantine, pest survey and IPM work.

Strengthen Plant Health Professional Development

The general provisions of the IPPC state that to the best of its ability the NPPO is responsible for training and development of staff. Delivering creditable sanitary and phytosanitary services is contingent on the inspectors performing the services knowing what to inspect for, how to inspect for it, having the tools to inspect for it and knowing what to do when they find a pest. Recent breaches of the safeguarding system and reports of infested certified export shipments indicate that additional training may be needed.

Furthermore, new market access requirements, implementation of more stringent national and international standards, and new initiatives, such as the proposed national plant pest surveillance program, an emergency plant pest response network, and a national pesticide residue monitoring program, will require significant training resources to ensure creditable implementation. Plant Protection Inspectors hold basic university degrees in plant protection or related disciplines but centralized formal classroom and on the job operational training of inspectors will be needed to meet these new challenges.

PPD should ensure that adequate information is available to personnel, in particular: guidance documents, procedures and work instructions as appropriate, the import regulations of its country, information on its regulated pests including; biology, host range, pathways, global distribution, detection and identification methods, and treatment methods. As ISPMs are adopted as national standards, it becomes necessary to

assess the implications of those standards for the operational capacity of the country, develop revised operational procedures and guidelines, and train managers, supervisors and field employees as needed to fully implement the new standards.

Long Term Measure: Establish a Center that would administer and manage training programs in support of the plant health safeguarding mission. These programs would be designed to train, educate, and certify new PPI employees, Customs officers, provincial inspectors, and other cooperators in areas such as alien pest exclusion, risk assessment, smuggling interdiction, safeguarding techniques, pest surveillance and pesticide compliance. Curriculum components could include legal authorities, commodity and pest identification, import/export procedures, inspection techniques, quarantine treatments, pesticide application, management and enforcement, emergency response training, and pest surveillance. The Center would deliver basic training for all new professional employees, provide technical translation services, develop operating manuals and instructions in Vietnamese, and develop and deliver training modules to meet special or new training needs as they are identified.

RISK ASSESSMENT

Strengthen Pest Risk Assessment Capacity

One of the most important emerging roles of government is the regulation of risk. Regulatory agencies intervene in the global marketplace to protect the public from undue risks such as the entry and establishment of alien plant pests. To prevent regulations from impeding international trade, they must be based on scientific principles, justified by risk assessment, and provide an appropriate level of protection. Analysis of risk must, therefore, be incorporated into all regulatory decisions and policies. The challenge for regulatory agencies is to develop a methodology to adequately, consistently, and transparently assess, manage, and communicate all risk factors so that decisions are fully justified and legally defensible. Through this process, potential pest entry routes are identified and both economic and environmental impacts are estimated. PRA can be used to evaluate and predict high or low risk pests, pathways and commodities, and can estimate and chart changes in the levels of risk posed. Extensive PRA work is needed in Vietnam to assure scientific justification for its list of regulated pests, support its application of phytosanitary import measures, effectively utilize its available resources, and to provide the necessary technical support to market access negotiations.

MARD has limited capacity or competencies to undertake PRA to international standards.

Short Term Measure: Conduct an intensive PRA training program for PPD and NIPP specialists using outside sources, continue awareness building for senior staff, acquire computer- assisted tools for PRA, and improved access to basic PRA information resources.

Medium Term Measure: Establish a core group of trained risk assessors with the needed disciplines composed primarily of PPD and NIPP specialists to serve as the focal point for pest risk assessment. Further, concentrating this specialized expertise in a Center for Plant Pest Risk Assessment would create the synergy needed to allow for more effective use of resources and a more collaborative work environment. The Center would apply state-of-the-art research and science-based processes to the plant health safeguarding system. Risk management decisions would remain the responsibility of PPD.

Long Term Measure: Establish a PRA curriculum at a university to increase the availability of basically qualified risk assessors to help assure the long term sustainability of this critical skill.

RISK MANAGEMENT

Strengthen the pest exclusion program

Exclusion is the cornerstone of the safeguarding system. A strong import quarantine program is vital to preventing the introduction of alien agricultural pests and disease, which can adversely affect the country's agricultural production and its ability to export agricultural commodities. Pest exclusion relies on quarantine laws and regulations as the authority to keep alien plant pests from entering and becoming established, the capacity to deliver credible phytosanitary inspections, and voluntary compliance by the traveling public.

ISPM No. 20 describes the essential components of phytosanitary import regulatory program at ports of entry. An import regulatory program consists of two components: a regulatory framework of phytosanitary legislation, regulations and procedures; and an official service, the NPPO, responsible for operation or oversight of the program.

PPD has a regulatory framework and an organizational structure in place that meets the basic provisions of the IPPC and ISPM No. 20. However, Vietnam reported that during the last 10 years several alien plant pests, with high potential for spreading and causing damage have become established. As international trade increases, the risk of new alien pest and disease introductions is likely to increase. These breaches of the safeguarding system illustrate the need to strengthen the port of entry exclusion program.

Vietnam currently lists 61 insects, diseases, nematodes and weeds of economic importance that do not occur or are not widely distributed in the country and are the focus of the exclusion program. Organisms may be added or deleted as a national pest surveillance program and pest risk assessment procedures are fully implemented.

Short Term Measure: An assessment should be done using ISPMs No. 20 and 21 as the basis for identifying further capacity building needs. Particular attention should be given to inspection procedures, training, and equipment and facility needs at port of entry Plant Quarantine Stations.

Import Permit System

An import permit system provides a mechanism for controlling the importation of regulated articles and is an integral part of the safeguarding system. Permit applications should be subject to pest risk analysis to justify the appropriate phytosanitary measures to be applied to the potential importation. PPD has an import permitting system but lacks the expertise, staff and resources to issue permits based on international standards for PRAs.

Imported plant material is inspected based on a relatively small sample taken by the inspector and examined in a Plant Quarantine laboratory. It is not known if the rate of sampling and the type of sampling is adequate to provide an appropriate level of quarantine security based on perceived risk. PPD should ensure that adequate equipment and facilities are available for inspection, sampling, testing, surveillance and consignment verification procedures.

The capacity to conduct high quality inspections is critical at all inspection points and especially critical at the two post entry stations inspecting high risk germplasm and post entry plant material for propagation. To help determine an appropriate level of inspection of various types of commodities and avenues of entry, it will be necessary to conduct pathway analyses. Local trade in agricultural products across land

borders is considered by PPD to present a low risk for introducing alien pests. Priority attention should be given to analyzing the local land border points of entry and those cargo importations that are potential hosts for regulated pests. China poses a special challenge, because of its increasing amount of trade with countries around the world and the increasing volume and variety of agricultural products crossing its border with Vietnam. The likelihood of alien pests entering Vietnam from China should be a high priority for pathway analysis.

Short Term Measure: An in-depth assessment is needed of the entire process for handling imported plant material for propagation from the PRA supporting the import permit decision to final release of the material for field planting.

Medium Term Measure: Conduct PRA on all currently regulated plant pests to technically justify the need to regulate them and validate current phytosanitary measures.

Initiate pathway analyses on the threat posed by local traffic at land border crossings. Special attention should be given to the land border crossings with China.

Long Term Measure: Upgrade the capacity of the post entry quarantine stations to process high risk germplasm and plant materials for propagation including: climate-controlled greenhouses, screen houses, seed X-rays, incubators, fumigation chambers, camera microscopes, vapor heat chambers (import and post harvest treatments), and virus testing equipment and methodologies.

Upgrade Plant Quarantine port of entry stations to ensure that adequate equipment and facilities are available for inspection, sampling, testing, surveillance and consignment verification.

Strengthen Plant Pest Surveillance Systems

A clearly defined, comprehensive, and coordinated alien plant pest surveillance program within Vietnam is of utmost importance to agricultural industries and the nation as a whole. An active pest surveillance program documents the presence or absence of pest species, generates information that assists international trade, and provides input into the risk assessment process. Exporting countries claiming freedom from a pest must provide the necessary evidence regarding geographic distribution, epidemiology, eradication or control programs, inspection, sampling and testing methods to objectively demonstrate these claims to the importing country. Only active surveillance using scientifically valid methods produces results that can be used to statistically infer the absence of pests.

Historically, survey programs in Vietnam have mainly focused on supporting IPM programs for a relatively small number of readily observable endemic pests. Most of the data collected was to monitor pest population levels to determine appropriate interventions. The survey requirements contained in ISPM 6 are significantly different, requiring a much higher level of planning and coordination, survey methodologies, diagnostic skills and data collection, storage and retrieval.

Nevertheless, the infrastructure developed for IPM programs can also be used to capture pest status information to meet international standards for pest status determinations. However, PPD and provincial decision makers need to understand that the resources required to meet the international standards for pest surveillance operations are substantial and every effort needs to be made to optimize and integrate the operations of all entities.

Current pest information is highly fragmented among a number of institutions and the information is often undocumented and thus unreliable when being used for technical justifications for implementing phytosanitary measures. There is a need to ensure that the survey design is consistent with international standards and reliable information exchange systems on pest survey activities are developed between the various provincial sub-departments and MARD.

An extensive pest surveillance action plan has been developed by PPD. Implementing an effective national surveillance program is a major initiative and very resource intensive over the long term. However, regardless of the long term nature of this initiative, several of the action items should continue in the short term as identified in the PPD action plan.

Short Term Measure: Conduct a comprehensive review of the plant pest surveillance systems and capabilities and develop strategic options for Vietnam to meet national and international standards.

Continue development of the survey tool box for current survey activities.

Design and implement commodity specific surveys to meet PRA data needs in support of market access requests.

Long Term Measure: Design and implement a clearly defined, comprehensive, and coordinated national plant pest surveillance program. Phase in implementation based on high priority crops for export and in limited geographic areas.

Strengthen Plant Pest Emergency Response Capability

The introduction or outbreak of plant pests, threats to domestic agricultural production and international trade, or market access regardless of size or complexity may require an emergency response. Essential components of an effective rapid response capability are:

- early detection,
- a national plant pest identification and reporting system,
- a supporting data base,
- taxonomists trained to identify foreign organisms,
- adequately equipped diagnostic laboratories,
- risk management based alien pest decision making protocol,
- a rapid response cadre, and
- a unified command structure

Several activities within the safeguarding system are carried out by or supported by the provincial government and their subordinate entities. Provincial, district and local entities are units or branches within the body of the administrative structure of Vietnam. These administrative units are governed and controlled by an elected body, the People's Council, and they are managed by the Peoples Committee as installed by the People's Council. Provincial bodies are a valuable resource and play a crucial role in implementation and support of pest surveillance and pest response initiatives. However, the decentralized structure requires greater coordination and collaboration between the national and provincial authorities in

implementing national programs. Resources, priorities and the ability to exchange information and data may vary considerably between the various Provinces and the PPD. Reliable information exchange between the PPD and provincial offices is often lacking or cumbersome. It is crucial that the PPD work closely with the Provinces to clarify roles, set resource priorities, build plant health awareness, and develop human resources to effectively carry out a national pest surveillance program and the capacity to respond to alien pest outbreaks.

Early detection and diagnosis of alien plant pests that pass through exclusion barriers increases the likelihood of timely eradication, if feasible, or the initiation of cost effective mitigation measures. Coordinated detection initiatives at the provincial and national levels are essential to assure that detection objectives are properly defined and executed in a timely manner. This critical intervention point in the safeguarding system has direct consequences to domestic production and access to foreign markets. A new pest may be brought to the attention of PPD through a variety of sources, including other parts of MARD, Provincial sub departments, extension, researchers etc. A determination is made as to whether the pest is an imminent threat, and whether or not the pest meets the definition of a quarantine pest. If the pest meets the definition of a quarantine pest, a risk analysis should be conducted to identify appropriate mitigation measures.

If eradication is the risk management option selected, then the capacity to respond in a timely manner is crucial. Ordinance No. 11/2001/L-CTN and Decree No. 58/2002/ND-CP define the roles of the central and provincial governments and the plant resource owners in the prevention and elimination of harmful organisms. It does not clearly authorize the central government to lead and coordinate an emergency response to a newly detected alien pest. A clearly defined plant pest emergency response capability does not currently exist in Vietnam.

Short Term Measure: Develop a clearly defined system for screening, identifying and reporting to Plant Protection plant pests detected by passive detection and active surveillance.

Review the capacity of MARD and the Provincial governments to respond to alien pest detections in a coordinated and timely manner.

Clarify the legislative authority for PPD leadership and coordination of responses to plant pest emergencies including eradication of newly established pests.

Long Term Measure: Establish an Emergency Response Command Network to respond to plant pest emergencies.

MARKET ACCESS

Successfully gaining access to and maintaining new international markets for fresh fruits and vegetables is a complicated process involving the cooperation of the private and public sectors from the farmer to the foreign consumer. To demonstrate this partnership a commodity based approach is proposed which would serve as a model for future fresh fruit and vegetable product exports. The primary objectives would be to gain market access and build capacity in the private and public sectors.

All components of the commodity chain would be identified and addressed. Barriers to market access would be identified and a plan of action would be developed to address each barrier. Project Components:

- Identify potential commodity

- Market analysis (US/Australia)
- Targeted commodity pest survey
- Host susceptibility studies
- Pest risk assessment
- US/Australia phytosanitary entry requirements
- Post harvest treatment(s) and handling procedures
- Quality standards: shelf life, effects of treatments.
- Good agricultural practices
- Pesticide residue monitoring
- Packing house and packaging
- Transportation and storage
- Marketing
- Other

The project manager would be responsible for working with the public and private sectors to develop the commodity chain program. Consultants would be hired to provide technical assistance as needed. Capacity building would be incorporated into the project plan to improve public sector service delivery where appropriate.

Long Term: Demonstrate the commodity chain approach on fresh fruit (logan, litchi, rambutan) for developed country markets.

FOOD SAFETY

Implement a National Pesticide Residue Reduction Program (NPRRP)

The use of pesticides had been an important strategy in ensuring food security in Vietnam, but the contamination of produce and the environment is hampering agro-industry development, and damaging human and environmental health. It is recognized by both the private and public sector that concerns about pesticide residues on plant products for consumption play an important role in foreign market accessibility. Domestic markets will also be affected as the Vietnamese consumer becomes more aware of health impacts of the more toxic pesticides.

It is generally accepted in developed countries that providing a safe food supply to consumers should be a total farm to table effort. In Vietnam, several Ministries have responsibilities in assuring a safe food supply. Clarification of roles, communications between Ministries and coordinating laboratory capacity are challenges to a comprehensive food safety action plan. Traditionally, MARD has had the lead role at the farm level and should remain responsible for a pesticide residue control program at the farm.

Pesticide Residues at the Farm

Studies have shown that industrialized and less industrialized countries have similar lists of banned chemicals and similar registration procedures for new pesticides. However, the level of monitoring was less in the second group of countries, and the percentage of samples with residues above the permitted limit was generally higher. This was partly because farmers had less knowledge about applying chemicals and less efficient spraying equipment. It is also partly because a thorough national monitoring system for pesticide residues is expensive, and it takes a long time to establish.

Incomplete data for 2004 show that pesticide inspectors reported 33 violations of banned or restricted use pesticides in the southern provinces. A small data set from one province in the south consisting of 411 farm product samples resulted in: 180 samples free of residue, 197 samples below MRLs, and 34 samples (8 percent) above MRLs. No information was obtained on the breakdown by commodity or the active ingredients detected. Until more complete data is obtained, one can only speculate if this small sampling is indicative of the extent of the plant product residue problem in Vietnam. However, participants in the Public and Private Sector Food Safety Workshop and numerous interviews with policy makers identified pesticide residues as a major food safety and market access issue.

In managing pesticide use, there are five steps at the farm level that can help reduce the impact of residues:

- minimize pesticide input;
- contain the pesticide to the application site,
- use pesticides with minimal environmental impact,
- monitor residues by analysis of produce, and
- penalize violators.

The Taiwan pesticide residue program is frequently used as model in Asian countries. It is based on: reliable data on pesticide violations, farmer education, field monitoring (Quick test), laboratory analysis at the market level, and destruction of (or compensation for) products determined to be in violation of pesticide laws.

Long Term Measure: Implement a farm level pesticide residue reduction program as a major component of a National Food Safety program.

VII – C: ASSESSMENT OF VIETNAM’S READINESS TO IMPLEMENT THE WTO AGREEMENT ON THE APPLICATION OF SANITARY AND PHYTOSANITARY MEASURES

Prof. Kevin Kennedy, Michigan State University

EXECUTIVE SUMMARY

From March 13–23, 2007, Professor Kevin Kennedy, Michigan State University College of Law, was invited to Hanoi to meet with representatives of the Vietnamese ministries responsible for SPS regulation and to provide a legal analysis of Vietnam’s food safety and animal and plant health legislation vis-à-vis the WTO SPS Agreement. Professor Kennedy and a representative of the STAR-Vietnam office, Ms. Do Hoang Anh, met with representatives of the Ministries of Agriculture and Rural Development, Health, Industry, Trade, Fisheries, and Science and Technology.

The SPS-related laws and regulations of Vietnam number in the hundreds. Given the scope of work of this project and the resources committed to it, it would be unrealistic to expect a comprehensive survey of the entire corpus of Vietnam’s SPS laws and regulations. Instead, approximately twenty core ordinances, decrees, and decisions across the spectrum of SPS subject areas (animal and plant health, food safety) were reviewed for consistency with the SPS Agreement.

Two decrees, Labeling Decree No. 89/2006/ND-CP and Article 6.2 of Food Safety and Hygiene Decree No. 163/2004/ND-CP concerning the shelf-life of imported raw materials and food additives, raise concerns about consistency with the SPS Agreement. The Labeling Decree requires information on food labels that is inconsistent with the Codex standard on food labeling. However, implementing decisions and circulars are being drafted that may address these concerns. Article 6.2 of the Food Safety and Hygiene Decree arguably violates GATT Article XI on import prohibitions and/or GATT Article III on national treatment. The shelf-life decree is currently being reviewed by the Ministry of Health.

Vietnam is undertaking a comprehensive review of all its SPS-related laws and revising them to bring them into conformity with international standards. The Prime Minister has made adoption of international SPS standards a high priority, as evidenced by a January 2007 draft decision that will establish a National SPS Action Plan. Under that Plan each ministry with SPS responsibility is to submit a list of decrees and decisions to be revised or repealed, and a timetable for adopting and implementing relevant international SPS standards. A completion date of 2010 has been set, with adoption and implementation of the most technically demanding standards being backloaded.

Vietnamese officials with responsibility for SPS-related issues are knowledgeable about and conversant with the WTO SPS Agreement and the associated international agreements on food safety and plant and animal health. They are keenly aware of how Vietnamese SPS-related laws measure up against international standards. Each Ministry that was visited showed a commitment to revising and amending their SPS regulations to comply with the SPS Agreement and international SPS standards.

The WTO SPS Agreement covers six core subjects related to food safety and animal and plant health: (1) transparency of SPS-related laws, (2) standards harmonization, (3) equivalency of standards, (4) risk assessment, (5) import inspection and approval procedures, and (6) technical assistance.

- **Transparency.** On the subject of transparency, WTO members are required to designate an SPS enquiry point and national notification authority. The enquiry point is responsible for answering relevant questions in the SPS area. The national notification authority is responsible for ensuring that new or amended SPS laws and regulations are notified to the WTO. Vietnam has combined the two functions into a single office, the SPS National Office located in the Ministry of Agriculture and Rural Development. That Office provides information on SPS regulations and notifies the WTO of new SPS laws and regulations or amendments to existing laws and regulations.
 - The Prime Minister has issued a draft decision (pending comment from the responsible ministries before it becomes final) that proposes the creation of an inter-ministerial SPS network. If the decision goes into effect, ministries with SPS responsibility will be required to post on the SPS National Office’s website not only final SPS-related regulations, but also draft regulations for public comment. This is an extremely important development for improving transparency and the quality of Vietnam’s SPS regulations.
 - The SPS National Office is currently staffed with a director and two assistants. Two more staff members will join the Office in April 2007. The Director has requested two additional staff members. Whether the Office has adequate staff to respond to inquiries in a timely manner is an open question. Encouraging the rapid growth of e-government will help to relieve some of the pressure on the SPS National Office from information requests that can be expected to build over time.
 - Related to the issue of transparency, the quality of the drafting of Vietnam’s SPS legislation – ordinances, decrees, and decisions – is low. Legal documents lack clarity, at times contain internally inconsistent provisions, and are often ambiguous. Clear laws and regulations are an important because they provide predictability and serve as a check against arbitrary and capricious administrative agency action.
- **Harmonization of Standards.** On the subject of standards harmonization, the SPS Agreement provides that WTO members’ SPS measures are to be “based on” international standards. The Agreement further provides that if national standards “conform to” international standards, then they are presumptively WTO-consistent. The WTO Appellate Body has noted that harmonization of SPS standards is a future goal, not a present obligation.
 - It is Vietnam’s near-term goal to adopt international SPS standards, not merely to base its SPS laws on such standards. Pursuant to a draft Prime Minister’s Decision issued in January 2007 to launch a National SPS Action Plan, each Ministry with SPS responsibility will prepare an action plan and timetable for adopting all relevant standards and guidelines issued by the three international standards setting bodies recognized by the WTO: the Codex Alimentarius Commission (food safety), the World Animal Health Organization (the International Epizootics Organization or OIE on animal health), and the Secretariat of the International Plant Protection Convention (the IPPC on plant health).
 - **Food Safety and Hygiene Standards.** The Ministry of Health estimates that approximately 60 percent of all Codex standards and guidelines have been adopted to date. The most important Codex standards are the those establishing maximum residue levels of pesticides, veterinary drugs, and contaminants in food. The difficulty Vietnam faces in bringing national standards up

- to Codex standards is the large number of smallholders farming in the country, making the adoption, implementation, and enforcement of higher international standards problematic.
- **Plant Health Standards.** On the subject of plant protection, the Plant Protection Department has adopted two IPPC standards and is the process of adopting five more by the end of 2007. It plans to adopt the balance (27 in total) by 2010. The Department has requested technical assistance in conducting pest risk analyses.
 - **Animal Health Standards.** On the subject of animal health, MARD and the Ministry of Fisheries generally observe the standards set out in the OIE Terrestrial Animal Health Code and Manual and the OIE Aquatic Animal Health Code and Manual. Both Ministries are revising their quarantine and inspection regulations to more closely conform to OIE standards on animal quarantine and inspection. Both Ministries have in place a process for prompt identification and notification of listed (notifiable) diseases. This is especially important not only from an economic standpoint (preventing the spread of contagious diseases within Vietnam and globally), but also from a public health perspective in the case of zoonotic diseases, such as avian influenza.
 - As the process of adopting international standards progresses within Vietnam, there is a concern that a double standard could emerge, i.e., products for export will meet either a higher international standard or an even a higher standard set by the importing country, but that the same product when imported or produced in Vietnam will be subject to a lower national standard. The SPS Agreement is silent on this phenomenon.
 - **Equivalence.** On the subject of equivalence, the SPS Agreement requires that importing countries accept the SPS measures of exporting countries as equivalent to those of the importing country, even when they are different, if the exporting country demonstrates that its SPS measures achieve the importing country's level of SPS protection. What has developed in practice is that WTO members negotiate equivalency agreements or mutual recognition agreements. A representative of the Ministry of Fisheries believes that Vietnam's negotiators lack effective negotiating skills to secure equivalence agreements that are beneficial to Vietnam.
 - **Risk Assessments.** On the subject of risk assessment, risk assessments are an indispensable SPS tool that all WTO members must be able to conduct. For example, an importing country may maintain SPS standards that are higher than international standards when the international standard does not meet the importing country's level of SPS protection, provided the importing country has conducted a risk assessment that evaluates the likelihood of entry or spread of a pest or disease, and further evaluates the associated biological and economic consequences. In addition, when international standards don't exist, an importing country must either conduct its own risk assessment to support its national standard or borrow one conducted by another country and adopt that country's standard as Vietnam's own. Finally, even when international standards do exist, risk assessments have to be conducted in plant and animal quarantine situations to establish that the risk has either passed (so that trade may resume) or is still present (so that an import ban may remain in place). Risk assessments are technically complex and require human capacity (e.g., highly-trained scientists) and technical capacity (e.g., labs and databases). Every Ministry that was visited requested technical assistance in conducting risk assessments.

- **Control, Inspection, and Approval Procedures.** On the subject of control, inspection, and approval procedures, the SPS Agreement calls for prompt and uniform import procedures, which are especially important in the case of perishable agricultural products. The Agreement also requires that import documentary and quarantine requirements be published. MARD and the Ministry of Fisheries generally observe OIE standards on these procedures, including the use of model forms that the OIE has published on veterinary export and import certificates. OIE quarantine protocols can vary depending on the animal and the disease in question. Both Ministries are in the process of adopting the OIE quarantine and inspection protocols. A representative of the Ministry of Fisheries has requested technical assistance in this regard.
 - The SPS Agreement also requires that a domestic procedure exist to review complaints that might arise during quarantine, inspection, and approval procedures. When representatives of the Department of Animal Health were asked how an importer could challenge a departmental quarantine or approval decision, the response was that the importer could use the dispute settlement mechanisms established by the OIE and WTO. This response shows a lack of appreciation that the SPS Agreement requires importing countries to provide “a procedure . . . to review complaints concerning the operation of [inspection and quarantine] procedures and to take corrective action when a complaint is justified.”

CONCLUSIONS

- Vietnam is in the process of undertaking a systematic and comprehensive review of its entire SPS legal regime. It will be a top to bottom review of all of its SPS laws with the goal of bringing its national SPS standards up to international standards on food safety and animal and plant health. For at least the next three years Vietnam’s SPS legal regime will be in a state of flux.
- Vietnam is just entering the first phase of bringing its SPS legal regime up to international standards. It is too early to say whether or not it will succeed, but the political will to fully implement the SPS Agreement seems to exist.
- Vietnam’s proposed timetable is ambitious: to revise and amend all of its SPS laws to bring them into conformity with international standards by 2010. Without generous technical assistance from donor countries and organizations, especially in conducting risk assessments, Vietnam’s timetable may be unrealistic.
- Although Vietnam is focusing a tremendous amount of attention on SPS measures per se, insufficient attention is being devoted to the process of rulemaking and the process of making legal challenges to agency determinations.
- Whether the SPS National Office is being adequately staffed is an open question.
- Vietnam is not at risk of violating the SPS Agreement to the extent its national SPS standards on food safety and animal and plant health are lower than or equal to international standards, which basically describes the current situation in Vietnam. In other words, if a country maintains national SPS standards that are lower than or equal to international standards, then there are no SPS barriers to import trade from countries with SPS standards higher than or equal to Vietnamese or international standards, and thus no grounds for a WTO complaint. Of course, maintaining comparatively low national SPS standards will not lead to an improvement in the living standards

of the Vietnamese people. The Government of Vietnam appears committed to raising Vietnamese SPS standards to match those set by the international SPS standards setting bodies recognized by the WTO.

RECOMMENDATIONS

The resources of the USAID mission in Hanoi are not sufficient to support most of the following recommendations on technical assistance. Nevertheless, alternative sources of donor support should be sought to implement the following training and technical assistance programs.

- **Provide training on negotiating.** In order to fully participate in the WTO SPS Committee and in the work of the international standards setting bodies, Vietnam's representatives must have strong negotiating skills.
- **Provide training on legislative drafting.** The quality of Vietnam's legal documents is low. Most US law schools offer specialized drafting courses on a variety of subjects, including wills, contracts, business agreements, and legislation. It should be possible to design an intensive legal drafting course with the assistance of a US law school, perhaps in partnership with a law school in Vietnam.
- **Provide training on administrative tribunals and adjudication.** As trade with Vietnam increases, so too will trade disputes. Vietnam has a WTO obligation to establish independent administrative tribunals to review agency determinations and to issue reasoned opinions.
- **Provide training on notice-and-comment rulemaking.** A model for rulemaking is that of the United States under the Administrative Procedures Act. Vietnam's rule makers should become familiar with it, perhaps in conjunction with training on administrative adjudication.
- **Support the growth of e-government, including the development of an e-Official Gazette in Vietnam.**
- **Provide training on conducting risk assessments and pest risk analyses, including financial support for equipping labs and creating databases.**
- **Provide STAMEQ with a database on international labeling laws and regulations.**
- **Review the operation of the SPS National Office at least annually.**
- **Conduct a follow-up review of Vietnam's SPS legal regime in late 2008-early 2009.** A second review of Vietnam's SPS legal regime should be undertaken with a focus on a single product through the entire food chain ("from farm to fork"). Such a review should include an assessment of SPS rulemaking procedures and dispute settlement processes.

SCOPE OF WORK

In 2006 the Ministry of Agriculture and Rural Development (MARD) sent a request to the U.S. Agricultural Attaché in Hanoi requesting, among other things, a legal review of Vietnam's legislation on sanitary and phytosanitary (SPS) measures for consistency with the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement). In response to the MARD request, the

Country Director of the USAID Office in Vietnam requested that the Washington-based RAISE SPS Project work closely with the STAR-Vietnam Project to carry out this activity.

Kevin Kennedy, a professor of international trade law at Michigan State University College of Law, was asked to serve as the SPS legal expert and to play the lead role in preparing an analysis of the legal framework for implementing SPS procedures in Vietnam. Specifically, Professor Kennedy was asked to provide the following technical assistance:

- Review Vietnam's current ordinances and implementing regulations for consistency with the following: (1) the WTO SPS Agreement, including the standards, guidelines, and recommendations of the three international standards setting bodies recognized by the WTO, namely, FAO/Codex Alimentarius Commission, the World Animal Health Organization (OIE), and the Secretariat of the International Plant Protection Convention, (2) the US-Vietnam Bilateral Trade Agreement, and (3) international best practice, including practice in the United States.²⁵
- Provide a written legal analysis of Vietnam's SPS legal regime, including the strengths and weaknesses of the system and recommendations for improving it.
- Participate in discussions with and interview officials from MARD and other Government of Vietnam Ministries responsible for SPS issues to share views on the strengths and weaknesses of the legal underpinning for SPS matters and how that system can be improved.

The SPS-related laws and regulations of Vietnam number in the hundreds. Given the scope of work of this project and the resources committed to it, it would be unrealistic to expect a comprehensive survey of the entire corpus of Vietnam's SPS laws and regulations. Instead, approximately twenty core ordinances, decrees, and decisions across the spectrum of SPS subject areas (animal and plant health and food safety) were reviewed for consistency with the SPS Agreement.

Professor Kennedy visited Vietnam for two weeks from March 12-23, 2007. Prior to his visit STAR-Vietnam provided him with the following ordinances and decrees on the subject of SPS measures:

- Veterinary Ordinance No. 06/2004/L/CTN
- Decree No. 33/2005/ND-CP on Implementation of the Veterinary Ordinance
- Decision No. 10/2006/QD-BNN on the Regulation of Veterinary Drugs
- Ordinance No. 36/2001/PL-UBTVQH10 on Plant Protection and Quarantine
- Decree No. 58/2002/ND-CP on the Regulation on Plant Quarantine, Plant Protection, and Management of Plant Protection Drugs
- Ordinance No. 12/2003/PL-UBTVQH11 on Food Hygiene and Safety

²⁵ Article 2.2(A) of the US-Vietnam BTA provides that the Parties shall "ensure that any sanitary or phytosanitary measure which is not inconsistent with the provisions of the GATT 1994, is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient evidence (i.e., a risk assessment), taking into account the availability of relevant scientific information and regional conditions, such as pest free zones" With Vietnam's accession to the WTO in January 2007, the modest SPS commitments of the US-Vietnam BTA have been eclipsed by the WTO SPS Agreement.

- Decree No. 163/2004/ND-CP on the Implementation of the Ordinance on Food Hygiene and Safety

During his visit Professor Kennedy made a request to the SPS National Office to provide an additional thirty Vietnamese laws, decrees, decisions, and circulars on SPS measures. Some of these documents were provided.

SUMMARY OF IN-COUNTRY ACTIVITIES

From March 13-23, 2007, Professor Kennedy was invited to Hanoi to meet with representatives of the Vietnamese ministries responsible for SPS regulation and to provide a legal analysis of Vietnam's food safety and animal and plant health legislation vis-à-vis the WTO SPS Agreement. A schedule of meetings was prepared by MARD in consultation with STAR-Vietnam. (The meeting schedule is attached as Exhibit A.)

Professor Kennedy and an attorney from the STAR-Vietnam office, Ms. Do Hoang Anh, met with representatives of the six Ministries with primary or lead responsibility for food safety and hygiene and animal and plant health: the Ministry of Agriculture and Rural Development (Plant Protection Department, Department of Animal Health, and the National SPS Office), the Ministry of Fisheries (National Fisheries Quality Assurance and Veterinary Directorate), the Ministry of Industry (Department of Science and Technology), the Ministry of Health, the Ministry of Trade, and the Ministry of Science and Technology (Standards, Measurements, and Quality Directorate).

Within Vietnam three other ministries play a less significant role in the SPS area and were not visited: the Ministry of Culture and Information (responsible for disseminating information on food hygiene and safety), the Ministry of Finance (responsible for fee setting, assessment, and collection), and the Ministry of Environment and Natural Resources (responsible for monitoring and assessing genetically-modified organisms in coordination with the Ministry of Health).

A summary of the discussions at each of those meetings follows.

Meeting with SPS National Office

On the first day of his visit, March 13, Professor Kennedy met representatives of the USAID mission in Hanoi to discuss the purpose of his visit. He then met with representatives of the USDA office in Hanoi to discuss specific SPS issues of concern to them. Later that day Professor Kennedy met with MARD officials responsible for the operation of Vietnam's SPS Enquiry Point (MARD has been designated as Vietnam's SPS enquiry point and the national notification authority pursuant to Annex B of the SPS Agreement). An exit interview was also held with the Director of the SPS National Office on March 22, at which Professor Kennedy's findings, conclusions, and recommendations were discussed.

Meeting with Ministry of Trade

On March 14, a meeting was held with the Multilateral Trade Department of the Ministry of Trade. Ms. Nguyen Hai Yen, WTO Desk Officer, represented the Ministry at that meeting. She explained that a draft Prime Minister's Decision on creating an inter-ministry SPS network had been circulated to the six ministries with SPS responsibility, giving the ministries one month for comment. The goal of the draft decision is to ensure that the transparency obligation of Annex B of the SPS Agreement is fulfilled. To that end, the draft decision obligates the six ministries to send all draft and final documents that create

SPS legal norms to the SPS National Office. Her office is well aware of WTO transparency obligations and is committed to working closely with the SPS National Office to establish the SPS national system.

Meeting with Department of Science and Technology, Ministry of Industry

On March 15, Professor Kennedy met with Nguyen Phu Cuong, Deputy Director General, and Le Viet Nga, Senior Official, of the Department of Science and Technology, Ministry of Industry. Within the area of SPS measures, the Ministry of Industry is responsible for ensuring that food hygiene and safety standards set by the Ministry of Health are not compromised in the course of food processing. Thus, MOI has oversight responsibility for ensuring that food processors observe Good Manufacturing Practices and HACCP principles (Hazard Analysis and Critical Control Points). Codex follows HACCP in its Food Hygiene Principles, its Code on Hygienic Practice for Fresh Fruits and Vegetables, and its Code of Practice for Fish & Fishery Products. The U.S. Food & Drug Administration also uses HACCP in its regulation, *Good Manufacturing Practice in Manufacturing, Packing and Holding Human Food*, and for inspection of seafood and aquaculture imports.

The Ministry of Industry does not itself certify food processors for compliance with HACCP, Codex, or Organization for International Standardization (ISO) food processing standards, but rather relies on the independent certification of organizations that have been approved by certifying bodies such as the ISO. Although independent certification is expensive, it avoids conflicts of interest that can arise when the body that sets the standards (Ministry of Industry) is also the certifier. Where food safety and hygiene are at stake, such potential for conflicts needs to be avoided.

Mr. Cuong explained that MOI is in the process of adopting a compulsory National Action Plan for HACCP that will require all food processors of so-called “high risk” foods to comply with HACCP principles by 2010.²⁶ Small and medium-size processors will receive government support to achieve this goal.

Meeting with Plant Protection Department, MARD

On March 16, Professor Kennedy met with a delegation of representatives from the Plant Protection Department, led by Hoang Van Thong, Chief of Planning, Science and International Relations Division. The Department appears committed to harmonizing its current regulations with international standards. An ambitious work plan has been launched pursuant to which most, if not all, plant quarantine and pesticide decrees and decisions in effect prior to Vietnam’s WTO accession will be amended or repealed as part of the international standards adoption process. Pursuant to its proposed roadmap for implementing the National SPS Action Plan by 2010, the Department plans to simultaneously pursue the goals of regulatory transparency, harmonize department regulations with international standards, and develop the capacity to conduct proper risk assessments.

In connection with risk assessments, Department representatives commented on the difficulty Vietnam is having with the USDA Agriculture and Plant Health Inspection Service in resolving the fruit fly issue associated with imports of Vietnamese dragon fruit and litchi. Vietnam believes that it has conducted a

²⁶ Vietnam identifies 10 food items as high risk: meat and meat products, milk and milk products, eggs and products processed from eggs, seafood products, ice cream, nutritional food, fast food, frozen food, soya milk and soya milk products, and fresh fruits and vegetables for instant consumption.

proper risk assessment that should satisfy APHIS. In May 2007 APHIS will be conducting a workshop for Department employees on pest risk analysis and quarantine.

Meeting with Food Administration, Ministry of Health

On March 19, a meeting was held with the Vietnam Food Administration (VFA), Ministry of Health. The VFA is responsible for promulgating food safety and hygiene standards, including establishing maximum residue levels for plant pesticides, veterinary drugs, and microorganisms, such as mycotoxins. In attendance from the Vietnam Food Administration were Dr. Nguyen Hung Long, Deputy Director General, and Ms. Tran Viet Nga, Integration & Development Division. As is the case with the other ministries and departments visited, the VFA is revising, repealing, and amending several SPS regulations with the goal of bringing them into conformity with international standards.

The VFA representatives explained that pursuant to the Prime Minister's draft decision of January 2007, the VFA was conducting a comprehensive review of its decisions related to the SPS Agreement. A timetable has been established for amending existing ministerial regulations. Most amendments are to occur within 2007. Among them include changes to food packaging and labeling decisions, as well as a revised Food Law that will amend the so-called "2/3 shelf life" import restriction. That import ban prohibits the importation of unprocessed raw food materials and food additives if the remaining useful life of such imports is less than two-thirds as measured from the date of importation. This import restriction was raised and criticized in the Working Party Report on Vietnam's WTO accession.²⁷ On its face it violates GATT Article XI as a ban on imports. (The rationale for the import restriction proffered by Vietnam during its accession negotiations is discussed below in the section on Findings, Conclusions, and Recommendations.)

A VFA regulation on the SPS Enquiry Point inter-ministerial network is in the process of being implemented. Ms. Nga confirmed that draft VFA decisions would be made publicly available for comment by interested persons, including the private sector. She also stated that the list of permitted food additives and maximum residue levels (MRLs) was being revised and is close to completion. In an encouraging sign of improved transparency, a draft revised list had been circulated to and comments received from several persons, including the food industry.

Dr. Long stated that Codex MRLs generally were being adopted, but that in export markets where relevant MRLs are lower, such as in the EU and US markets, the MRL of the export market would be adopted. He also noted that regional MRLs on mycotoxins that reflected the climatic conditions of southeast Asia were being considered. Dr. Long acknowledged that these regional standards would set MRLs at levels higher than those permitted in the EU.

On the subject of biotechnology and genetically modified (GM) food, Dr. Long stated that the current labeling requirement is that food containing 5 percent GM content or greater must be labeled as containing GM inputs. That labeling requirement is under review, in consultation with the Ministry of Environment and Natural Resources. At the present time Vietnam follows the EU guidelines for monitoring and assessing GMOs. Dr. Long added that technical assistance is needed to support labs for monitoring GM products and foods. Later in the year APEC will be hosting a workshop on GM foods.

²⁷ See Report of the Working Party on the Accession of Vietnam, WT/ACC/VNM/48, 314-316 (Oct. 27, 2006).

There appears to be some disconnect between GM labeling as contemplated by the Food Administration and GM labeling as reflected in the recent Labeling Decree promulgated by Ministry of Science and Technology (MOST). The MOST labeling decree defers to international agreements on the subject of GM labeling, of which there are none. The MOST labeling decree is discussed in greater detail below.

In explaining the jurisdictional lines of the various ministries that have an oversight role in enforcing food safety and hygiene regulations, Dr. Long explained that imported unprocessed food products derived from plants (e.g., bulk agricultural commodities) are inspected by the Plant Protection Department for compliance with standards set by MOH on MRLs for plant pesticides and other contaminants, and that imported unprocessed meat products are examined by the Department of Animal Health for compliance with standards set by MOH on MRLs for veterinary drugs and other contaminants. Imported, fully-processed food products and beverages are inspected by MOH. In the case of fish and fish products, pursuant to an inter-ministerial circular issued by MOH and the Ministry of Fisheries, the Fisheries Ministry is responsible for issuing export and import certificates for compliance with food safety and hygiene requirements for all fish and seafood products. Dr. Long conceded that in certain instances, the line dividing jurisdictional responsibilities between the various ministries is not always a bright one. For example, there occasionally has been some confusion over which ministry is responsible for enforcing food safety and hygiene laws once an animal carcass has left a slaughterhouse and from there has been subject to further processing short of being butchered into consumer-size cuts of meat. There has been some dispute whether the responsibility rests with the Ministry of Health or MARD.

Finally, Dr. Long noted that pursuant to an inter-ministerial circular issued by the Ministries of Health and Fisheries, the Ministry of Fisheries is responsible for ensuring compliance with food safety and hygiene standards within the fisheries and aquaculture industries. The Ministry of Fisheries also issues hygiene export certificates for fish and seafood.

Meeting with Department of Animal Health, MARD

On March 20, Professor Kennedy met with a delegation of six representatives of the Department of Animal Health, led by Dr. Bui Thi Cuc, Vice Chief of Planning, International Cooperation and Science Division, and Dr. Dau Ngoc Hao, Department Vice Director. The subjects of animal quarantine, disease control, and veterinary drugs were discussed.

Vietnam's animal quarantine procedures are generally in conformity with OIE standards. DAH uses the veterinary export certificate forms prescribed by OIE.

However, the OIE Terrestrial Animal Health Code sets out disease-specific protocols to be observed during animal quarantine, rather than a "one-size-fits-all" procedure. DAH is in the process of amending its regulations to conform to OIE's disease-specific quarantine protocols.

On the subject of prompt reporting of listed diseases to the OIE and other responsible international bodies, such as the World Health Organization in the case of animal diseases transmissible to humans, DAH uses the web-based global reporting information system set up by the OIE for reporting listed diseases. The OIE requires that listed diseases be reported within 24 hours of the first occurrence. To meet this reporting obligation DAH requires provincial authorities to notify Ministry officials in Hanoi of the occurrence as soon as possible. In practice this means a three-day delay from suspicion to confirmation that a listed disease exists. DAH has set up an "early warning" system to detect disease outbreaks that includes both passive surveillance (regular reporting by farmers and detection by officials

during non-disease related visits to farms) and active surveillance (random, unannounced visits to farms by animal health authorities). When asked about compensation paid to farmers who have diseased livestock destroyed, DAH reported that farmers are compensated (or “subsidized,” as DAH prefers to call it) approximately 50 percent of the market value of the destroyed animal.

Regarding the production and importation of veterinary drugs, the subject of requiring the retrial of drugs that are imported into Vietnam for the first time was discussed. This was a subject raised in the Working Party Report where a WTO member complained that such retrials were unwarranted.²⁸ DAH’s position, which is supported by Article 4 of the SPS Agreement on equivalence, is that all new vet drugs must be retried in Vietnam before they may be sold in the country, absent a protocol or mutual recognition agreement with the country of manufacture. Concerning the requirement that vet drug manufacturers within Vietnam be certified as following Good Manufacturing Practice, manufacturers must be certified either by DAH or by an independent certifying company, at the option of the manufacturer. Government certification is less expensive but slower.

Finally, DAH reported that it was receiving meat inspection training from USDA in October 2007, training from the EU on MRLs for vet drugs and heavy metals, and training from the Swiss government on conducting risk assessments.

Meeting with National Fisheries Quality Assurance and Veterinary Directorate, Ministry of Fisheries

On March 21, Professor Kennedy met with a delegation of four officials from the National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED), Ministry of Fisheries. The NAFIQAVED delegation was led by Dr. Nguyen Nhu Tiep, Head, Aquatic Animal Health Division. NAFIQAVED has responsibility for human health and food safety issues in fish processing, and for aquatic animal and plant health matters. Dr. Tiep explained that Vietnamese laws or ordinances are essentially framework laws enacted by the National Assembly that assign functions and responsibilities to one or more ministries. The responsible ministries in turn are expected to draft implementing decrees and decisions. Because of the large volume of regulations that need to be drafted, there is a delay of anywhere from three to four years between the time the National Assembly enacts an ordinance and the time a responsible ministry adopts implementing decrees and decisions. An additional explanation for the delay in preparing implementing regulations is limited human resources and capacity. NAFIQAVED employs technical personnel who do not have a legal background or strong legal document drafting skills.

NAFIQAVED has identified 43 Fisheries Ministry documents that relate to SPS requirements. At least 19 of those documents have to be revised either because of the SPS Agreement or because they are outdated and inconsistent with current national law.

Dr. Tiep explained that the Ministry of Fisheries is responsible for certifying fish and seafood processing plants for compliance with HACCP and Good Manufacturing Practice. NAFIQAVED will not only certify such processing plants for compliance with Vietnamese standards, but also as being in compliance with EU standards. The EU will accept NAFIQAVED certification for products shipped from these plants. Private certification is also available for processing plants that desire it, but such certification is in addition to, and not in lieu of, NAFIQAVED certification.

²⁸ See Working Party Report on Vietnam’s WTO Accession, ¶ 322.

With regard to MRLs for veterinary drugs, pesticides, and other contaminants, Dr. Tiep confirmed that NAFIQAVED follows Codex standards. However, the list of substances that Vietnam has banned is not as inclusive as the comparable lists maintained by the WTO's Quad members (Canada, the EU, Japan, and the US).

In a related context, Dr. Tiep referred to the problem that Vietnam had about five years ago involving the unauthorized use of the broad spectrum antibiotic chloramphenicol by shrimp farmers. Chloramphenicol is known to cause aplastic anemia in humans, and its use is banned in the US and the EU. Shrimp farmers in Vietnam were using it because it is cheap and effective. NAFIQAVED adopted a three-pronged approach that successfully stopped the use of chloramphenicol: (1) law enforcement, with heavy fines being imposed for detected use of the drug; (2) education through the use of (a) print media, (b) radio and television broadcasts at the provincial level, and (c) "at pond" and "at factory" training, all of which were designed to educate farmers and processors about the economic consequences of using chloramphenicol; and (3) research to find alternatives to the drug. The research found that by using GAP (Good Agriculture Practices), such as maintaining clean water in shrimp ponds, the need for any antibiotics could be eliminated. Dr. Tiep summed up by noting that all trade disputes with the EU, the US, and Japan involving fish and seafood products have been successfully resolved and that trade with them resumed. He added that less than 0.1 percent of all export consignments have an SPS problem after they reach their destination.

On the subject of meeting private standards, Dr. Tiep commented that processors must, of course, in all events meet national SPS standards and then are free to meet private standards if they conclude that it is in their economic interest to do so. He noted that private distributors might be interested in selling a seafood product that, for example, could be marketed with an eco-friendly "green" label. The question is whether such a product can command a premium price that is sufficiently high to warrant the additional expense of meeting the standards for the eco-friendly label.

In the area of technical assistance, Dr. Tiep identified three areas where such assistance is needed: (1) conducting risk assessments, (2) developing world-class negotiating skills, and (3) developing high quality document drafting skills. TA on building capacity to conduct risk assessments is needed in general, and specifically to meet OIE animal quarantine and inspection standards.

Regarding improved negotiating skills, Article 6 of the SPS Agreement calls for countries to negotiate non-reciprocal equivalence agreements and reciprocal mutual recognition agreements. For example, in the bilateral negotiations between the US and Vietnam on Vietnam's WTO accession, Vietnam agreed to recognize US food safety and hygiene inspections for beef, pork, and poultry as equivalent to Vietnam's inspection systems. However, this agreement was not a mutual recognition agreement where the US agreed in return to recognize Vietnam's food safety inspections for meat as equivalent to those of the US. Negotiating SPS equivalence and mutual recognition agreements will be an on-going exercise for all WTO members. Dr. Tiep believes that although Vietnam's representatives in such negotiations have the technical knowledge, they lack the negotiation skills to conclude agreements that benefit Vietnam.

Finally, Dr. Tiep noted how poorly drafted SPS legal documents are. Poorly written documents lack clarity and contain ambiguities. They are, in a word, non-transparent. They are a reflection of documents written by persons with solid scientific backgrounds, but who have no particular expertise or skill at document drafting. NAFIQAVED anticipates having to re-draft between ten to fifteen 10-15 SPS documents through 2010 as part of its National SPS Action Plan.

Meeting with Directorate for Standards and Quality (STAMEQ), Ministry of Science and Technology

By way of background, Vietnam's Codex Committee, which is an inter-ministerial committee, is headquartered within the Ministry of Standards and Technology (MOST). STAMEQ takes lead responsibility for Vietnam's labeling laws. Because product labeling covers not only food items but also industrial products, there is a good deal of cross-over between the WTO Agreement on Technical Barriers to Trade (the TBT Agreement) and the SPS Agreement. MOST defers to MARD on labeling issues related to food.

On March 23, a meeting was held with a delegation of six representatives of STAMEQ to discuss Labeling Decree No. 89/2006/ND-CP that went into effect March 13, 2007. A STAMEQ representative explained that the March 13, 2007 Labeling Decree is a comprehensive decree that covers labeling of all products, both industrial and agricultural. He also explained that during the drafting of the labeling decree, the Codex labeling standard and the labeling laws of ASEAN countries, China, Canada, and the US were consulted. In connection with the Labeling Decree, a STAMEQ spokesperson explained that a Minister's decision implementing the decree is in draft stage. Thus, many of the details on how the decree will work in specific cases must await the Minister's decision.

Four specific issues were raised and discussed during the meeting concerning the Labeling Decree: (1) Article 16 concerning product dating, (2) Article 15 on listing the quantity of ingredients, (3) Article 19.4 on irradiated foods, and (4) Article 19.4 on genetically-modified foods or foods containing genetically-modified ingredients.

Product label dating. Regarding product dating of imported food items, a May 31, 2006 understanding reached between the US and Vietnam confirms that processed food items will only require a "best-if-used-by" date on the label. Pursuant to that understanding, the STAMEQ representative acknowledged that for all but raw food materials and food additives, Vietnam would accept imported food products bearing a "best-if-used-by" date. A circular is being drafted to reflect this bilateral understanding. Under the MFN obligation, this US-Vietnam understanding will be generalized and applied to all imported processed food items from other WTO member countries.

Another issue concerning product dating is the requirement in Article 12 of the Decree requiring that food labels include both the product's date of manufacture and the expiration date. Codex Standard 1-1985 provides that a country may require that a food label contain the following items of information: (1) the name of the food, (2) a list of ingredients, (3) the net contents and weight, (4) the name and address of the manufacturer or distributor of the food, (5) lot identification, and (6) a date marking of "best before" with the date indicated. The Codex standard has no other requirement regarding dates, including the date of manufacture, on food labels. When questioned, the STAMEQ representative stated that other countries require both dates. He added that the rationale for requiring both dates was for consumer protection and enhanced consumer choice. For example, if a canned meat item has a shelf life of three years, by including the date of manufacture the consumer might decide to buy the canned meat item that was more recently manufactured, even though the "best before" date was still months away. He further stated that preservation conditions vary from country to country, so by requiring both dates on a label a consumer can decide to buy the fresher of two identical food items.

List of quantities of ingredients. Regarding the requirement that the quantity of ingredients be listed on a label, it was explained that for foodstuffs the requirement that "ingredients or ingredient quantities" be identified on the label is at the manufacturer's option. In other words, Article 12.2(d) of the Decree on

foodstuffs labeling is stated in the disjunctive, and the manufacturer or distributor has the option of whether to state the ingredients only or the quantity of ingredients. Codex Standard 1-1985 does allow countries to require quantity labeling when a claim is made that a food product is high or low in a particular ingredient.

Irradiated and GM food. Regarding irradiated food, Article 19.4 of the Decree provides that “[f]or goods or goods ingredients which have been x-rayed or genetically modified, their labels shall be presented in accordance with treaties to which Vietnam is a contracting party.” In the case of irradiated food, it was pointed out that Codex is a treaty, that Codex permits countries to require an irradiation label on food that has been irradiated, and that Vietnam is a party to Codex. The STAMEQ representative stated that a Minister’s decision is being drafted that will identify which types of food will have to bear a label stating that the food item has been irradiated.

Finally, with regard to GM food, although Vietnam is not currently a party to any bilateral, regional, or multilateral treaty on GM food labeling, the STAMEQ representative stated that a Minister’s Decision on GM labeling was in draft stage. He offered that this Decision would supersede Minister’s Decision No. 212/2005 on GM labeling which now requires products with 5-percent GM content to be labeled as such. He also stated that Vietnam was headed in the direction of the EU on GM food labeling, and that whatever the Vietnamese standard turned out to be, that it would not be stricter than that of the EU.

At the conclusion of the meeting the STAMEQ representative noted that his department could benefit from an international food labeling database on countries’ labeling requirements for specific types of foods and food groups. Professor Kennedy offered to supply STAMEQ with information on FDA food labeling requirements.

Meetings with Other Persons and Organizations

On March 13, Professor Kennedy met with the former Vice Minister of Fisheries, Dr. Nguyen Thi Hong Minh, who provided an overview of the successes and difficulties that the Vietnamese seafood industry has had in developing an export-oriented industry. Dr. Minh explained the important role played by the Denmark International Development Agency (DANIDA) in bringing the Vietnamese seafood industry up to international SPS standards.

On March 15, Professor Kennedy met with Dr. Nguyen Huu Dung, General Secretary, and Nguyen Hoai Nam, Director, of the Vietnam Association of Seafood Exporters & Producers (VASEP). Dr. Dung explained the history of VASEP, its development, and the success of the Vietnamese fish and seafood industry in global markets. He noted the growing challenge of meeting private industry standards in developed country markets. The abuse of antibiotics by the shrimp aquaculture industry and the misuse of preservatives in the fishing industry are two of the more recent problems that VASEP has had to address.

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Without question the most encouraging developments in Vietnam following its WTO accession are (1) the commitment spearheaded by the Prime Minister’s office in the area of SPS transparency, and (2) the National Action Plan to bring Vietnam’s SPS legal regime up to international standards by 2010 (discussed below in connection with harmonization).

The Prime Minister's transparency decision is still in draft form as of this writing. It has been distributed to all of the affected ministries for their comment before it goes into effect next month. The final decision will create an inter-ministerial SPS network that will obligate each ministry with SPS responsibility to post on the SPS Enquiry Point's website final decisions in advance of their effective, as well as draft decisions for comment by interested parties. The obligation to make available all laws with trade effects to interested persons in advance of the date when they enter into effect is a core WTO obligation found in GATT Article X and the US-Vietnam BTA.²⁹

The WTO SPS Agreement has six main components: (1) transparency, (2) harmonization of SPS-related laws and regulations, (3) equivalence, (4) risk assessment, (5) control, inspection, and approval procedures, and (6) technical assistance. Vietnam's commitment to implementing the provisions of the SPS Agreement, including bringing its sanitary and phytosanitary laws into conformity with international standards, appears to be strong. Vietnam's progress and needs in each of these six areas is discussed next.

Transparency

On the subject of transparency, Annex B of the SPS Agreement requires WTO members to designate an SPS enquiry point and national notification authority. The enquiry point is responsible for answering relevant questions on national SPS-related laws. The notification authority is responsible for ensuring that new or changed national SPS-related measures are notified to the WTO. Vietnam has combined the two functions into a single office, the SPS National Office that is part of the International Cooperation Department of the Ministry of Agriculture and Rural Development.

With financial support from the EU, a database, software, two dedicated servers, and new computers have been delivered and will be installed shortly in the SPS National Office. During the meeting with representatives from the SPS National Office, a concern was expressed that the Office might not be adequately staffed. Five full-time employees have been assigned to the Office, which includes the Office Director and an IT person. There is an outstanding request for two more staff employees. The staff will be English-Vietnamese bilingual, and a request has been made that one staff member be French-Vietnamese bilingual. The plan is to assign to a specific staff member responsibility for one of the three SPS subject matter areas, i.e., food safety, animal health, and plant health. Paying compensation adequate to attract qualified persons was identified as a problem.

A draft Prime Minister's Decision was issued in March 2007 that if promulgated will establish an inter-ministry network to ensure that all SPS measures issued by the respective ministries and departments are posted on the SPS National Office's website. The draft Decision has been distributed to the ministries

²⁹ GATT Article X:2 provides: "No measure of general application taken by any contracting party effecting an advance in a rate of duty or other charge on imports under an established and uniform practice, or imposing a new or more burdensome requirement, restriction or prohibition on imports, or on the transfer of payments therefor, shall be enforced before such measure has been officially published." To the same effect is Chapter VI, Article 1 of the BTA which provides that "Each Party shall publish on a regular and prompt basis all laws, regulations and administrative procedures of general application pertaining to any matter covered by this Agreement. Publication of such information and measures will be in a manner which enables governmental agencies, enterprises and persons engaged in commercial activity to become acquainted with them before they come into effect and to apply them in accordance with their terms. Each such publication shall include the effective date of the measure, the products (by tariff line) or services affected by the measure, and all authorities that must approve or be consulted in the implementation of the measure, and provide a contact point within each authority from which relevant information can be obtained."

with responsibility for SPS measures for their comment before the draft Decision is finalized and promulgated. The draft Decision calls for web posting of both final decisions and regulations and draft SPS-related documents. The current informal practice is for ministries and departments to make draft documents available to outside parties for their comment, but it is the ministry or department that decides to whom to send the drafts. Under such an ad hoc practice draft documents will reach some, but not necessarily all, persons with an interest in the document. Posting draft documents on the SPS National Office's website will ensure that such documents will reach a wider audience. If implemented, not only will this new practice boost transparency, but it will also improve the quality and promote the WTO-consistency of new SPS-related laws and regulations.

Vietnam's decision to publish draft legislation for comment goes an important step beyond any WTO commitment and reflects best practice. Its decision to publish draft ministerial SPS regulations fulfills a commitment that Vietnam made in the US-Vietnam BTA to "allow, to the extent possible, the other Party and its nationals the opportunity to comment on the formulation of laws, regulations and administrative procedures of general application that may affect the conduct of business activities covered by this Agreement."³⁰ Clearly, it is impossible to comment on draft regulations unless one knows of them. If such a procedural mechanism had been in place when MOST was in the drafting phase of the recent Labeling Decree that went into effect on March 13, 2007, misunderstandings with interested outside parties might have been avoided and clarifications made to the Decree.

What Vietnam is in the process of creating approaches the notice-and-comment provisions of the Administrative Procedures Act governing proposed rulemaking by U.S. federal agencies. If such draft regulations were to be published in advance in the Official Gazette and then followed by an opportunity for comment, then we would have the functional equivalent to U.S. agency rulemaking practice where notice of proposed rulemaking is published in the Federal Register. In the interests of greater transparency Vietnam should move to a practice where all draft ministerial decisions are published in the Official Gazette for comment. Until such time, however, what it is in the process of implementing is a significant development. Knowing that its draft regulations will be subject to public scrutiny should lead to more careful drafting by the responsible departments and ministries. At the same time, Vietnam will benefit from the comments that it receives because such comments will be a form of free technical assistance.

Areas of greatest concern regarding transparency include the quality of Vietnam legal documents, prompt notification of animal diseases and plant pest outbreaks, Vietnam's rule making process, and the potential for conflicting legal requirements in view of Vietnam's complex institutional structure for managing its SPS legal regime.

Low Quality of Vietnam's SPS-Related Legal Documents. A general criticism of Vietnamese legal documents is the poor quality of their drafting. Ordinances and decrees are not well organized, lack clarity and internal consistency, and are rife with ambiguities. With perhaps the exception of the Ministry of Justice, the qualifications and background of the SPS legislative and regulatory drafters are not in law. This obviously raises an important issue of transparency at two levels: first, unclear laws make it difficult for importers and others subject to SPS legislation to know what their rights and obligations are; and second, unclear and ambiguous laws give ill-intentioned administrators an opportunity to engage in arbitrary and capricious acts.

³⁰ US-Vietnam BTA, Ch. VI, Art. 3.

As Vietnam adopts international standards (discussed immediately below), greater clarity should be brought to SPS legal documents as international definitions and the texts of international standards are incorporated into Vietnam's SPS legal documents. A representative of NAFIQUVED requested technical assistance in the area of legal document drafting, noting that the drafters are scientists and persons with technical backgrounds with no particular expertise in preparing legal documents. The same representative pointed out that Vietnam's inability to draft high quality legal documents impairs its ability to participate effectively in the work of the international standards setting bodies. Article 10.4 of the SPS Agreement calls upon WTO members to facilitate the active participation of developing countries in these bodies. However, rather than spend resources on improving the legal drafting skills of department scientists and technicians, it would be more efficient to hire and/or train persons with experience in legal drafting to perform the role of legal document drafter.

Prompt Notification of Animal Disease and Plant Pest and Disease Outbreaks. Turning to the subject of notifiable animal and plant diseases and plant pests, prompt notification of plant pest and animal disease outbreaks to responsible international bodies is critical, first to protect human health and life in the case of animal diseases that are zoonotic, such as avian flu, and second, to minimize the negative economic impacts that can follow either kind of outbreak.

Within 24 hours of the first occurrence of a listed disease, such as avian flu, the OIE Terrestrial Animal Health Code requires notification to its Central Bureau (a parallel notification obligation exists under the IPPC for notifiable plant pests). Establishing an early response and notification system between the provincial and national levels in the event of a disease outbreak is essential to the maintenance of an internationally credible SPS system.

In the Working Party Report on Vietnam's Accession to the WTO, Vietnam committed to promptly report any animal or plant disease that is notifiable.³¹ However, Vietnam legislation does not have a clear requirement that such notification be given by the responsible ministry. Indeed, under the Vietnam Veterinary Ordinance and the implementing Decree, outbreaks of animal epidemics that are zoonotic (i.e., transmissible to humans from animals) are handled first at the provincial level. Only when such epidemics occur in two provinces is control and responsibility formally transferred to the ministerial level.

Equally troubling is a concern that affected farmers may have an economic disincentive to promptly report disease outbreaks because of the low compensation provided them when their livestock are destroyed (approximately 50 percent the value of the animal destroyed, according to representatives of the Department of Animal Health). A tension may also exist between ministries with conflicting demands. For example, MARD's international mandate to report promptly an outbreak may be at odds with the desire of the Ministry of Culture and Information to promote tourism and, therefore, to delay reporting a purported outbreak. Nevertheless, while promptly reporting a disease outbreak will undoubtedly have short-term, negative economic consequences, the failure to promptly report the outbreak of such diseases can have an even greater long-term negative impact for a country's future exports of such products. Trust and confidence in the integrity of a country's animal and plant health authorities can be destroyed that may take years to restore.

³¹ See Working Party Report on Vietnam's WTO Accession, ¶ 325.

A case study commissioned by the WTO on an avian influenza outbreak in Chile and Chile's response to it provides a good example of best practice in this area. The case demonstrates that it is possible for a developing country to handle complex SPS emergencies which, if not controlled within days, can have potentially drastic consequences. It also demonstrates that by being transparent with importers the necessary confidence that the case has been resolved can be developed. The importance of this last point cannot be overstated in the case of an exporting country that does not enjoy a reputation for openness. The WTO case study can be downloaded from the WTO's website at:

www.wto.org/english/res_e/booksp_e/casestudies_e/case10_e.htm.

Inadequate Transparency in the Rule-Making Process. On the subject of regulatory rulemaking, improvements have been made and are planned that will foster an environment of greater transparency by providing an opportunity for comment on draft regulations. With the use of the Official Gazette and the creation of an e-Gazette for publishing agency regulations, Vietnam is moving closer to a US model. However, at the present time concerned departments or ministries solicit input on draft documents directly from persons and organizations that they consider to be "interested," instead of making it generally known that certain regulations are being drafted. Publishing draft documents will give persons or organizations an opportunity to self-identify as being "interested," and thereby allowing them to comment. As a best practice, the rulemaking process in the United States under the Administrative Procedures Act is a model that Vietnamese ministries might want to emulate.

Potential for Conflicting Legal Requirements. Finally, MARD had made an inquiry as to how other countries manage their SPS legal regime. There seems to be some sense or at least a view that Vietnam has too many "cooks" in its SPS "kitchen". In other words, with more than six ministries assigned responsibility in the SPS area, jurisdictional lines can become blurred.

With six Vietnamese ministries having major responsibility for SPS-related matters, the potential exists for conflicting legal requirements. In its Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems, Codex warns that "[w]here different authorities in the same country have jurisdiction over different parts of the food chain, conflicting requirements must be avoided to prevent legal and commercial problems and obstacles to trade."³² The situation that Codex warns of -- different authorities in the same country having jurisdiction over different parts of the food chain -- is precisely the situation that exists in Vietnam.

Given the number of ministries vested with jurisdiction in regulating the SPS area, two risks are present: (1) conflicts of jurisdiction in cases where responsibilities overlap, and (2) conflicts of interest, where the ministry responsible for promulgating SPS standards is also the ministry responsible for enforcing them. Nevertheless, having met with representatives of the ministries with core SPS responsibilities, jurisdictional lines are clear in the minds of the responsible ministries. MARD has asked what the best practice is in this regard and has made a request to conduct future training or a workshop on alternatives to its current system. While the Vietnamese SPS institutional structure might be complex, it is not clear that the structure of Vietnam's SPS institutional regime is broken and thus in need of repair.

³² CAC/GL 26-1997, Section 6(19).

Harmonization of Standards

In its Protocol of Accession to the WTO, Vietnam agreed to apply the Agreement on the Application of Sanitary and Phytosanitary Measures from the date of accession (January 11, 2007) without recourse to any transition period.³³ Pursuant to a January 2007 draft decision issued by the Prime Minister, all Vietnamese SPS-related laws are to conform to international standards, and all ministries with SPS responsibility are to submit an action plan or “roadmap” describing how the relevant ministry will fully implement all international obligations in the area of SPS by 2010. Each department and ministry visited referred to their SPS Action Plan which they were in the process of finalizing and submitting to the Prime Minister’s office. (Because the Prime Minister’s Decision and the action plans are in draft form, copies were not made available.)

Article 3 of the SPS Agreement contains a harmonization obligation. Harmonization is the process of bringing the various national laws of a group of countries on a particular subject into close approximation with one another using a uniform international standard as a benchmark or guide. However, it is important to understand exactly what the SPS Agreement requires in the way of harmonization.

The WTO SPS Agreement does not obligate WTO members to maintain high standards or even to adopt international standards (the benchmark for international standards are those developed by Codex, OIE, and IPPC). If a country wants to have national standards that are lower than international standards, it is free to do so, provided it applies such standards in a non-discriminatory manner relative to the like domestic product (the national treatment obligation) and in a non-discriminatory manner with regard to imports of the like product from different countries (the MFN obligation).

Next, the SPS Agreement encourages harmonization of members’ national standards by creating an incentive for adopting international standards. Thus, if a country does adopt SPS standards that are higher than existing national standards, such standards are presumptively consistent with the SPS Agreement, provided they conform to the international standards set by the three international standards setting bodies recognized by the WTO.

Third, a WTO member may adopt a standard that is higher than a relevant international standard if there is a scientific justification for it, or if the international standard does not achieve the importing country’s appropriate level of SPS protection based on a risk assessment conducted by the importing country. Thus, in order for a country to adopt standards higher than international standards or to develop its own standard when no international standard exists, it must either (1) have in place the technical infrastructure to conduct WTO-consistent risk assessments that can withstand scrutiny under the SPS Agreement, or (2) borrow higher standards set by other countries that have conducted their own risk assessment, and trust that a technically sound risk assessment was conducted or be in a position to critically review and assess another party’s risk assessment for consistency with the SPS Agreement.

In the case of Vietnam, in its Protocol of WTO Accession it did not request a transition period for adopting the SPS Agreement basically because its national SPS standards are lower than or equal to international standards at the time of its accession. While the SPS Agreement is silent on the question of

³³ See Working Party Report on Vietnam’s WTO Accession, ¶ 328. None of the countries to accede to the WTO immediately prior to Vietnam – Armenia, Macedonia, Taiwan, and China – had an SPS transition period.

maintaining SPS standards that are lower than international standards (provided such standards are applied in a non-discriminatory manner), the maintenance of low standards is not necessarily in the best interests of humans, animals, or plants within the country. Vietnam's decision to adopt international standards is welcome news for the people of Vietnam.

At the same time, however, there is a risk that a system of double standards might develop, with one set being higher in the case of exports and the other set being lower in the case of imports and products produced within the country for domestic consumption. This is a phenomenon that has occurred, for example, in sub-Saharan Africa. On more than one occasion when asked what Vietnam does when exporting to a country with an SPS standard higher than its own, the answer was always that "the buyer's standard is met." While that does not necessarily mean that what is sold in the Vietnamese market is unsafe, it does suggest that what is sold in Vietnam could be of lower quality than what is sold abroad. In that case the living standards of the Vietnamese are not improved. Again, the SPS Agreement is silent on such a development.

Many persons incorrectly believe that the SPS Agreement mandates immediate adoption of international standards upon accession to the WTO, when it does not. Article 3.1 of the SPS Agreement provides that WTO members are to "base" their SPS measures on international standards, whereas Article 3.2 states that if a member's SPS measures "conform to" international standards, such national standards then enjoy a presumption of consistency with the SPS Agreement. The two obligations are different. The WTO dispute settlement panel in the *EC -- Beef Hormone* dispute incorrectly equated the two terms, and thus would have imposed a present obligation on WTO members to adopt immediately all international standards if they exist. The WTO Appellate Body reversed, stating that the ordinary meaning of "based on" is different from "conform to." The Appellate Body explained that "based on" requires simply that a thing "is supported" by another thing, a looser standard than "conform to." In addition, the fact that the term "conform to" is explicitly used in Article 3.2 suggests that the drafters chose these different terms in order to convey different meanings. Finally, and most importantly, the Appellate Body held that the object and purpose of Article 3 anticipate harmonization of standards as a future goal, not as a present obligation. The Appellate Body stated that "[w]e cannot lightly assume that sovereign states intended to impose upon themselves the more onerous, rather than the less burdensome, obligation by mandating *conformity* or *compliance with* such standards, guidelines and recommendations." Moreover, Article 12.1 of the SPS Agreement creates a Committee on Sanitary and Phytosanitary Measures and gives it the task, *inter alia*, of "furtherance of its objectives, in particular with respect to harmonization," and in Article 12.2 to "encourage the use of international standards, guidelines and recommendations by all Members." The Appellate Body summed up by observing that harmonization of SPS measures of Members on the basis of international standards is projected in the Agreement, as a *goal*, yet to be realized *in the future*. To read Article 3.1 as requiring Members to harmonize their SPS measures by *conforming those measures with international standards*, guidelines and recommendations, *in the here and now*, is, in effect, to vest such international standards, guidelines and recommendations (which are by the terms of the Codex *recommendatory* in form and nature) with obligatory force and effect. The Panel's interpretation of Article 3.1 would, in other words, transform those standards, guidelines and recommendations into binding norms. But, as already noted, the *SPS Agreement* itself sets out no indication of any intent on the part of the Members to do so.

So, for example, a national law that "conforms to" and incorporates a Codex standard is, of course, "based on" that standard. On the other hand, a national law that is based on that same standard might not

conform to it, as where only some, but not all, of the elements of the international standard are incorporated into the national law.

In short, Vietnam does not have a present obligation to “base” its national SPS laws on international SPS standards immediately upon accession, let alone “conform” its national SPS laws to international standards. Nevertheless, as confirmed in the meetings with ministry representatives, in the proposed National SPS Action Plan for adopting international SPS-related standards, it is Vietnam’s near-term goal to *adopt* international SPS standards, not merely to *base* its SPS laws on such standards. Pursuant to a draft Prime Minister’s Decision issued in January 2007 to launch a National SPS Action Plan, each Ministry with SPS responsibility will be asked to prepare an action plan and establish a timetable for adopting all relevant standards and guidelines issued by the three international standards setting bodies recognized by the WTO: the Codex Alimentarius Commission (food safety), the World Animal Health Organization (formerly known as the International Epizootics Organization or OIE on animal health), and the Secretariat of the International Plant Protection Convention (the IPPC on plant health).

Vietnam’s proposed National SPS Action Plan thus envisions the adoption of international standards by 2010, that is, that national SPS laws will “conform to” international standards, not simply be “based on” them. Vietnam has made the following progress to date:

- **Food Safety and Hygiene Standards.** The Ministry of Health estimates that approximately 60 percent of all Codex standards and guidelines have been adopted to date. The most important standards are those setting maximum residue levels of pesticides, veterinary drugs, and contaminants in food. The challenge Vietnam faces in bringing its national standards up to Codex standards is the large number of smallholders farming in the country. This makes the adoption, implementation, and enforcement of higher international standards difficult.
- **Plant Health Standards.** On the subject of plant protection, the Plant Protection Department of MARD has amended its laws on pest risk analysis to conform to two of the 27 international standards for phytosanitary measures (ISPMs) promulgated pursuant to the IPPC: (1) ISPM No. 2, *Guidelines for pest risk analysis*, and (2) ISPM No. 11, *Pest risk analysis for quarantine pests, including analysis of environmental risks and living modified organisms*. Vietnam will have completed adoption of five more ISPMs by the end of 2007: (1) ISPM No. 5, *Glossary of phytosanitary terms*, (2) ISPM No. 10, *Requirements for the establishment of pest free places of production and pest free production sites*, (3) ISPM No. 20, *Guidelines for a phytosanitary import regulatory system*, (4) ISPM No. 21, *Pest risk analysis for regulated non-quarantine pests*, and (5) ISPM No. 23, *Guidelines for inspection*. Pursuant to its draft SPS Action Plan, the Plant Protection Department intends to adopt the balance of the IPPC’s twenty-seven ISPMs by 2010. The Department has requested technical assistance in conducting pest risk analyses.³⁴
- **Animal Health Standards.** On the subject of animal health, MARD and the Ministry of Fisheries generally observe the standards set out in the OIE Terrestrial Animal Health Code and Aquatic Animal Health Code. Both Ministries are revising their quarantine and inspection regulations to more closely conform to OIE standards on animal quarantine and inspection. Both Ministries have

³⁴ A “pest risk analysis” is defined as “[t]he process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of any phytosanitary measures to be taken against it.” ISPM No. 5, *Glossary of phytosanitary terms*.

in place a process for prompt identification and notification of listed (notifiable) diseases. This is especially important not only from an economic standpoint (preventing the spread of contagious diseases), but also from a public health perspective in the case of zoonotic diseases, such as avian influenza.

Vietnamese SPS Legislation That Raises Concerns of WTO Inconsistency. Two decrees, Labeling Decree No. 89/2006/ND-CP and Article 6.2 of Food Safety and Hygiene Decree No. 163/2004/ND-CP concerning the shelf-life of imported raw materials and food additives, raise concerns about consistency with the SPS Agreement.

The Labeling Decree that went into effect March 13, 2007 requires information on food labels that is inconsistent with the Codex standard on food labeling. Specifically, it requires that the label contain the date of manufacture and the expiration or “use-by” date. The applicable Codex standard on food labeling, *Codex Standard for the Labelling of Prepackaged Foods*, Stan. 1-1085 (Rev. 1-1991), only requires the latter. This issue was raised in the Working Party Report on Vietnam’s WTO accession in the context of Article 35 of Food Safety Ordinance No. 12/2003/PL-UBTVQH11. Article 35(f) of that Ordinance provides that food labels must include, *inter alia*, “Date of production, use duration, food preservation duration”. The Vietnamese representative stated that only one of the three items of information had to be included on the label, not all three.³⁵ In addition, the Codex standard only requires that the contents of the food item be listed, but not the quantities, unless a claim is made that the product is high or low in some ingredient.

As noted above in connection with the meeting with STAMEQ representatives, the new Labeling Decree has not yet been fully implemented and awaits the promulgation of a ministerial decision and a circular. Although concerns have been raised about the consistency of the Labeling Decree with international obligations, STAMEQ representatives responded that a circular is being drafted that will only require a “best-if-used-by” date on food labels of imported goods, pursuant to the May 31, 2006 understanding reached between the US and Vietnam. This circular will have general application to all imported food as a result of the generalizing effect of the most-favored-nation obligation of GATT Article I. Consequently, it appears as though Vietnam will end up with a double standard regarding dates that are required on food labels: (1) for imported processed food, a “best by” date only, pursuant to the circular that will implement the May 31, 2006 US-Vietnam understanding; and (2) for food processed in Vietnam, both a date of manufacture and an expiration date, pursuant to the March 13, 2007 Labeling Decree.

Regarding listing the ingredients or quantity of ingredient on a food label, a STAMEQ representative confirmed that a manufacturer or distributor had the option of identifying one or the other, but did not have to list both, on its labels.

Turning to the “2/3 shelf life” import ban for raw food materials and food additives, Article 6.2 of the Food Safety and Hygiene Decree bans the importation of raw food materials and food additives if the “use by” or “best by” date is less than two-thirds of the product’s useful life as measured from the date of importation. This matter was raised in the WTO Working Party Report. Vietnam’s rationale for this import restriction is “to avoid the importation of raw food materials and food additives close to expiration

³⁵ Working Party Report, ¶ 314. This provision is also an example of poor document drafting. Without the insertion of the word “or” after the term “use duration”, the natural reading of this provision is in the conjunctive, not the disjunctive, i.e., that all three dates are required on a food label.

and thereby limit the risk that expired material and food additives be used in the production of food products as had been revealed by some on-site inspections.”³⁶

Without launching into an extended legal analysis, Article 6.2 of the Food Safety and Hygiene Decree on its face violates GATT Article XI on import prohibitions. That GATT Article prohibits importing countries from banning the importation of goods generally, subject to narrow exceptions. One of those GATT exceptions is an import ban for human health reasons under GATT Article XX(b). If Vietnam is relying on that exception as the legal basis for its “2/3 shelf life” import ban, then the burden is on Vietnam to justify it as a measure “necessary” to protect human health and safety under GATT Article XX(b).

Although Vietnam has raised a legitimate concern, its regulation arguably exceeds what is “necessary”, i.e., what is the least trade restrictive alternative, because at the time of importation the imported items are not intrinsically deleterious to human health. Less trade restrictive alternatives are available, including better law enforcement at the food processing stage. In addition, if this restriction were extended to prohibit the internal sale of such products, then there would also be a GATT Article III national treatment violation, unless the same restriction was imposed on the sale of the domestic like product.

As reported in the Working Party Report on Vietnam’s WTO accession, the Vietnamese representative stated that Vietnam “was in the process of implementing technical regulations on shelf life for raw food materials and food additives.”³⁷ In the March 20th meeting with representatives of the Ministry of Health, it was reported that the shelf-life decree is currently being reviewed by MOH.

Other Areas of Concern as Vietnam’s Harmonization Process Progresses. As the process of adopting international standards progresses, there are two areas of concern:

First, a double standard could emerge, that is, products of Vietnamese origin that are exported will meet either a higher international standard or an even higher standard set by the country of importation, but the same product when destined for domestic consumption within Vietnam might be subject to a comparatively lower national standard. The SPS Agreement is silent on this phenomenon. This concern was raised during the meetings with the various government ministries, and each Ministry insisted that a legal regime of double standards would never be allowed to develop within Vietnam.

Second, maintaining national standards that are lower than international standards will, of course, postpone Vietnam’s entry into export markets for its fruit, vegetable, and meat products. But even where Vietnam has adopted Codex standards, those standards might still be lower than the applicable national standards adopted by the European Union and the United States (e.g., in the area of maximum residue levels for certain plant pesticides), both of which are major export markets for Vietnam.

Equivalence

On the subject of equivalence, Article 4 of the SPS Agreement requires that importing countries accept the SPS measures of exporting countries as equivalent to those of the importing country, even when they are different, if the exporting country demonstrates that its SPS measures achieve the importing country’s level of SPS protection. What has developed in practice is that WTO members negotiate equivalency

³⁶ Working Party Report, ¶ 314.

³⁷ Working Party Report, ¶ 315.

agreements (non-reciprocal, as in the case of the US-Vietnam WTO Accession Agreement where Vietnam agreed to recognize USDA food safety inspections for beef, pork, and poultry as equivalent to its inspections systems) or mutual recognition agreements (reciprocal, e.g., the Canada-EU MRA on Good Manufacturing Practice in veterinary drug production where Canada and the EU recognize each other's GMP certifications for vet drug manufacturers within their respective jurisdictions). A representative of the Ministry of Fisheries believes that Vietnam's negotiators lack effective negotiating skills to secure equivalence agreements that are beneficial to Vietnam. He has requested technical assistance in this regard.

Risk Assessments

On the subject of risk assessments, importing countries may maintain standards that are higher than international standards when the international standard does not meet the importing country's level of SPS protection, provided the importing country has conducted a risk assessment that evaluates the likelihood of entry or spread of a pest or disease, and further evaluates the associated biological and economic consequences. In addition, when international standards don't exist, an importing country must either conduct its own risk assessment to support its national standard or borrow one conducted by another country and adopt that country's standard as Vietnam's own. Finally, even when international standards do exist, risk assessments have to be conducted in plant and animal quarantine situations to establish that the risk has either passed (so that trade may resume) or is still present (so that an import ban may remain in place).

Legal challenges to an importing country's risk assessment is the only SPS-related matter that has resulted in WTO dispute settlement proceedings (four completed to date, two pending). With one exception, all of these SPS disputes have been between developed countries. The US has complained against Japan twice; the US and Canada have complained against the EU once; the US, Canada, and Argentina have complained against the EU once; Canada has complained against Australia once; and the EU has complained against the US and Canada for their continued imposition of retaliatory tariffs in the *Beef Hormone* dispute. The responding countries have lost in the four completed cases, largely due to reliance on improper risk assessments.

Risk assessments are technically complex and require human capacity (e.g., highly-trained scientists) and technical capacity (e.g., labs and databases). Their complexity is illustrated in Exhibit B, which is the table of contents for the risk assessment completed by the USDA in October 2006 on the risk of mad cow disease from cattle imported from Canada.

Every Ministry that was visited requested technical assistance in conducting risk assessments.

Control, Inspection, and Approval Procedures

On the subject of control, inspection, and approval procedures, Article 8 of the SPS Agreement calls for prompt and uniform import procedures, which are especially important in the case of perishable agricultural products. The Agreement also requires that import documentary and quarantine requirements be published. MARD and the Ministry of Fisheries generally observe OIE standards on these procedures, including the use of model forms that the OIE has published on veterinary export and import certificates. OIE quarantine protocols can vary depending on the animal and the disease in question. Both Ministries are in the process of adopting the OIE quarantine and inspection protocols. A representative of the Ministry of Fisheries has requested technical assistance in this regard.

In addition, the SPS Agreement requires that a domestic procedure be in place to review complaints that might arise during quarantine, inspection, and approval procedures. When representatives of the Department of Animal Health were asked how an importer could challenge a departmental quarantine or approval decision, the response was that the importer could use the dispute settlement mechanisms established by the OIE and WTO. This response shows a lack of understanding of the obligation in Annex C(1)(i) of the SPS Agreement that an importing WTO member provide “a procedure . . . to review complaints concerning the operation of [inspection and quarantine] procedures and to take corrective action when a complaint is justified.”

Finally, although the subject of judicial review of administrative agency action is beyond the scope of this report, another facet of transparency involves the process for challenging agency determinations in administrative tribunals or courts. Both GATT and the BTA require countries to maintain administrative or judicial tribunals for reviewing challenges to administrative agency action.³⁸ That is another development that should be closely followed.

Technical Assistance

Article 10 of SPS Agreement directs developed countries to provide technical assistance to developing countries so that developing countries may fully assume their obligations under the SPS Agreement. In the area of additional technical assistance, Vietnam needs such assistance in several areas.

First, technical assistance is needed in order to build capacity to conduct proper risk assessments. It was made abundantly clear during the meetings with the relevant ministries that all departments responsible for conducting risk assessments require additional donor support.³⁹ Conducting a valid risk assessment is complex and requires both sophisticated human and technical capacity. Consequently, they are expensive and difficult to conduct. (For readers unfamiliar with what a risk assessment involves, attached as Exhibit B is the table of contents of the risk assessment that the USDA completed in October 2006 assessing the risk of the introduction of mad cow disease from cattle imported from Canada. It should provide some

³⁸ GATT Article X:3(b) provides:

Each contracting party shall maintain, or institute as soon as practicable, judicial, arbitral or administrative tribunals or procedures for the purpose, *inter alia*, of the prompt review and correction of administrative action relating to customs matters. Such tribunals or procedures shall be independent of the agencies entrusted with administrative enforcement and their decisions shall be implemented by, and shall govern the practice of, such agencies unless an appeal is lodged with a court or tribunal of superior jurisdiction within the time prescribed for appeals to be lodged by importers; *Provided* that the central administration of such agency may take steps to obtain a review of the matter in another proceeding if there is good cause to believe that the decision is inconsistent with established principles of law or the actual facts.

In a parallel provision, Chapter VI, Article 7 of the US-Vietnam BTA provides:

The Parties will maintain administrative and judicial tribunals and procedures for the purpose, *inter alia*, of the prompt review and correction (upon the request of an affected person) of administrative action relating to matters covered by this Agreement. These procedures shall include the opportunity for appeal, without penalty, by persons affected by the relevant decision. If the initial right of appeal is to an administrative body, there shall also be the opportunity for appeal of the decision to a judicial body. Notice of the decision on appeal shall be given to the appellant and the reasons for such decision shall be provided in writing. The appellant shall also be informed of the right to any further appeal.

³⁹ Annex A of the SPS Agreement defines the term “risk assessment” as “[t]he evaluation of the likelihood of entry, establishment or spread of a pest or disease within the territory of an importing Member according to the sanitary or phytosanitary measures which might be applied, and of the associated potential biological and economic consequences; or the evaluation of the potential for adverse effects on human or animal health arising from the presence of additives, contaminants, toxins or disease-causing organisms in food, beverages or feedstuffs.”

sense of the complexity of a risk assessment.) The capacity to conduct proper risk assessments is needed not only to support national SPS standards that are higher than international standards, but also to satisfy countries which import Vietnamese agricultural products that its products are pest-free and disease-free (on the export side) and, on the import side of the equation, to justify import bans on products from countries that are not free of pests or diseases of quarantine significance. It is preferable for Vietnam to develop its own risk analysis capacity than to rely on outside capacity.

Second, technical assistance is needed to promote Vietnam's agricultural exports. This calls for a multidisciplinary approach that integrates the talents of sociologists, agriculture economists, food processing and food industry experts, and to a very limited extent, the talents and expertise of lawyers. The Vietnamese fish and seafood industry is a good example. As explained by Dr. Dung, VASEP's General Secretary, shrimp farmers were using the antibiotic chloramphenicol that is banned both in Vietnam and the EU and that is being smuggled from China and sold in local shops. Dr. Dung further explained that the shrimp aquaculture industry consists of many smallholders. Ensuring that they not only follow best aquaculture practices but that they also obey the law is problematic, given their numbers. While this presents a law enforcement problem both at the border and at local shops, educating shrimp farmers is probably a better approach to ensuring law observance. This observation suggests a role for the Ministry of Culture and Information. Similarly, Dr. Dung explained how fishermen were using a preservative in lieu of ice, resulting in excessive levels of the preservative that resulted in Japan closing its market to Vietnamese fish imports. Policing the Vietnamese fishing fleet when it is out to sea is, of course, impossible. Educating them when they return to port seems to be the only effective approach. A third problem, unrelated to the two just mentioned, is the one that the catfish industry is facing in meeting private industry standards that are set in export markets. Private industry standards fall into a WTO gray area or gap. Generally speaking, the WTO only regulates government conduct, not private party behavior (an exception would be where a government has delegated responsibility to a private body to set national TBT or SPS standards). The advantage that catfish production has over shrimp farming in Vietnam is that catfish production is on an industrial scale with far fewer producers, making quality control a more manageable task. The private standards phenomenon has mushroomed across the food industry.

Technical assistance provided through programs such as the USAID-supported Partnerships for Food Industry Development have helped food producers in developing countries raise the quality of their products so that food wholesalers and supermarket chains in developed countries will buy their products.⁴⁰ There are three USAID-funded PFID programs: one for fruits and vegetables at Michigan State University (PFID-F&V), one for meat, seafood, and poultry at Louisiana State University (PFID-MSP), and one for herbs and natural products at Rutgers University. PFID collaborates with public and private partners to increase the competitiveness of small and medium scale producers in local, regional, and international markets. Its methodological approach is cross-disciplinary and taps the expertise of persons knowledgeable about food industry grades and standards. PFID's approach of building business partnerships throughout the supply chain and on a global basis is one that Vietnam's food industry might find worth pursuing. In a related vein, a need for technical assistance has been identified in connection with genetically-modified crops and food. The Ministry of Health will be monitoring and assessing the safety of GM products in coordination with the Ministry of Environment and Natural Resources.

⁴⁰ More information on PFID's services is available at <http://www.pfid.msu.edu/services.php>.

Third, making sure that the SPS National Office becomes fully operational is critical. The EU has provided servers, computer equipment, and a database that are in the process of being installed. There is a lingering concern about adequately staffing the Office to ensure that outside inquiries receive prompt attention. A related concern is with implementing the obligation to notify the WTO of all SPS laws and SPS trade measures. The inter-ministerial SPS network that the Prime Minister plans to establish and that is designed to provide notification of all draft and final SPS laws, decrees, and decisions should be monitored for effectiveness. The operation of the SPS National Office should be reviewed at least annually.

Fourth, in order to fully participate in the WTO SPS Committee and in the work of the international standards setting bodies, Vietnam's representatives must have strong negotiating skills. Therefore, providing training on negotiating should be considered.

Fifth, as noted, the quality of Vietnam's legal documents is low. Ministries should either hire staff who are trained in drafting legal documents or provide training on legislative drafting to current staff. Most US law schools offer specialized drafting courses on a variety of subjects, including wills, contracts, business agreements, and legislation. It should be possible to design an intensive legal drafting course with the assistance of a US law school, perhaps in partnership with a law school in Vietnam or with the Ministry of Justice.

Sixth, as trade with Vietnam increases, so too will trade disputes. Vietnam has a WTO obligation to establish independent administrative tribunals to review agency determinations and to issue reasoned opinions. Training on running administrative tribunals and establishing an adjudication mechanism that is transparent are critical.

Seventh, Vietnam is moving closer to having an open and transparent rulemaking process. Training on notice-and-comment rulemaking should be offered. A model for the process of rulemaking is that of the United States under the Administrative Procedures Act. Vietnam's rule makers should become familiar with it, perhaps in conjunction with training on administrative adjudication. In this connection, support for the growth of e-government, including the development of an e-Official Gazette in Vietnam, should be provided.

SUMMARY

Vietnam is in the process of undertaking a systematic and comprehensive review of its entire SPS legal regime. It will be a top to bottom review of all of its SPS laws with the goal of bringing its national SPS standards up to international standards on food safety and animal and plant health.

For at least the next three years Vietnam's SPS legal regime will be in a state of flux. Vietnam is just entering the first phase of bringing its SPS legal regime up to international standards. It is too early to say whether or not it will succeed, but the political will to fully implement the SPS Agreement seems to exist. Its proposed timetable is ambitious: to revise and amend all of its SPS laws to bring them into conformity with international standards by 2010.

Without generous technical assistance from donor countries and organizations, especially in conducting risk assessments, Vietnam's timetable may be unrealistic. Although Vietnam is focusing a tremendous amount of attention on SPS measures per se, insufficient attention is being devoted to the process of rulemaking and the process of making legal challenges to agency determinations.

A follow-up review of Vietnam's SPS legal regime should be conducted in late 2008-early 2009, with a focus on a single product through the entire food chain ("from farm to fork"). Such a review should include an assessment of SPS rulemaking procedures and trade dispute settlement processes.

MEETING SCHEDULE AND PERSONS CONTACTED IN HANOI

Date	Agencies	Persons Contacted
March 13, 2007	U.S. AID	David Brunell Dennis Zvinakis
	Foreign Agricultural Service, USDA	John Wade Valerie Ralph
	SPS National Office, Ministry of Agriculture and Rural Development	Hoang Thi Dzung, Deputy Director General, International Cooperation Department Le Thanh Hoa, Director, SPS National Office
March 14, 2007	Multilateral Trade Department, Ministry of Trade	Nguyen Hai Yen, WTO Desk Officer
March 15, 2007	Department of Science and Technology, Ministry of Industry	Nguyen Phu Cuong, Deputy Director General Le Viet Nga, Senior Official
	Vietnam Association of Seafood Exporters & Producers	Dr. Nguyen Huu Dung, General Secretary Nguyen Hoai Nam, Director
March 16, 2007	Plant Protection Department, MARD	Hoang Van Thong, Chief of Planning, Science and International Relations Division
March 19, 2007	Vietnam Food Administration, Ministry of Health	Nguyen Hung Long, Deputy Director General, Vietnam Food Administration Tran Viet Nga, Integration & Development Div., Vietnam Food Administration
March 20, 2007	Department of Animal Health, MARD	Dr. Bui Thi Cuc, Vice Chief of Planning, International Cooperation and Science Division Dr. Dau Ngoc Hao, Department Vice Director
March 21, 2007	National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED), Ministry of Fisheries	Dr. Nguyen Nhu Tiep, Head, Aquatic Animal Health Division
March 22, 2007	SPS National Office, MARD	Le Thanh Hoa, Director, SPS National Office
	U.S. AID Mission	David Brunell Dennis Zvinakis
March 23, 2007	Directorate for Standards and Quality (STAMEQ), Ministry of Science and Technology	Mr. Luong Van Phan, Deputy Director