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**Business engagement in smallholder agriculture:
Developing the mango sector in the Mekong Delta, Vietnam**

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Abstract

There were 286,207 ha of fruit cultivated area in the Mekong Delta with total volume reached 3,18 million tonnes in 2013; in which 185,000 ha from specialised fruit area (about 64.6% of total area of the South region) including 13 kinds of fruit products: dragon, mango, rambutan, durian, star apple, pomelo, longan, banana, pineapple, oranges, custard, sapoche (sapodilla) and tangerine. Mango is one of the most widely grown fruit in the Mekong Delta with 41,800 ha (accounting for 48.0% of the total national mango area and 65.1% of the Southern region) with an output of 417,268 tonnes in 2013. Mango is mainly cultivated in 4 provinces such as Dong Thap, Tien Giang, An Giang and Vinh Long. The four provinces account for 72.8% of the total area and 72.8% of the total mango production in the Mekong Delta. There are two main varieties of mangoes: Hoa Loc mango and Cat Chu mango (about 80%); both kinds of these mangoes have comparable and competitive advantages in price and quality than those of other mangoes in Vietnam but not in international market. In addition, there are many limitations regarding awareness of mango chain actors, linkages of production and distribution as well as the support of local governments at all levels to increase mangoes quantity and quality. The study applied the value chain approach of Kaplinsky & Morris (2001), the ValueLinks method of GTZ (2007); Marking value chains work better for the poor (M4P, 2008) and participation of chain actors. The research objectives are (1) Analysis of mango market, (2) Assessment of production and distribution situation of mango in the MD, (3) Analysis of mango value chain and (4) Mango constrains and recommendations for developing further policies and better measures to improve added value of mango products.

Key words: Cat Chu, Hoa Loc, Mango, value-added and value chain

1. Introduction

This research report focuses on the mango sector in the Mekong Delta (MD) of Vietnam, and how support can be provided through local companies to develop the sector and promote the livelihoods of smallholder farmers. It follows an initial scoping of opportunities for business engagement in agriculture in the MD, which examined the rice, pangasius and fruit sectors.

1.1 Key message

- Global mango export values increased 12% per annum 2005-2012. Significant opportunities exist, particularly in China under the ASEAN-China FTA.
- Mango production alleviates poverty. Average annual net income per household VND 105 million (\approx US\$4900): much higher than rice production.
- Current markets predominantly domestic and informal Chinese border trade: volatile and lower prices, except for niche Cat Hoa Loc variety.
- Fragmented, smallholder production with few farmer organisations and weak linkages to export and processing companies. Difficult to transfer technology, relay market information, certify production, increase productivity.
- Potential to establish business support facility to catalyse investment and support to producers by exporters, processors and service providers

Vietnamese agriculture in general is characterised by large volume, low value production. A variety of structural issues affect the ability of the agriculture sector to improve productivity. For instance, a fragmented production system characterised by numerous small scale producers, creates challenges for the introduction of new technology, quality control and crop certification. Specific lessons and ideas on how to overcome these constraints in the mango sector therefore may have wider relevance for application in other agricultural sectors.

There is considerable interest and enthusiasm in donor circles about the potential for private sector engagement to achieve development outcomes, although the specifics of how this can be achieved are sometimes elusive. This case study in the mango sector may provide some concrete examples of where donors could (or should not) play a role in supporting the private sector to improve livelihood opportunities for smallholder farmers.

Analysis of the Mango Value Chain in the MD conducted by Mekong Delta Development Research Institute (MDI), Can Tho University, which focused on production and trade patterns, both within the domestic and export markets. The study involved household survey of 223 mango producers in Dong Thap and Tien Giang provinces, as well as key person interviews and group discussions with collectors, wholesalers, trading and processing companies, relevant government officials and other stakeholders in the mango sector.

1.2 Research objectives

The overall objective of this study is to understand the structure of the mango sector in the MD, constraints to mango development and opportunities for donors and business to address these constraints in a way which will increase mango added value and incomes of smallholder producers.

1.3 Research methodology

- (1) Literature review of secondary data related to mango in the MD
- (2) Methods of primary data collection
 - Direct interview of chain actors (producer, collector/trader and company) by structured questionnaires.
 - KIP interview of local managers who are responsible for agricultural aspects related to mango by unstructured questionnaires.
 - KIP interview of leaders of production models of mango by unstructured questionnaires.
 - Group discussion of producers by unstructured questionnaires (three groups of producers: one for Hoa Loc mango, one for Cat Chu mango and one for other mangoes).
- (3) Workshop organisation for chain actors and other stakeholders of mango sector (April 22nd 2014)

1.4 Sampling

Dong Thap and Tien Giang are chosen for the study because they are two leading provinces for mango cultivation (representative of 44.1% of total mango area and 44.4% of total volume in the MD in 2013). The sample size of the study is 427 including value chain actors (farmer - F, collector - C, wholesaler - W, company - Co, retailer – R and supermarket - S), facilitators (local managers at all levels) and workshop participants. Following table shows the sample structure of the study.

Table 1: Sample structure of the study

No	Actors	Sampling	Method
1	Farmers	223	Non-random sampling
2	Collectors	20	Valuelink method
3	Wholesalers	28	Valuelink method
4	Companies	10	Valuelink method
5	Retailers	29	Valuelink method
6	Facilitators	20	Key informant panel method
7	Workshop	70	Workshop held on April 22,
8	Cooperatives	02	
9	Group discussion	25	3 groups
Total		427	

2. Vietnam mango sector in the global market

2.1 Mango production

Global mango production has increased steadily over the past decade. According to FAO statistics, global production of mango, mangosteens and guava increased from 25 million tonnes in 2000 to 42.14 million tonnes in 2012. The largest producer in this category is India (15.25 million tonnes), which has accounted for 35-40% of global production. India cultivates at least 30 different varieties of mango which fruit at various times between February through to August. Other very big producers include China (4.57 million tonnes), Kenya (2.78 million tonnes) and Thailand (2.65 million tonnes). Vietnam is the 13th largest producer with annual production of 775, 942 tonnes in 2012. Global production has been increasing steadily at an average increase of 4% between 2005 and 2012, with a small reduction only in 2009. Harvested area has increased similarly to 5.2 million hectares in 2012. Again, India has the largest harvested area at 2.3 million hectares in 2012. This compares with a reported 73,690 hectares in Vietnam.



Mango production in Mexico



Mango production in India

2.2 Trade

The vast majority of mango produced are consumed domestically. According to FAO statistics, 1.53 million tonnes were exported globally in 2011 (compared with 43.6 million tonnes produced that year). The volume of exports is increasing, however, by an average of 5.5% per year in terms of volume and 12.2% per year in terms of value between 2005 and 2012.

The top exporting countries in 2011 were Mexico (287,771 tonnes), India (229,192 tonnes), Thailand (152,285 tonnes) and Brazil (126,568 tonnes). Mexico is the top exporter of mangoes, even though it is only the 7th largest producer. Over the last decade, exports from India, Thailand and Pakistan have increased significantly. According to FAO figures, Vietnam exported only 755 tonnes in 2012, compared with 196,441 tonnes exported by its neighbour, Thailand. Clearly, Vietnamese exports are not reaching their potential. Export patterns vary too, with Mexico and Brazil supplying the US and European markets, India and Pakistan supplying the Middle East and Thailand serving mainly the Asian markets such as China, Japan and South Korea.



Alphonso mango of India



Tommy mango of Mexico

The largest importers of mangoes, mangosteens and guavas are the US (accounting for 22.6% in 2012), China (11%), Netherlands (10%), Germany and the UK (both 5%). Netherlands is a big re-exporter of mangoes that arrive in the international port of Rotterdam. China is therefore a very important market, supplied mainly from Southeast Asian countries: Thailand, Burma, Indonesia and Philippines. Interestingly, Vietnamese imports of mangoes, mangosteens and guava have been increasing very recently – to a volume of 87,000 tonnes (and a value of US\$51million) in 2012. Note that this figure compares with total domestic production of 775,942 tonnes in 2012. Vietnamese consumers buy Thai mangoes because of the flavour and quality while Cambodian mangoes are gaining a share of the market due to their competitive price.

Mango export prices have increased since 2005, with a steady increase averaging 2.7% per annum. Prices dipped in the recession of 2008 but had recovered to \$US1218 per tone in 2011, but with considerable variation between countries. Import prices into the US tend to be lower (US\$1100 per tone in 2012) compared with Europe (averaging US\$ 1400 per tone) and China (US\$1600 per tone).

Processed mango products traded globally include pulp, puree, juice, dried mangoes, pickled mangoes, chutney and mango flour. India, Pakistan and Brazil are the main exporters of processed mango. According to R.E. Litz, only 1% of mango production is used to make processed mangoes of this type. Another market which is growing, however, is prepared and packaged mango – partly because the fruit is deemed to be difficult to peel and prepare.

2.3 Potential export markets

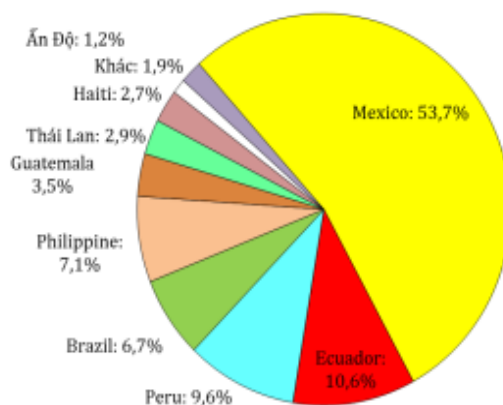
2.3.1 European Union

The EU imposes a variety of ‘must’ requirements on fruit imports, the most important of which is maximum residue level for a range of 450 different pesticides. GAP (Good agricultural practice) certification is increasingly common, though not compulsory for import to the EU. GAP certification requires that 9 different categories of criteria are met, including criteria on traceability, GM varieties, fertilizer storage, irrigation and plant protection. Global GAP certification is an expensive requirement to meet. Thailand has been able to secure wider access to EU markets through the development of its Thai GAP certification which, while cheaper to administer, has achieved trust and acceptance in European markets. The EU applies MFN duty rate of 24% on imported mangoes, plus €4.20 per 100 kg, with varying levels of sales tax applied in different member states.

2.3.2 United States

Latin American producers (Mexico and Brazil) have enjoyed a longstanding dominance of the US market. Followings are Ecuador, Peru and the Philippines. The US has strict measures in place to deal with invasive pests and foreign diseases and will turn away shipments suspected of pest infestation. Various treatments can be applied to address pest infestation: mechanical (shaken, washed, hot water dips), temperature treatment, fumigation and irradiation. The US requires that Indian and Thai mangoes undergo irradiation – which adds significantly to the cost. Vietnamese exporters need to be registered with the US Department of Agriculture’s Animal and Plant Health Inspection Service (APHIS) and apply for an APHIS permit – which can be a serious challenge for Vietnamese exporters. Following figure shows a structure of mango exporters to the US market.

Figure 1: Sources of mango supply to the US market by value, 2012



Nguồn: FAOSTAT, 2013

Under the Bilateral Trade Agreement between Vietnam and the US, which came into effect in December 2001, Vietnam can export fruit to the US with Most Favoured Nation status. Unlike Thailand and India, however, Vietnam has not been granted GSP (Generalised System of Preferences) privileges for import of agricultural produce without any import duties. If and when the Trans-Pacific Partnership is agreed and comes into force, then import duties would be lifted.

2.3.3 China

Given proximity and customer preferences, China is clearly a major potential market for mangoes from Vietnam, though competition from Thailand, Burma and the Philippines is intense. Thailand currently enjoys preferential zero rate duties but, with the China ASEAN Free Trade agreement coming into effect in 2015, opportunities exist for Vietnam to take advantage of preferential duties. China also requires vapour heat treatment of imported mangoes, though will also allow alternative treatments (such as Extended Hot Water Dip EHWD) for fruit from some countries such as the Philippines. Large quantities of mango enter the Chinese market through informal cross-border trade. Vietnamese varieties, such as Cat Chu, are popular in China.

2.3.4 Asian markets

Japan and South Korea require vapour heat treatment for imported fruit, which is less expensive than irradiation but still adds significantly to costs. The South Korean markets have remained heavily protected until recently – with the market opening to dragon fruit (in 2011) and mango (in 2012). While volumes still remain very low, Dong Thap and Tien Giang mangoes have started to enter these markets. A small volume (41.5 tonnes) of GAP certified fruit from the My Xuong Co-operative in Dong Thap and 40 tonnes from Hoa Loc Mango Co-operative in Tien Giang province, for example, were exported to Japan and Hong Kong in 2013. A number of Japanese and South Korean trading companies have come to Dong Thap and Tien

Giang to source supplies of mangoes but have found it difficult to find suppliers who can commit to producing sufficient quantity and quality consistently throughout the year. Anecdotal evidence would suggest, however, that there is considerable demand for Vietnamese mangoes in these markets.

3. Mango production in the Mekong Delta

There are 4 leading provinces where have the largest mango production areas in the Mekong Delta; they are Dong Thap, Tien Giang, An Giang and Vinh Long (Table 2). These provinces account for 72.8% of total mango area and 72.7% of total mango volume in the MD.

Table 2: Area and volume of mango production in the MD in 2013

Province	Cultivated Area (ha)	Harvest Area (ha)	% of area	Volume (tonnes)	% of Volume	Yield (tone/ha)
Dong Thap	9,200	8,319	28.4	123,870	29.7	14.89
Tien Giang	4,894	4,591	15.7	61,290	14.7	13.35
An Giang	4,664	4,217	14.4	64,251	15.4	15.24
Vinh Long	4,857	4,204	14.3	54,230	12.9	12.89
Others	18,185	7,985	27.2	113,627	27.3	14.23
The MD	41,800	29,316	100.0	417,268	100.0	14.23

Source: Statistical Yearbook of provinces in the MD and MDI survey data, 2014

Dong Thap province is also known for progressive local government with an open attitude towards inward investment. Dong Thap scored highest in the provincial competitiveness index ranking for 2012 and has been particularly strong in SME development. The province has the largest mango production areas of any province in the MD (9200 hectares in 2013). This area increased gradually by an average of 3.5% per year between 2009 and 2013. Average yield was 14.89 tonnes per hectare in 2013. According to provincial statistics, mango production in Dong Thap totaled 123,870 tonnes in 2013 (average 59,730 tonnes per crop). Mango cultivation is concentrated in areas along the banks of the Tien branch of the Mekong river, in Cao Lanh district and the rural areas of Cao Lanh city. Since the 2000 floods, the province has invested in the construction of protective river dykes which are maintained on an annual basis. Mango production is relatively well protected against flooding. Two main strains are cultivated: Cat Chu and Cat Hoa Loc. It is estimated that these two strains account for 83.4% of total harvest area; of which Cat Chu is about 62.9%.

Mango in Tien Giang, particularly, is nearby Dong Thap with the same production conditions but different percentage of mango strains. Tien Giang focuses mainly on Hoa Loc mango peaking 45.9% of total mango production, while Cat Chu is about 24.8%; especially price of Hoa Loc mango is normally double than that of Cat Chu. Both Cat Chu and Hoa Loc mangoes in Tien Giang province account for 70.7%.

Mango trees normally flower in January and February, though techniques can now be used to stimulate flowering at other times of the year. As with other fruit crops, there are benefits in

spreading out the harvest season throughout the year, in order to avoid seasonal gluts and to better meet consumer demand. According to Ministry of Agriculture and Rural Development, Mango cultivation is primarily a smallholder activity. The household survey carried out by the Mekong Delta Development Research Institute (MDI) for this project, covering a total of 223 smallholders, indicated average household cultivation area of 0.65 hectares per household (with a range from 0.1 hectares up to 3 hectares per household). Much of the mango area is situated close to residential areas and was originally paddy land converted to fruit cultivation under government programmes in the 1980's. Mango farmers responding to the MDI survey averaged 50 years of age and had an average of 15 years' experience growing mangoes.

Of those surveyed, 80% stated that mango cultivation was their primary source of income. Gross income from mango production was reported at an average of 216 million VND per household per year, with net income of 138 million VND (US\$ 109.5 per person per month at exchange rate of US\$1 = VND 21,000 and assuming average household size of 5). Clearly, mango cultivation is significantly more profitable than rice cultivation.

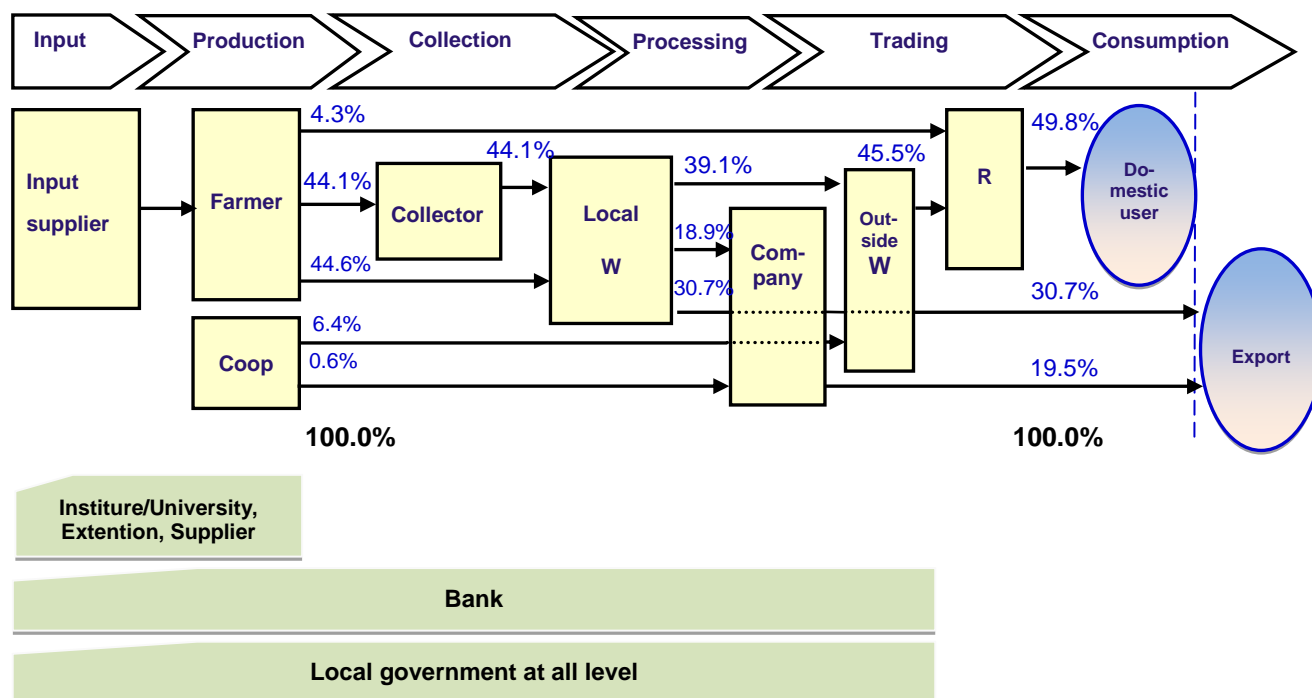
The survey results showed average production costs per hectare of VND 96.6 million (US\$ 4,600 per year) – a 5% increase on 2012. Of the sample surveyed, 30% of households financed mango production from external borrowing, primarily from the state agricultural bank and the state policy bank (Vietnam Bank of Agriculture and Rural Development and the Vietnam Bank of Social Policies). Loan sizes averaged VND 49.9 million – sufficient to cover production costs for about half a hectare. Inputs are transported primarily by motorbike from nearby suppliers at an average household cost of only VND 264,000 per year.

In 2013, only 161 hectares of mango cultivation were GAP certified of the two provinces: 1.25% of total harvested area. This included 46 hectares Global GAP certified and 115 hectares VietGAP certified.

4. Mango value chain in the Mekong Delta

Mango chain actors in the MD include farmer (F), cooperative (Coop), collector (C), wholesaler (W), company (Co) and retailer (R). The following table showed map of the mango value chain in the MD in 2013. There was 49.8% of the total mango in the MD distributed in domestic market and 50.2% for export.

Figure 2: Map of mango value chain in the MD



Source: Vo Thi Thanh Loc et. al, 2014

4.1 Farm level

The household survey conducted for this project showed that 44.1% of farmers sell their produce to small scale local collectors. A further 44.6% sell to local wholesalers, with a handful selling directly to individual retailers. Virtually none of these sales are based on advance contracts – with prices fixed at the time of sale. Over 44.7% of respondents sometimes sell their mangoes at the farm gate. Over 44% will transport some of their mangoes themselves to either collectors or local wholesalers, usually by motorbike or small lorry. Almost half of the surveyed farmers (45%) sort mangoes before selling as they were able to secure higher prices for higher grade produce. Mangoes are usually picked in the morning or late afternoon and packed by households in bamboo baskets, padded with paper, straw or sedge. Mangoes are not refrigerated or treated with preservatives.

4.2 Co-operatives

In Dong Thap there is currently one mango cooperative, My Xuong Cooperative, which has received support from the provincial government to cover the costs of GlobalGAP and VietGAP certification. There are also 27 co-operative groups that are working towards achievement of GAP standards. Two of these, in My Tho town and Tinh Thoi commune, have achieved GAP standards already but cannot afford certification costs.

MY XUONG CO-OPERATIVE IN DONG THAP

- Established: 2012
- Location: Cao Lanh district, Dong Thap province
- Membership: 50
- Executive Board: 3 members – Director, Vice Director, Accountant.
- Production area: 21 hectares with the volume 100 tonnes in 2013 (85% Cat Chu and 15% Hoa Loc)
- Packaging: The co-operative packages mangoes in card boxes which is said to reduce damage and various forms of infestation post harvest.
- Sales: Wholesalers in Hanoi and Ho Chi Minh City; twice exported directly to New Zealand and Bangladesh. One Korean company buys direct from the co-operative.
- Branding: Cooperative uses the 'Cao Lanh mango' brand
- Prices: My Xuong Co-operatives sells Grade 1 Cat Chu mangoes (over 300g) at VND 25,000, compared with VND 15,000 for Grade 2. Grade 1 Hoa Loc mangoes sell to agents at VND 70-80,000 per kg.

Similarly, Tien Giang has only one cooperative, namely, Hoa Loc Mango cooperative where was also supported by provincial government to cover the costs of GlobalGAP and VietGAP certification.

HOA LOC MANGO CO-OPERATIVE IN TIEN GIANG

- Established: 2002
- Location: Cai Be district, Tien Giang province
- Membership: 105
- Executive Board: 6 members – Director, 2 Vice Directors, Accountant, controller and cashier.
- Production area: 65 hectares (of which 21 ha certified VietGap and GlobalGap with the volume of 150 tonnes sold by contracts in 2013 (100% Hoa Loc mango)
- Packaging: The co-operative packages mangoes in card boxes for buyers.
- Sales: Wholesalers in Ho Chi Minh City (70.6%), in Hanoi (1.7%) and export 27.7% to Hong Kong and Japan in 2013.
- Branding: "Hoa Loc mango, product 100% of Tien Giang"
- Prices: Grade 1 Hoa Loc mango (over 300g) at VND 65,000 – 80,000 per kg, compared with VND 35,000 – 40,000 for Grade 2.



Hoa Loc mango from Hoa Loc cooperative



Cat Chu mango from My Xuong cooperative

4.3 Collectors

Collectors are the small traders that link producers to the larger market. They are informal, family concerns rarely hiring labour outside of the peak harvest season. A total of 20 collectors were interviewed by MDI as part of this research. Most collectors use a motorbike or a small lorry (capacity 1.2 tonnes) to carry out their business. Collectors pay cash on delivery to farmers and purchases are not based on contracts. The capacity of individual collectors clearly varies but for the sample of 20 collectors interviewed, each collector traded, on average, 98.2 tonnes per year. Collectors differentiate between mangoes of different quality and pay a premium of VND 3,000-5,000 per kg for grade one mangoes. In general, they will accept mangoes of a wider quality range than the local wholesalers. About a quarter of collectors interviewed borrow funds to finance their trading activities – with average loan size of VND 43.2 million.

4.4 Local wholesalers

Around 20 major local wholesalers dominate the mango trade in Dong Thap and Tien Giang. They are family businesses – usually not formally registered as companies – which employ an average of 10 people including women to sort mangoes and men to carry them. They purchase mangoes from both collectors and directly from farmers. Wholesalers pay cash up front and transactions are not based on contracts. Mangoes are transported mainly by boat or 1 tonne lorry.

Local wholesalers interviewed for this research by MDI traded an average of 640.2 tonnes each in 2013, of which 23.2% were Cat Hoa Loc variety, 59.1% Cat Chu and other mangoes 21.8%. Cat Hoa Loc mangoes are mainly absorbed by the Ho Chi Minh City market and are sold on to wholesalers and agents in the city, as well as to supermarkets and other retailers. Cat Chu mangoes are sold to processing and export companies with one third exported directly by local wholesalers, primarily to China. Most wholesalers access commercial capital to finance their business – with loan sizes averaging VND 186 million.

Particular in Dong Thap, much of the trade in mangoes is carried out at the My Hiep wholesale market with 100-200 tonnes per day passing through the market. From this market, produce takes 2.5 hours to reach Ho Chi Minh City, 52-56 hours to Hanoi and 4-5 days to Guangzhou in China. My Hiep is a large market covering an area of 5 hectares situated close to Highway 30. A total of 50,000 tonnes passes through the market annually, including mango, longan, lemon and guava.

In addition, there were 8 interviewed wholesalers from outside the MD (HCMC, Hanoi and highland region). They buy mangoes from local wholesalers (39.1%) and cooperatives (6.4%) and then distribute them to retailers. Both of local and outside wholesalers are high risk of mango damage (30% of total volume in 2013).



Cao Lanh mango rot of a wholesaler in Hanoi

4.5 Processing and export companies

All of the processing and export companies that purchase mangoes in the MD are situated in Mekong Delta provinces and Ho Chi Minh City.

The main companies include:

- Phu Thinh Limited Liability Company (LLC), Hau Giang Industrial Zone
- Long Uyen LLC, Tien Giang Industrial Zone
- Quoc Thao LLC, Vinh Long Industrial Zone
- That Su LLC, Ho Chi Minh City
- Duyen Hai Economic Development Company, Ho Chi Minh City
- Le Fruit company, Cantho Industrial Zone
- Hachando company, Ho Chi Minh City
- Vinh Loc LLC, Ho Chi Minh City
- Green Food company LLC, Ho Chi Minh City
- Viet Duc Food Technology company

There are two main types of business. The first is export of fresh fruit – usually VietGap or GlobalGap certified fruit purchased from co-operatives like My Xuong and Hoa Loc mango Cooperatives. The main markets for these mangoes are Hongkong, South Korea, Japan, New Zealand and Bangladesh. The second business is the processing of mangoes – normally Grade 2 Cat Chu mango – and export of mango products. This is normally carried out by companies that process a range of other fruit products. The main markets for mango products are also South Korea and Japan, as well as Singapore, EU and China.

4.6 Retail market

A small proportion of mangoes are sold on a retail basis within the MD, including Dong Thap and Tien Giang. Market sellers tend to buy directly from farmers or collectors. There is about 500-700kg of traded mangoes per day, particularly in Dong Thap and Tien Giang it is about more than 1000 kg of mangoes are traded per day. Some Thai and Cambodian mangoes are also evident in the local market.

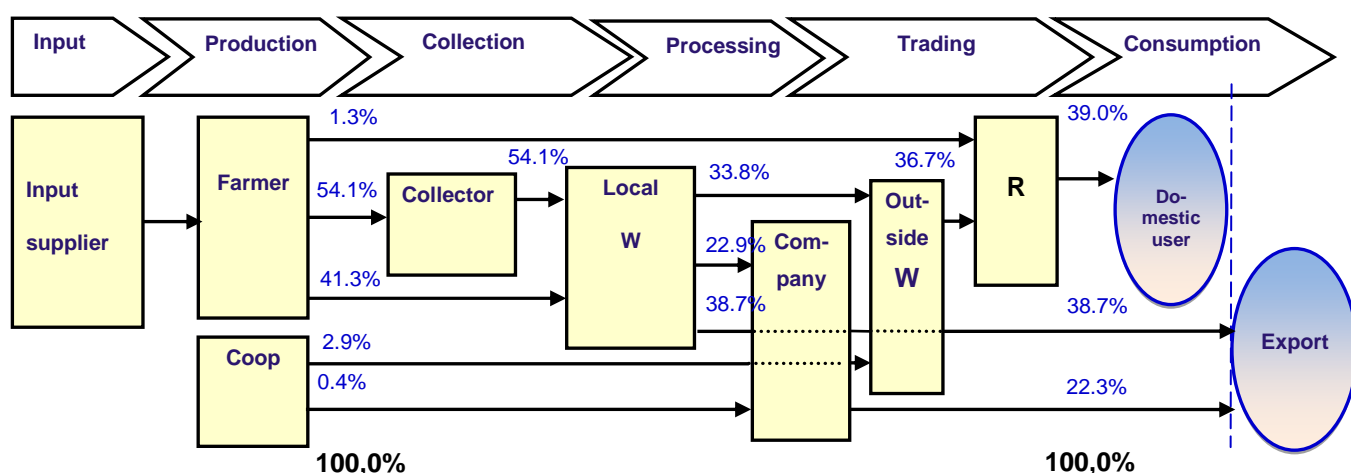
4.7 Cat Chu mango value chain

In 2013, Cat Chu variety mangoes accounted for 59.1% of total mango production in the MD. Cat Chu mangoes are predominantly exported (61%), mainly through informal cross border trade with China. Top grade Cat Chu mangoes are popular in the Hanoi market, partly as they are cheaper than the Cat Hoa Loc variety. For the same reasons, Grade 2 Cat Chu mangoes are popular with processors.

Farmers receive a similar price for produce destined for the domestic and export markets. The only real price premium is earned by cooperatives which sell Viet GAP or Global GAP certified fruit to export companies. The MDI research shows that when farmers sell Cat Chu mangoes at VND 14,000 per kg to collectors, cooperative is able to sell certified grade 1 fruit at VND 23,550 – 25,0000 per kg. However, this channel accounts for only 0.4% of total Cat Chu production.

Typically, farmers make VND 7,990 net profit per kilogram of mangoes – slightly more if they transport produce to the local wholesaler themselves. This compares with net profit of around VND 900 per kg earned by collectors. Local wholesalers make between VND 2,220 and 2,800 per kg – earning slightly more if exporting to China than to the domestic market.

Figure 3: Map of Cat Chu mango value chain in the MD

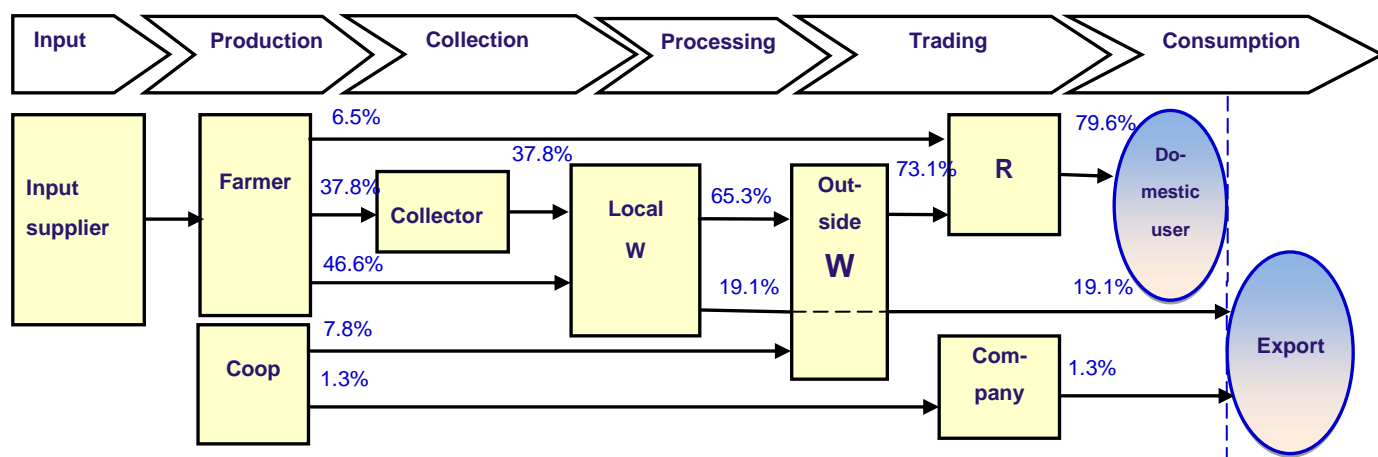


Source: Vo Thi Thanh Loc et. al, 2014

4.8 Hoa Loc mango value chain

In 2013, the Hoa Loc variety accounted for 23.2% of production in the MD, of which 79.6% entered the domestic market and 20.4% for export. The main domestic market is Ho Chi Minh City. The prices for Cat Hoa Loc mangoes are almost double those for the Cat Chu variety. Therefore, they are consumed primarily as a fresh rather than a processed product. The main export destination is China, through informal border trade.

Figure 4: Map of Hoa Loc mango value chain in the MD



Source: Vo Thi Thanh Loc et. al, 2014

At the time of the MDI research, farmers were selling Hoa Loc mango for VND 34,320 per kg, or VND 39,360 if selling directly to local wholesalers and were making VND 24,390 – VND 26,260 net profit per kg – 3.5 times per kg the profit from Cat Chu mango. Collectors were making net profit of VND 4380 – again, much more profitable for them than the Cat Chu variety. Local wholesalers were able to sell Hoa Loc mango for VND 48,200 for the domestic market and VND 60,670 for export to China, making net profits of between VND 5180 and for domestic consumption and VND 12,880 per kg for export to China.

In all cases, farmers were calculated to earn between 40% and 70% of total value added per kilogram in the whole in-country value chain.

4.9 Support institutions and programmes

Vinafruit is a national trade association established in 2001 that represents the interests of fruit and vegetable export companies. It co-ordinates with government on the development of the fruit and vegetable sector in terms of cultivation, processing, preserving, trading. It helps to link Vietnamese companies with companies overseas. The association supports research and training to improve productivity and quality in the sector. It also represents member companies in discussions on trade and regulation with the government. Vinafruit has been assigned responsibility by the government to promote company exports overseas as well as carrying out

market research and surveys. Vinafruit is a national organisation based in Hanoi and does not have any representation in the MD.

MDI Mango value chain workshop in Cao Lanh, April 22nd 2014

A wide variety of government programmes and policies have been issued and implemented in support of the agricultural sector. In terms of support for production, they can be divided into four main categories: policies to subsidise agricultural inputs, to support research and technology, to develop infrastructure and to provide credit for producers. Many of these policies focus particularly on the largest output crops such as rice and coffee, with relatively limited policy attention given to the fruit sector.

Workshop on “Sustainable development of mango value chain in DT province”

Dated April 22, 2014



Of most direct relevance to the MD mango industry is the second category. In July 2008, the Prime Minister issued Decision 107/QĐ-TTg approving policies to support the production, processing and consumption of safe vegetables, fruits and tea until the year 2015. This decree set a target for all fruit and vegetables to be safely produced and VietGAP certified by 2015. As outlined elsewhere, however, budget provision to support this aim is more limited, with only 161 hectares VietGAP certified for mango sector under government programmes by 2014.

The government has also supported technical research relevant to the fruit sector. The Southern Fruit Research Institute has carried out more than 20 research projects on fruit, including mangoes, with government support between 2006 and 2011, including: ‘IPM research on mango, dragon fruit and pineapple in the southern provinces (2006-9), ‘Building production process for assuring quality and food safety of Hoa Loc mango and durian (2005-7) and ‘Research on seed selection and GAP for some main fruits of the southern provinces (pineapple, mango, dragon fruit, pomelo’ (2006-10). The issue remains, however, of how to

disseminate and apply the research findings amongst smallholder producers through the extension system.

The government also has policies to support trade in agricultural produce, including support for trade promotion and also reform of border gate and customs procedures. A national trade promotion programme was promulgated in November 2005 and has provided funds for technical advice on exports and organising trade promotion events. In the fruit sector, these include the Vietnam Fruit Festival series organised in the Mekong Delta on an annual basis. Investment, however, is relatively limited compared with the campaigns organised by the Thai fruit industry to boost exports to Asian countries.

Government regulation of border trade with China has not been effective and has adversely effected mango producers due to periodic long queues to cross the border – delays which have particular impact on trade in perishable goods such as fruit. Attempts to limit border trade to goods produced only in border provinces proved difficult to enforce and have been superseded by contradictory regulations.

5. Constraints

5.1 Production issues

Unpredictable weather, particularly heavy rain effecting flowering, was partly responsible for the very significant drop in mango production in the MD from 505,216 tonnes in 2012 to 417,268 tonnes in 2013. Some farmers believe that weather patterns are changing and adding to production risks. Weather clearly also impacts on the incidence of pests such as trunk borer, branch borer, fruit flies and plant diseases such as anthracnose. Adoption of 'Good Agricultural Practice' can mitigate against these risks. Covering fruit in paper bags reduces significantly pesticide and spraying costs, as well as reducing pest damage.

Many factors affect the adoption of good agricultural practice, such as levels of knowledge, commercial incentives to change production practices and procedural difficulties in implementing good practice. Cost is also a significant deterrent not only in terms of certification costs (described below) but also in terms of higher production costs. Farmers are currently paying VND 750 per bag for white paper bags and VND 1,200 for yellow paper bags manufactured in Taiwan.

Farmers also find it difficult to regulate flowering in order to spread out the timing of the mango harvest more evenly throughout the year. Attempts to find alternatives to the use of the growth retardant Paclobutrazol have not yet yielded results. As discussed above, the provinces Dong Thap and Tien Giang has established a target of balancing the mango harvest to 50% in the May – June period and 50% in the October – March period and more even harvesting is a top requirement of companies seeking to sign contracts for mango export. Spreading out the harvest seasons will also enable farmers to enjoy higher prices outside of the traditional harvest period. However, even the My Xuong and Hoa Loc Mango cooperatives have not been

able to effectively regulate flowering and harvesting. And purchasing companies have also noted that sugar levels in off- season mangoes (10-13% content) tend to be lower than market requirements (15-16%).

As mentioned above, gradations of mango of wholesalers are about 30% because of mango rot and damage during transportation and storage time. These problems requires farmers to have good storage after harvesting and use paper bags (prolongs maturity of mangoes more 4 days compared to mangoes without paper bags). In addition, mangoes with paper bags is higher VND 3,000-5,000 from farmers and VND 5,000-10,000 per kg from wholesalers in selling price than that of without paper bags; while costs of paper bags and labour is about VND 1,000-1,500 per kg.



Paper bags on mango tree



Mango with paper bags



Mango without paper bag

5.2 Organisation

Mango cultivation is a smallholder activity, with average cultivation area of 0.65 hectares per producer. This leads to a fragmented production system in which it is difficult to disseminate information, co-ordinate technological improvements, market produce to fulfill larger scale orders etc.

Organisation of producers into collective structures such as cooperatives or cooperative groups is relatively limited. Only the My Xuong and Hoa Loc Mango Cooperatives in Dong Thap and Tien Giang provinces have received solid state support in terms of management training, support for certification costs and registration of an official “Cao Lanh mango” and “Hoa Loc mango” brands. And even the Cooperatives face a wide variety of challenges, including:

- Limited capacity and professionalism of board members, who themselves are full time mango farmers.
- Insufficient working capital, given that the co-operative must make full immediate payment to farmers but experiences delays in payment from customers.
- Inability to organise collective input supply for members due to competition from private suppliers.

The fragmented production systems with low levels of trust is also reflected in the weak enforcement of contracts between participants in the value chain, with companies complaining that farmers are liable not to fulfill the original terms of a contract if prices rise and better terms can be achieved elsewhere.

5.3 Business environment

The business environment in Dong Thap and Tien Giang provinces are dominated by a large number of small wholesalers and traders which operate relatively informally as family businesses. All of the larger trading and export companies are located outside the two provinces, either in Ho Chi Minh City, Vinh Long or other provinces. The smaller wholesale businesses, while having strong local links with producers, do not have sufficient scale or reach to invest significantly in improving their supply chain. Particularly, there has been no local investment in fruit processing in Dong Thap, though one company, the Viet Duc Food Technology Company, is currently carrying out procedures to make an investment in a drying and processing plant in Thanh Binh district which will process mango, chili and pangasius fish fillets. The plant will occupy a 5,600 m² plot and aims to process 1,120 tonnes of fresh mango in the first year.

5.4 Policy environment

The provincial governments have started to place emphasis on support for the fruit sector in the recent years, for example through the registration of the Cao Lanh mango and Hoa Loc mango brands and support to the My Xuong and Hoa Loc Mango Cooperatives for GAP certification. Government supports for certification, however, have run into a variety of difficulties, most notable of which is the high cost of US\$9,000 per certified production unit for initial certification and US\$6,000 for subsequent re-registrations. This means certification is not viable without significant state subsidy, partly because the scale of production is small but also other constraints limit access to the premium export markets which require certification.

Stakeholders in the MD fruit sector also commented that there has been relatively limited support from the state or from relevant trade associations in terms of facilitating and promoting mango exports.

5.5 Market environment

The factors described above – production issues, fragmented production, low levels of certification – have resulted in very limited exports through formal channels – and heavy dependence on the domestic market and on the informal cross-border trade with China. Strong demand is apparent in the cross-border trade and prices offered are currently high. Chinese are often present in Dong Thap and Tien Giang, believed to be monitoring local price trends. The border trade is volatile, however, with limited premiums earned for higher quality produce. Traders also have very limited bargaining power, accepting whatever spot prices are offered by traders at the border. Because of the dominance of the China border trade, however, companies complain that it is difficult to encourage farmers to focus on quality of production.

6. Recommendations

6.1 Background

The recommendations below have been drawn up based on the research findings and suggestions made by stakeholders in the sector, particularly at a workshop organised by the Mekong Delta Development Research Institute in Cao Lanh on 22nd April 2014. In addition, a report on 'Restructuring the Agriculture Sector up to 2020 and vision until 2030' prepared by the Institute of Policy and Strategy in Agriculture and Rural Development (IPSARD) for the People's Committee of Dong Thap province particularly has also been consulted to establish consistency. It is encouraging that there is considerably overlap in the recommendations from both sources.

6.2 Orientation

Clear potential exists to increase mango exports, particularly to China (through formal trade channels), Japan, South Korea and other Asian markets. These markets are growing and are increasingly accessible to Vietnamese producers, particularly with the ASEAN-China Free Trade Agreement coming into effect in 2015. Increasing exports to these markets would enable producers to gain higher prices for GAP certified, grade 1 fruit and also reduce dependence of the local industry on informal cross-border China trade, considered to be a source of market instability at present. Experts agree that expansion of this market suggests a focus on increasing cultivation of the Cat Chu mango variety that is most in demand in these markets.

Production of Hoa Loc mango for the domestic market, particularly in Ho Chi Minh City, is currently the most profitable form of mango production and should be promoted and more limited growth potential although Tien Giang is home of the Hoa Loc variety. It suggests that this should be given secondary priority after Cat Chu.

There is also general agreement that there is potential to establish and develop some industrial capacity for mango processing – providing a new market outlet specifically for lower grade mangoes which are not possible to export as fresh fruit. Particularly in Dong Thap, agricultural restructure plan suggests designation of a mango growing area in Cao Lanh District and Cao Lanh City, covering 10 communes and wards, with a target cultivated area of 5,700 hectares, producing approximately 50,000 tonnes of mango per year. The plan suggests targets of 50% for grade 1 mango production, 40% for grade 2 and 10% for grade 3 (for processing industry). In addition, the plan also focuses on developing mango export potential in terms of improving quality, increasing GAP certification, spreading out fruiting and harvesting more evenly through the year, strengthening linkages between exporters and producers, improving the flow of market information through the value chain and active promotion of Vietnamese exports in target markets. The recommendations below are aimed at developing an approach for donors to follow a company-led strategy to address these issues, through the establishment of a business support facility.

6.3 Business support

We recommend the establishment of a business support facility that will identify, partner with, and support companies in the following categories:

i) Fruit trading and export companies with capacity and appetite to invest in their supply chain in the MD by:

- Piloting contract agreements for export with co-operatives, co- operative groups or farmer groups.
- Providing technical assistance to co-operatives and farmers to meet GAP requirements.
- Offering financial support for GAP certification of co-operatives or co- operative groups.
- Potentially providing credit for farmers to invest in inputs, drafting of new mango stock where necessary.
- Investing in improved cold storage in Dong Thap and Tien Giang.

Providing this kind of support to producers through companies has the strong advantage of linking the assistance to real market opportunities. It is a demand led approach that would be flexible as market conditions change. The focus of the facility would be on companies that trade in the MD mangoes in general, in Dong Thap and Tien Giang mangoes in particular. Companies currently sourcing mangoes in the MD are mainly from Ho Chi Minh city. A number of these expressed interest in strengthening their supply chains to develop their export business at the workshop organised by MDI in Dong Thap in April 2014.

ii) Companies with plans to invest in fruit processing facilities in the MD. Currently there are no fruit processing companies operating in Dong Thap – though one, the Viet Duc Food Technology Company – is currently in the process of acquiring land and registering for investment in Thanh Binh District. If successful, this and similar investments in processing facilities, could provide important new market opportunities not only for Dong Thap farmers but for other provinces, particularly those unable to meet higher quality and size standards for grade 1 mangoes.

iii) Service related companies. A specific but very obvious example here is the opportunity for a company to produce protective paper bags for mango cultivation according to GAP standards. Paper bags are currently imported at high cost from Taiwan (even though the bags are made from Vietnamese Bai Bang paper). There may also be potential for SMEs or co-operative groups to provide extension services, pest control services, out of season flowering etc.

A facility of this kind would need to work with only a small number of companies, selected in an open and transparent manner on the basis of track record in supporting farmers, commitment and capacity to make further investments in their supply chain and ability to develop export markets.

Such a facility should provide support to companies in the form of:

- Information: on GAP certification, on contracting arrangements, on export requirements, market opportunities, processing technology.
- Networking: linking companies to relevant sources of government support, trade associations such as Vinafruit, research facilities such as the Southern Vietnam Fruit Tree Institute, Can Tho University, potentially linking to banks to facilitate a farmer credit programme or to microfinance institutions operating in the local area such as CEP (Capital Aid Fund for Employment of the Poor) etc.
- Catalytic financial support – co-funding of farmer training, certification costs, piloting of contract farming etc.

Such a facility could be housed in a Vietnamese organisation outside of the government structure, independent of the companies that it would be set up to support but with a full market orientation and familiarity with the business environment. The types of organisation that might be considered to host such a facility include trade associations, research institutes or NGOs.

6.4 Co-operative support

As described above, the focus of support to develop the mango sector would be through companies that interact with producers as buyers, processors or service providers. However, companies cannot work directly with numerous individual small farmers. They need to partner with farmer owned collective institutions that can act as intermediaries between companies and individual farmers. In Dong Thap and Tien Giang, the My Xuong and Hoa Loc Mango Co-operatives are the sole example of a relatively strong specialised fruit producers' co-operatives, though 27 less formally organised co-operative groups are also operating. These co-operative groups have very limited financial resources and are managed by volunteers who are busy, full-time farmers. As outlined above, much of the technical support needed by co-operatives may best be provided through trading and processing companies. However, co-operative groups would also benefit from more generic capacity building that companies may not be best placed to provide. A business support facility could provide a range of management support directly to mango growing co-operative groups in the form of management and accounting training, advice on co-operative governance and link with other co-operative development initiatives such as the DFAT funded Asia Foundation project supporting co-operatives in the Mekong Delta.

6.5 Government support

To achieve the objectives of increased exports, local government agencies also play a crucial role in a number of areas and support is needed to ensure these roles can be carried out effectively. Activities include:

- Collecting global market intelligence on the mango sector and forecasting market trends and opportunities for mango producers.
- Actively promoting provincial fruit exports through: developing the ‘Cao Lanh mango’ and “Hoa Loc” brands, supporting attendance at trade exhibitions etc.
- Facilitating entry of new trading and processing companies, including international trading companies, to the provinces.

A business support facility might also consider providing selective support to the provincial People’s Committee to help carry out these functions.

6.6 Research support

Technical innovations may be best introduced to co-operatives and farmers through company relationships with co-operatives and producers. However, stakeholders interviewed by MDI also indicated that some technical issues still require additional research and development before widespread transfer to producers. In particular, further research is recommended on testing alternatives to the plant growth stimulant Paclobutrazol for stimulating early or late flowering of mango trees to better control fruit supply. A business support facility could consider providing financial support direct to specialist research institutes to address these technical issues.

Creating opportunities for mango farmers in the MD to develop higher value export opportunities is a complicated issue. It is clear that improved transport links with construction of the Cao Lanh bridge and completion of the Central Mekong Delta connectivity project, will reduce transport costs, increase market access and create opportunities for the producers. However, to translate these opportunities into real increases in income in specific sectors requires a wider set of actions involving companies, co-operatives, farmers, local government and the research community. The conclusions from this report suggest that donors such as DFAT could play an important catalytic role in supporting these activities using a company led approach. Engagement with trading, processing and service companies may be the best way to strengthen supply chains, transfer technology, facilitate access to finance and relay price and market information between farmers and their markets. The report recommends establishment of a business support facility within an independent Vietnamese trade association, research institution or NGO to engage with companies in this way, as well as providing selective direct support to co-operatives, local government and researchers to fulfill other vital roles within the value chain. If successful, it is suggested that a business support facility of this kind may form an example applicable to other key agricultural sectors in Dong Thap and elsewhere.

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