Final Report – NWC-FAO Farmer Market Linkage Activity for the Fiji Papaya Industry

project **Fiji Papaya Project**

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1 Executive Summary

This project was technically supported by the Food and Agriculture Organization of the United Nation's (FAO) Rural Infrastructure and Agro-industries Division (AGS) and funded by the EU-All African, Caribbean Pacific Agricultural Commodities Programme (project code: GCP/INT/045/EC).

The project coordinators undertook a preliminary study of the Fiji papaya value chain along with a financial analysis of this chain. This study identified all of the actors involved in the chain and the various issues affecting them. The primary objective of this study was to collect and analyse information that could be used in the development of training materials.

The financial analysis of the Fiji papaya value chain focused primarily on the export industry and drew heavily on recent market surveys to NZ supported by the EU Funded Facilitating Agriculture Commodity Trade (FACT) project. This market-back approach was very successful in identifying the key inefficiencies along the value chain and the improvements that need to be made in order address these issues.

The Fiji Papaya Supply Chain consists of a relatively large number of actors as compared to other papaya industries around the world. This fact is positive in that a larger number of people are benefiting from employment and livelihoods as a result of this industry. However, having a large number of actors has significant negative implications in regards to quality management and overall cohesion between the different actors.

Fiji papaya has serious quality issues which are likely due to the fact that there are so many different people handling the fruit from the farm to the market that it is almost inevitable that physical damage will occur. Furthermore, because this physical damage does not show up until the fruit begins to ripen (which is usually in an overseas market) there is very little scope for the handlers who likely caused the damage to realise the result of their actions.

Based on the outcomes of the stakeholder consultations and the findings of the value chain review, a series of training materials were developed to address the key issues. The training materials were intended to assist in the delivery of information under the training programme of the FAO/NWC Farmer Market Linkage project. The training materials developed were also intended to be used by extension partners well beyond the life of the project. On this basis a series of different training tools were produced that could be adjusted for the various training environments, i.e. classroom setting, on the farm etc.

Based on the outcomes of the stakeholder consultations and value chain analysis a training programme was designed. Detailed reports of each workshop are provided in support of this final report.

Following the completion of workshops the coordinators and selected trainers initiated a programme of mentoring and follow up that included; field visits to the Sigatoka Valley and Nadi area, meetings with MPI and TTM staff and meetings with exporters association.

Based on the outcomes of this project a number of key interventions have been identified that could be supported by FAO under the EU AAACP programme.

2 Background

Fiji is in the midst of an exciting and challenging period in its agricultural history. The decline of the sugar industry signals a passing of an economic era and a way of life for many people in the rural areas. Although sugar is still important to the economy the face of Fiji's agriculture sector is rapidly changing and going through a transition from plantation systems to smaller-scale diversified agriculture. This challenge has brought new crops, products and services to the sector. In this context papaya has been identified as a crop with the potential to be very profitable for smallholder and commercial farmers. While papaya farming has traditionally been considered a gardeners activity in Fiji it is now emerging as an important export commodity offering the opportunity for sustainable income and employment in the rural areas.

Under the EC funded ACP commodities programme AGS Agribusiness and Enterprise Development officer, Mr. Heiko Bammann fielded a mission to Fiji to consult with NWC, Ministry of Agriculture, exporters and small-farmer representatives about the interventions required to support small-farmers integration in the fruit and vegetable chain through NWC. The consultations discovered that NWC and the support services it offers, provides an excellent and feasible market entry opportunity for small-farmers, who already receive production related support through NWC, MAF and the Taiwanese Technical Mission (TTM), ACIAR, and SPC. NWC has prepared a description of its business model and, based on the business model, an action plan/upgrading strategy on how to more successfully integrate small-farmers into value chain for "Fiji Red" papaya. On this basis a sequence of activities were designed to successfully integrate small-farmers into the value chain for "Fiji Red" papaya and in turn improve the industries competitiveness and increase the volume of produce sourced from small farmers.

The support project was technically supported by the Food and Agriculture Organization of the United Nation's (FAO) Rural Infrastructure and Agro-industries Division (AGS) and funded by the EU-All African, Caribbean Pacific Agricultural Commodities Programme (project code: GCP/INT/045/EC).

Ironically, the commencement of this project coincided with one of the most devastating floods in Fiji's history. The flooding occurred between January 10th and 12th 2009. The extent of the flooding in the Nadi - Ba area is the worst in living memory. In Ba the water level reach exceeded that of the great floods of 1938. For these areas this is 50 year plus climatic event. In the Sigatoka Valley the level of the floods was significantly less than that caused by Cyclone Kina (1993). There was modest flooding of the building at Natures Way Cooperative but it did reach a level to damage machinery and equipment.

For Fiji's papaya industry this flood could not have come at a worse time, in December 2009 a record level of 15 tonnes a week of papaya were being exported which drastically fell to only 5 tonnes in the whole month of January 2009. The assessment was that about 60% of papaya trees have been lost which is lower than was originally envisaged. Most of the crop remaining was in the middle and upper Sigatoka Valley. These trees tended to be small trees that offer less resistance to flowing water. Immediately after the flood there was still a modest amount of fruit available for export, however, a majority of this fruit was sold on the local market where premium prices were on offer.

3 Overview of the Fiji Papaya Supply Chain

In preparation for the training programme for stakeholders of the Fiji papaya industry a baseline mapping of the Fiji papaya supply chain was carried out to identify all of the actors involved in the chain and the various issues affecting them. The primary objective of this supply chain mapping exercise was to collect and analyse information that could be used in the development of training materials.

3.1 Seedling suppliers

The availability and quality of papaya seedlings is a critical initial link in the papaya supply chain. The Fiji papaya industry has long struggled with this aspect and as a result the NWC Field Service continues to support the industry through the importation and distribution of seeds. It is the intention of the NWC Field Service to continue imports of papaya seed to supply to its smaller farmer members; this is done merely as a service to its members as there is no significant profit arising from these sales. There are 4 other companies that are importing and raising the sunrise solo variety, these are;

Sigatoka Research Station

MPI Sigatoka Research Station has a long history of papaya seedling production dating back to early the early of work of the late Professor Nakasone of the University of Hawaii who is heralded as a grandfather of commercial papaya production. Due to a number of factors including loss of key technical personnel and funding issues the Sigatoka Research Station has fallen out of large scale papaya seedling production. Over the last few years as the station continued to produce seedlings on a small scale, the station developed a reputation for producing low quality seedlings from seeds collected from surrounding farms.

After the January 2009 flood the Sigatoka Research Station was injected with much needed the much needed resources to continue nursery production. At present the Sigatoka Research Station are offering seedlings at a selling price of $0.43 and farmers can apply for a subsidy whereby they are sold on 1/3rd to 2/3rd share cost with the Government.

Taiwan Technical Mission (TTM)

TTM import seed and raise their own seedlings at their demonstration farm in the Sigatoka Valley. Their primary objective is to supply growers who are under their farming scheme. Members are sold individual seedlings at $0.40 a seedling while growers outside the group are offered seedlings for $0.50 each. Quality of papaya seedlings from TTM is reported to have improved dramatically over the last two years and the majority of farmers receiving seedlings from TTM are quite satisfied. While TTM have indicated that their papaya support programme will continue it is highly probable that this could change over the next few years or at any instance due to political shifts.

British American Tobacco (BAT)

British American Tobacco has been recently involved in papaya seedling production. To maximise the use of their nursery facilities during off seasons they have sourced seeds directly from Hawaii and produce seedlings for farmers for $0.50 a seedling. BAT's input have been able to cushion the undersupply problem that farmers were facing. The quality of seedlings produced by BAT is very high, however because tobacco is their core business the availability of supply has been poor.

Bula Agro

Bula Agro is an established private nursery that is involved in raising fruit and vegetable seedlings; primarily to supply farmers in the Nadi district. With a history of consistent quality seedlings Bula Agro have been able to secure contracts with MPI to supply papaya seedlings to farmers who are involved in vegetable and fruit farming. They have been able to maintain a good image with MPI and as a result have secured long term contracts with Ministry of Agriculture. Bula Agro offers seedlings in trays at $6.00FJD (50 plants in a tray).

Produce Specialties Limited (PSL).

PSL is Fiji's leading papaya grower and exporter and have been very successful in raising papaya seedlings for their own commercial farms and out growers. PSL imports all their seed from the University of Hawaii. PSL have recently experimented with direct seeding in their fields which has produced mixed results. It is likely that PSL will continue to produce seedlings for their own farms and for their out growers.

Uno Ltd.

Through "Contract Growers Agreement" Uno has successfully implemented a Papaya project in the Natovi Region, demonstrating a successful test of contractual growing in Fiji without the need or use of land leases whereby indigenous farmers use their land to grow the contracted crops (Uno provides the seedlings at no cost to the farmer) so there is no need for farmers to secure loans to plant the crops. Uno Ltd produces papaya seedlings at a makeshift nursery in Dawasamu which are distributed to four farmer groups in the Natovi / Luvunavuaka area.

3.2 Farmers

Sigatoka – East bank and West bank

This is the geographical area that contributes to nearly 60% of the total papaya production in Fiji. Data collected from MPI research Sigatoka revealed that there are currently a total of 165 registered farmers in this region. Although most of these farms were devasted during the January floods, post- flood data revealed that 22.65 ha of papaya were newly planted. Baseline surveys indicate that the average farm in this area consists of around ¼ acre of papaya combined with a range of other horticultural crops.

Sigatoka Coastal

The Sigatoka Coastal areas account for 22 papaya farmers. Latest figures from MPI show that farmers along this area have a total of 8.6 ha under papaya. These farms are situated along the main Queens Highway.

Nadi – Lautoka corridor

The latest figures from MPI staff in Nadi indicate a total of 12 growers only in this area. Despite the close proximity to Natures Way treatment chamber there has not been any significant papaya plantings in this area in the last couple of years.

Dawasamu- Tailevu

The area of Dawasamu, Tailevu is the most remote papaya growing location located between the boarders of Ra and Tailevu province. Most of these villagers in this area are subsistence farmers however through a recent "Contract Growers Agreement" with exporter Uno; there are now approximately 20 households involved in papaya production. The exporter has also acquired the services of a specialist agronomist to help out the farmers with seedlings and give technical advice on the best suitable husbandry practices that would suit there humid and mostly damp climate.

3.3 Extension partners

Taiwanese Technical Mission (TTM)

The Taiwanese Technical Mission (TTM) is based on the West bank of the Sigatoka River beside the MPI Sigatoka Research Station. TTM are involved with a number of horticultural crops including tomato, capsicum, lettuce etc. TTM have a core demonstration farm and nursery and also engage farmers through training and supply of inputs.

TTM have had a significant papaya component for the last two years and have been influential in raising production levels for papaya growers in the Sigatoka valley and surrounding areas. Equipped with a very efficient field service team they service both the West and East banks of the Sigatoka valley which are the main papaya growing areas in Fiji. At present TTM has 9 groups of farmers with a total of 39.5ha of farmland planted to papaya. TTM offer technical training and support as well as a supply of agro inputs to farmers on a micro-finance scheme where farmers are required to pay back the loan when they begin harvesting. TTM aims to increase papaya production and farmer income while generally promoting rural economic development. Their extension model is successful in many respects due to the fact that they visit every farmer once a week. They are well financed with good vehicles and an apparent high level of operating capital.

Ministry of Primary Industries – Agriculture extension division

The Ministry of Primary Industries – Agriculture extension division has officers located all over Fiji with the objective of providing technical expertise to farmers on production issues as well providing a link to the Government ministries.

The Sigatoka Research Station extension service provides support to papaya farmers in the upper regions of the Sigatoka valley (Keiyasi), the mid valley region (Dubalevu), the lower valley (Bilalevu), the East bank and the cane coastal areas. These are all areas where papaya is currently being grown. Within these areas there are specific locality officers assigned to all the different communities. Locality officers provide services such as farm registration services for farmers intending to export, technical training and farmer field days, farm hygiene and sanitation inspections, technical advice and promoting awareness on post harvest handling and quality management. Despite the fact that they are under resourced due to limited budgets they continue to assist farmers as best as possible.

3.4 Domestic traders

There are a number of domestic traders involved in the papaya value chain. These traders have a range of fruit and vegetable crops for sale locally. These domestic traders can be divided into four broad groups;

Roadside vendors

The emergence and growth of roadside vendors in Fiji over the past 10 years has been significant. Roadside vendors basically supply motorists and people who do not have time to visit municipal markets. Due to the very low overheads many roadside vendors sell produce at competitive rates which has led to their success in Fiji.

Many of these roadside vendors will either sell their own papaya or buy from farmers on a per crate basis and then divide them into heaps which are sold for $2-$3 dollars. The quality of the fruit is generally not as good as that supplied for export.

Market vendor

Market vendors comprise of both indo Fijian and Indigenous Fijian farmers and middlemen. Vendors either have their own papaya farms or buy it from farmers on a per crate basis either at the market or at the farm gate. The price of papaya selling at the local market is generally higher than roadside vendors, taking into account the stall fees and the transport costs incurred by the vendor. A heap of papaya at the local municipal market could range from $3.00 a heap to $1.00 a fruit.

Middleman

Middlemen usually carry cash with them and do direct dealing with farmers at the farm gate. They have their farmer and buyer contacts and will drive around trying meet orders. It is reported that these middlemen will 'poach' fruit from farmers already contracted by exporters. Since farmers registered to exporters get paid at the end of the month, many farmers are tempted to receive cash in return for papaya meant to be supplied for the export market.

These middlemen will then sell on the papaya to hotels, restaurants, market vendors or supermarkets.

3.5 Transporters and handlers

Aside from exporters and middlemen operating their own vehicles, the transport sector of the papaya supply chain consists primarily of informal transporters including lorry drivers, bus drivers etc. These informal actors generally do not consider themselves as part of any supply chains. In the case of the papaya industry where the focus is on the export market with middlemen taking a majority of the non-export fruit there are a relatively few transporters.

NWC Staff

NWC staff has the primary role of quarantine treatment. Due to the BQA pathway in place for exports, NWC staffs are also involved in the sorting, grading and packing of fruit. NWC staff will handle all of the fruit intended for export at least twice, once prior to treatment and once after treatment. As a result of this system NWC staffs hold a very important handling role in the papaya supply chain and require a high level of understanding of post harvest issues. NWC staffs along with quarantine staff are able to reject fruit unsuitable for export both pre and post treatment. Data available indicates that there is a high level of rejects at the chamber (Annex 1).

Exporters staff

Exporter's staffs pick up papaya fruit at the farm gate and will be responsible for the transporting and handling of this fruit until it is delivered to NWC. Exporter's staffs play a critical role in ensuring maintenance of post harvest quality.

Air Terminal Services (ATS)

Air Terminal Service (ATS) staff are based at the International Airport and are responsible for collecting the Loading Devices (containers) from NWC and delivering it directly to the aircraft or to the freight companies (in the event of a delay). ATS staffs have an important role in ensuring that the containers are collected on time and quickly transferred to the airlines or freight companies. It is reported that there has been a number of cases where whole shipments of papaya have been damaged because ATS staff have left them in the sun for up to 6 hours. It is important that ATS staff understand the nature of the product they are dealing with and as such consider themselves as part of the value chain.

Freight companies

Freight companies will handle an exporter's shipment of papaya when there is a delay between the when the fruit has been packed at NWC and when the airline loads the cargo. Freight companies act on the exporter's behalf to liaise with ATS on what to do with the fruit. Freight companies have cooler facilities where they will hold fruit. As with ATS it is important that the staff at the freight companies understand the specifics of the product that they are handling so that they can make informed decisions on how to manage it.

3.6 Exporters

There are approximately nine exporters handling papaya at present. From these nine exporters there are four main exporters that handle the majority of papaya exports. A summary of these four export companies is provided below while a detailed report is available in the Buyer Consultations Report.

PRODUCE SPECIALTY (PSL)

Produce Specialty Ltd. (PSL) is Fiji's biggest papaya producer and exporter with farm and satellite farmers stretching from the Banks of the Sigatoka valley to the cane belt districts of Nadi, Lautoka and Rakiraki. PSL are producing, packing and exporting papaya to New Zealand, Australia and Japan. PSL have advanced to new methods of planting papaya which have resulted in improved quality and higher yields per tree. PSL have now taken the lead in the industry and have adapted to organically grown papaya, due to the unfavourable weather the organic trial had to be abandoned. PSL have recently adopted Hawaii's planting technique of direct sowing. They currently have 9 acres [3.6 ha] of papaya which were direct seeded on the East Bank of Sigatoka River and are performing very well.

MAHEN'S EXPORTS

One of the oldest exporters, ranging back some thirty years. Apart from their ninety acres of vegetable farm land they have invested heavily on out growers around the country to supplement their produce. Managing Director attributes their success to spreading their supply source all over the country from the upper regions of the Sigatoka valley to the cane belt districts of Nadi, Lautoka, Ba, Tavua and Rakiraki. They also span from to the eastern division to the interior of Naitasiri where they

source their ginger from. They spread their risk around to maintain their supply and this has worked out well.

UNO

Through “Contract Growers Agreement” Uno has successfully implemented a Papaya project in the Natovi Region, demonstrating a successful test of contractual growing in Fiji without the need or use of land leases whereby indigenous farmers use their land to grow the contracted crops (Uno provides the seedlings at no cost to the farmer) so there is no need for farmers to secure loans to plant the crops. According to Uno, this pilot project catapulted them to becoming the largest exporter of Papaya in the South Pacific and established the new concept and strategy of "Growers Agreements" in The Fiji Islands.

RAMS VALLEY FRESH

Rams Valley fresh is one of the smaller papaya suppliers that has made a name for themselves in the Papaya Industry. From humble beginnings the three year old Export Company boasts a colourful record, being awarded “Best small exporter of the year”, which is the premier award for new and established exporters who continue to invest and develop the Agricultural sector. They currently have a group of nineteen farmers who constantly supply them with papaya, eggplants, okra, chillies, curry leaves and spices for export. Rams Valley Fresh is based in Bila Levu in the Sigatoka Valley,

3.7 Fiji Quarantine and Inspection Service (FQIS)

The primary role of FQIS is to strengthen biosecurity and regulatory services to protect Fiji’s natural resources to develop for food and income security (improve livelihoods and alleviate poverty). FQIS also maintains Fiji’s “Area Free” zone from specific pest and diseases. Their role is also to maintain Fiji’s strategic advantages as a relatively pest-free country from high-risk pest and diseases.

FQIS play a critical role in the Bilateral Quarantine Agreement (BQA) which is in place for exports of fruit fly host products. Under this BQA FQIS carry out a number of functions along the supply chain including inspection and grading and eventually issuing the phytosanitary certificate. At present FQIS is the only body that has the regulatory authority to reject papaya for exports. Rejects are usually on the basis of fruit being too green or too ripe however in the case that a disease or pest is discovered on the fruit it will also be rejected.

4 Financial analysis of the Fiji Papaya Value chain

The financial analysis of the Fiji papaya value chain focused primarily on the export industry and drew heavily on recent market surveys to NZ supported by the EU Funded Facilitating Agriculture Commodity Trade (FACT) project. This market-back approach was very successful in identifying the key inefficiencies along the value chain and improvements that need to be made in order address these issues. The analysis began with an assessment of the market potential and requirements for achieving these markets. At present Fiji papaya is only exported to two markets; New Zealand and Australia. Of these two markets, NZ represents the most significant share of Fiji's exports and on these grounds this study chose to focus on this market. The findings of the analysis can be easily applied to the Australian market as well.

Four main areas were identified as hindering the industry from achieving its full market potential and for allowing the various actors along the chain to achieve maximum profitability. These broad areas include;

- Price competitiveness
- Reliability of supply
- Quality
- Marketing

4.1 Price competitiveness

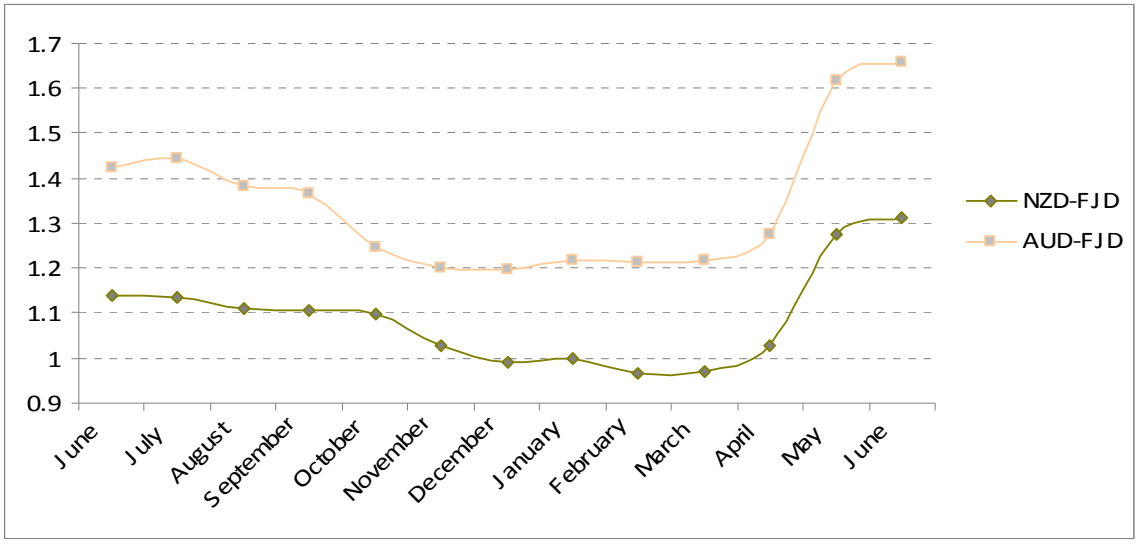
In 2008 the price of Fijian papaya (measured in term of value for duty purposes) was 25% higher than that of the price of papaya from Fiji's main competitors in the NZ market, the Philippines. On this basis a number of areas were investigated that would allow Fijian papaya to be more price competitive, including:

- Improvements in the terms of trade between Fiji and New Zealand
- Reducing the price paid to growers
- Reducing the cost of quarantine treatment
- Reducing transportation costs.

4.1.1 Improvements in terms of trade

On April 15, 2009 there was 20% devaluation in the Fijian dollar. Over the prior 12 months the Fijian dollar had appreciated by around 17 % against the NZ dollar and by 12 % against the Australian dollar (figure 1). Thus in the lead up to the devaluation Fiji papaya was losing competitiveness in both markets – but particularly in New Zealand. With the devaluation there was significant immediate enhancement in the competitiveness of Fiji papaya on export markets. This improvement in competitiveness is, however, less than 20%. Papaya production and marketing uses significant amounts of imported inputs (fuel, fertilizer and other agro chemicals). The cost of these imported inputs can be expected to increase in the order of 20%. It is estimated that imported items constitute 40% of the cost of growing papaya (Farmer Budget 1) and 30% of the cost of marketing papaya (Exporter Budget 1). The duration of any advantage from the devaluation for papaya exports will depend on by how much and for how long grower prices and labour wage rates can be contained. However, the devaluation has certainly given the Fiji industry some breathing space to improve competitiveness through more fundamental efficiency gains.

Figure 1: Exchange rates for 12 month period, June 15th 2008 – June 15th 2009) (1 NZD/AUD = FJD)



* FXHistory © 1997-2009 by OANDA Corporation)

4.1.2 Reducing the price paid to growers

The Farmer Budget 1 produced as part of this financial analysis shows the returns to a farmer planting 1 acre of papaya a year for three years and utilizing hired labour. At a farm gate price for papaya to be exported of 90c/kg (the price received prior to January 2009 floods) and 70c/kg for papaya sold on the local market, the returns to the farmer are estimated as follows:

- The average gross margin over a 5 year period from the 3 acres planted - $11,051
- The average gross margin per acre - $3,684

At a farm gate price of 90c/kg an exporters estimated fob (to the point of export) price is $1.88/kg (Exporter Budget 1). At current freight rates this results in a landed price in New Zealand of $3.60/kg (or NZ$2.70 – 1 FJD = 0.75 NZD) (Exporter Budget 1).

At farm gate purchase price of 80c/kg the estimated NZ landed price is $3.44. At a farm gate price of 80c/kg, all other factors remaining the same, the returns to farmer are as follows;

- The average gross margin over a 5 year period from the 3 acres planted - $9,670
- The average gross margin per acre - $3,223

(Exporter Budget 2 – 80 c price scenario)

The impact on grower returns and the export price of the 10c/kg reduction in the grower price is summarised in table 1 below.

Table 1: Estimated grower returns and landed prices for different farm gate prices

Farm gate price ($/kg)	Gross margin/acre ($)	Landed price in NZ ($/kg)
$0.90	$3,684	3.60
$0.80	$3,223	3.44

A farm gate price decrease in the order of 10c to 20c/kg could be expected as supply expands with increased plantings. These prices are still seen to provide growers a reasonable return considering the alternatives available from their labour and land resources. Gross margins for planting sugar in the Sabeto Valley, for farmers wishing to plant papaya, indicated a negative return per acre (Annex 1). However, a decline in the farm gate price does not necessarily mean a decline in farm income derived from growing papaya if the decrease in price can be offset by increasing yields and reducing reject rates. There can even be an increase in farm income if the gains from increased productivity and improved quality more than offset the decline in price. In essence the objective of the Fiji Papaya Project is to simultaneously improve the competitiveness of Fiji papaya exports and increase the income derived from growing papaya.

4.1.3 Reducing the cost of quarantine treatment

Natures Way Cooperative (NWC) began treatment operations in October 1996, with the treatment rate set at 40c/kg. This treatment charge remained unchanged until June 2008. A treatment charge of 40c/kg was established based on projections that the business would be able cover its operating costs within in a period of 3 to 4 years. Thus sufficient working capital was necessary from the outset cover initial short fall in revenue. In recent years exporters have argued that treatment charges were too high and that it reduces their international competitiveness. In early 2008, in response to demands of exporters, NWC undertook a review of treatments changes.

Table 2 compares treatment charges with other costs over the period 1996 to 2007. Over this period when there was no increase in treatment charges, whereas base wages increased 50%, electricity charges per unit have increased by 6% and the unit cost of gas has increased by some 120%. Airfreight charges to exporters have increased by over 30%.

Table 2: A comparison of treatment rates with other charges over the period 1996 to 2007

		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	% incre
treatment charge	(c/kg)	40	40	40	40	40	40	40	40	40	40	40	40	
wage (packer and grader)	$/hr	1.74	1.74	1.74	1.74	1.74	1.9	1.9	2.05	2.05	2.25	2.25	2.25	5
electricty	$/kwh	0.18	0.18	0.18	0.21	0.21	0.21	0.21	0.21	0.21	0.24	0.24	0.24	
gas	$/kg	1.1	1.1	1.1	1.38	1.48	1.58	1.58	1.68	2.11	2.11	2.31	2.31	12
freight (LD8 to Auckland)	$/kg	0.82						1.1				1.36	1.15	3

The review found that NWC treatment charges were more than competitive with equivalent quarantine treatment facilities, for which data was available. These are in the Cook Islands and Molokai (Hawaii). Unfortunately, data could not be obtained for papaya quarantine treatment operations in the Philippines. The rate charged by the Cook Islands facility is NZ 45 cents/kg (approx FJD 53 cents). The Molokai facility is owned and operated by a grower exporter, who treats his own fruit. Thus the treatment charges are no explicit. Most of Hawaii's papaya growers are located on the Big Island. Fruit exported to the US mainland is treated by a commercial irradiation facility. In 2007 the charge for this treatment was USD 17c/lb (which was equivalent to FJD 61 c/kg – and at the current exchange rate around FJD 80c/kg). Thus, the cost of quarantine treatment for Hawaii papaya exporters is about double that of their Fijian counterparts[1]. According to a recent issue of the Philippines Agri Business Week the cost of vapour heat treating of mongo for export to China is USD 40c /kg. One can

[1] The difference between Hawaii and Fiji treatment rates can be explained by two main factors:
- The capital cost of eradiation quarantine treatment is some $FJD 5 to 7 million, compared with less the FJD 1 million for an HTFA facility.
- Hawaii's labour costs are substantially higher than those in Fiji (USD 10 – 12/hour compared with FJD 2.15/hour.

assume that the cost for treating mango and papaya with vapour heat would be the same because the energy use and treatment parameters are the same. In Hawaii, the figure for vapour heat treating papaya shipped to is generally between US$0.21 and US$0.32/pound (personal communication Dr John Armstrong). Fiji's exporters have a significant competitive advantage when it comes to the cost of quarantine treatment charges.

A comprehensive review of NWC treatment changes was conducted at the beginning of 2008. Based on the findings of the treat charges review the following treatments charge schedule is now in place[2]:

1. The flat base treatment rate of 40c/kg.
2. At the end of each month any exporter that has no arrears exceeding 30 days receives a rebate of 5c/kg of fruit treated.
3. Rebates are given to exporters who achieve above certain treatment thresholds in a calendar year and who have no arrears exceeding 30 days. The thresholds and rebates that apply are:
   - > 150 tonnes/year receives a rebate of 3% of total treatment charges paid during the preceding year.
   - > 300 tonnes/year receives a rebate of 5% of total treatment charges paid during the preceding year.
   - > 500 tonnes/year receives a rebate of 10% of total treatment charges paid during the preceding year.

This new treatment charge schedule offers the opportunity for exporters to substantially reduce their treatment cost by keeping their account current and by increasing their throughput. It is of note that Fiji largest papaya exporter currently has a particularly unfavourable arrears status. This company, just by getting it arrears current, would immediately reduce its fob cost of exporting by 5c/kg.

NWC recently completed its second Strategic Plan (2009 – 2014). The Plan which has been approved by the Cooperative's Board and will be presented at the next AGM for endorsement, recommended that the treatment fees remain at 35c/kg (for exporters whose accounts are current) and 40c/kg for others (exporters with accounts over 30 days) remain for the foreseeable future. This recommendation was based on the need to maintain a sufficient level of retained earnings to

- to continue a high level of repair and maintenance;
- to maintain a high level of "rainy day" reserves (the value of high level reserves has been proven with consequences of 2009 flood); and
- To have sufficient funds to operate a small field service.

Thus exporters should not expect further reductions in treatment charges in for foreseeable future.

4.1.4 Reducing the cost of transportation

It currently costs approximately $1.60/kg (including the fuel surcharge and the war risk levy) to airfreight papaya to New Zealand (table 3). This is significantly more than the cost of buying papaya from farmers and is the main factor in the lack of price competitiveness with papaya from the Philippines which is sea freighted.

[2] A Review of Treatment Charges and Worker Wages and Conditions for Natures Way Cooperative (Fiji) Ltd. Prepared by Koko Siga (Fiji) Ltd., May 2008

Table 3: Air freight capacity and cost Nadi – Auckland (June 2009)

There may be some scope for negotiating better freight rates. Air Pacific has adopted a policy of maximizing freight charges. Such a policy, particularly for a national airline may not be in the best interest of Fiji or the airline. It would be in the national, and in the Air Pacific's long run interest, to expand the volume of produce shipped by offering more competitive freight rates. Table 3 suggests that Air Pacific currently has significant excess freight capacity available. The critical role a national airline can play horticultural export development shown with Thailand's Thai Air. In the past the Government of Thailand has utilised the IATA regulation allowing for Government Ordered Rates (GOR) to stimulate its horticultural export horticultural export development. The Fiji government needs to give serious consideration to making similar interventions with respect to Fiji's national airline.

NWC as a representative of the Fiji fresh produce export industry is particularly well place to negotiate more competitive air freight rates on behalf of the industry.

Airfreight will always be required to place a premium quality papaya product at the top end of the New Zealand market. However, substantial increases in papaya exports will require the use of sea freight if Fiji is to be price competitive with the Philippines. The current cost of shipping a reefer (cooler) container from Lautoka to Auckland is approximately $4000. A reefer container could be expected to carry around 1500 cartons at 5 kg per carton, giving a freight cost of $0.53per kg. This compares with the current cost of $1.60/kg for air freighting papaya to Auckland. The voyage time from Lautoka to Auckland is 4 days, compared with two weeks from the Philippines. Thus Fiji would still retain a significant advantage in terms of quality.

Sea freighting papaya to New Zealand is a priority applied research requirement for the industry. Fiji exporters need to identify importers who are willing to handling sea freight containers of Fiji papaya at a time. Importers identified that fall into that category are:

- Darrack Produce Markets Ltd (DPM)
- MG Marketing
- Turners and Growers

4.1.5 Achievable price competitiveness

The section below outlines what is seen to be an achievable landed price for Fiji papaya in New Zealand for an exporter who:

- Buys papaya at the farm gate for 80c/kg
- Initially pays 35c/kg for quarantine treatment (exporter not in arrears in payments to NWC) and treats over 150 tonnes of fruit per year and thus gets a 3% (1.05c/kg) reduction in treatment charges. Thus the effective quarantine treatment charge is 33.95c/kg.
- Sea freight to Auckland at a cost of 53 c/kg.
- An exchange rate of 1FJD = 0.75 NZ$ applies (rate at June 19th 2009)

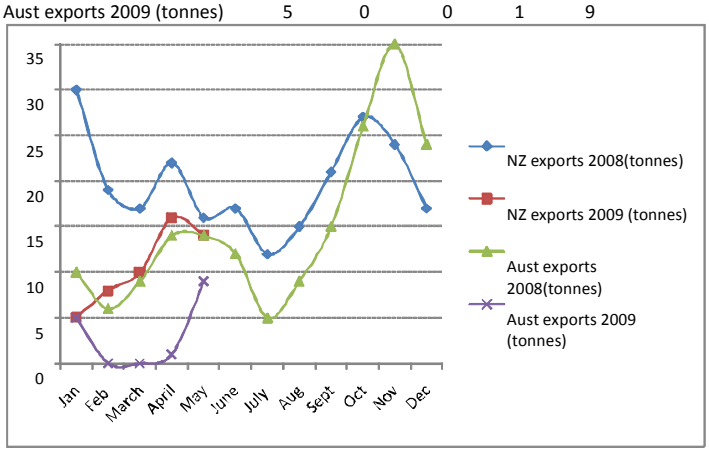
It is estimated that this exporter could land papaya in Auckland at a price of $2.70 (NZ$ 2.04). This papaya would be reasonably price competitive with Philippines papaya. The average value for duty purposes (VFD) of Philippines in 2008 was NZ 2.06/kg. Thus if the quality and marketing of Fiji can be significantly improved it will be in position to strongly compete with papaya from the Philippines.

4.2 Reliability and consistency of supply

Reliability and consistency of supply is likely the key criteria that Fiji stakeholders must address for the industry to achieve the identified potential and for actors along the value chain to achieve maximum profitability. Exporters, importers, wholesalers, and retailers need a product that is available in the right quantities all throughout the year. It has been unfortunate that Fiji has suffered a series of natural disasters over the last three years which has had a significant impact on supply of papaya. The 'Great Flood' of 2009 had a significant impact and papaya exports to New Zealand from a high 27 tonnes in October 2008 to only 5 tonnes in January 2009.

Table 4: Effect of the Great Flood of 2009 on papaya supply

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
NZ exports 2008(tonnes)	30	19	17	22	16	17	12	15	21	27	24	17
NZ exports 2009 (tonnes)	5	8	10	16	14							
Aust exports 2008(tonnes)	10	6	9	14	14	12	5	9	15	26	35	24
Aust exports 2009 (tonnes)	5	0	0	1	9							



The industry needs to seriously consider measures to mitigate against the threat of these natural disasters. Some measures to cushion Fiji's papaya exports from the devastation in a natural disaster included;

- Spreading out the geographic distribution of papaya plantings
- Use the January 2009 flood as a benchmark for the flood line and only plant in areas above this flood line.
- Spread planting throughout the year, one planting immediately after cyclone season (April) and one planting in August – so that trees are small enough not to be affected by strong winds in the event of a cyclone.

4.3 Quality

From consultations with importers and from physically inspecting fruit in the market it is clear that Fiji papaya has major quality issues. Fiji growers and exporters need to improve the quality of their product. This is seen as critical improvement necessary to be competitive with Dole papaya and increase Fiji's market share.

The quality parameters in need of improvement include:

- Control of postharvest diseases on the farm
- Harvest and postharvest handling
- Grading
- Packaging and labelling

4.3.1 Control of postharvest diseases on the farm

Damage by disease infection is a leading cause of post harvest losses in papaya. Like physical damage, the affects are often not seen until the fruit begins to ripen. Therefore fruit can be shipped looking nice and clean but arrive infected with disease which creates a particularly bad impression in the market place.

Anthracnose (*Colletotrichum gloespoirides L.*) disease is one of the most common post harvest diseases of papaya in Fiji. The disease is present on unripe papayas but is latent (not visible). As the fruit starts to ripen, circular spots (lesions) begin to appear and gradually enlarge and may become sunken into the fruit.

Phytophthora stem-end rot (*Phytophthora nicotianae* var. parasitica) is another major post harvest problem affecting Fiji papaya. Phytophthora is characterised by circular spots (lesions) which develop with grey and white 'fungus' (mycelium) growing on the surface. Infection of phytophthora is particularly apparent around the stem end.

There are number of measures that can be taken to reduce the impact of post-harvest diseases of papaya; including

- Good site selection (avoid locations that have poor airflow and poor drainage)
- Good farm management practices (good hygiene, monitoring and chemical control as necessary)
- Control by various pre and post-harvest chemical treatments
- Careful handling to minimize physical damage.
- Keep fruit in a cool place with a low relative humidity.

4.3.2 Harvest and postharvest handling

The Fiji papaya export supply chain involves a large number of actors and fruit is handled/graded up to five times before being packed in cartons. It is through this rigorous handling that fruit is subject to significant bruising and scratching. The post harvest damage to fruit is compounded by the condition of roads from the farm to the packing house and NWC.

Physical damage to papaya fruit at the green stage will not show up until the fruit ripens. Physical damage can occur from the time of harvest through to final packing and at all of the steps in between.

Physical damage on the farm usually occurs as a result of the harvesting implement, dropping into crates, over-filling of crates and excess movement of fruit during transport.

Similar effects can occur as a result of poor handling during washing, grading and transportation. These actions will result in latex staining, punctures, scars and bruises. During ripening, bruised areas will develop into dark soft regions which become affected by secondary diseases such as Anthracnose and Phytophthora.

Most physical damage occurs when staffs are trying to work to fast. Because the damage is not immediately seen staffs are often not aware that they are doing anything wrong.

Bruising and scratching damage from improper handling on the farm.

Stem end damage from dropping fruit into the bins.

There are number of measures that need to be adhered to in order to reduce the damage caused to papaya during harvest and postharvest handling; including;

- Always practice good harvesting techniques and do not rush.
- Stems should be removed in the field to prevent puncturing or scratching of other fruit in the crate.
- Foam or newspaper should be placed in the base of field crates and crates should contain only one layer of fruit.
- Fruit should never be dropped or thrown into crates or bins.
- Vehicles used to transport the fruit should be driven slowly and with care

4.3.3 Grading

In order to be competitive the grading of the fruit for export must be improved. Importers demand that all exports are of even size and maturity with very minimal skin blemishes or diseased fruit. Currently Fiji exporters have very poor grading which means that importers, wholesalers and retailers have to do this grading on their end at a much higher cost.

For this very reason it is critical that farmers, exporter staff and NWC handlers understand that the market wants each box to be the same in terms of:

- size (weight)
- sex (shape – female, round; hermaphrodite bell shaped)
- stage of ripeness.

At present NWC staff use scales in order get fruit of the same size for final packing. The performance here is mixed and should improve significantly with the installation of the grading machine that is currently being purchased with NWC's Enterprise Challenge Fund grant.

What is much more difficult is trying to get fruit of the same stage of ripeness – this is where our competitors are doing a much better job.

It is the importers request to an exporter that dictates what should be packed in a box; therefore the onus is on the exporter to strive to meet the exact requirements of his order and to achieve consistency within every box.

Dole papaya in Auckland, February 2009

Fijian papaya in Auckland, February 2009

4.3.4 Packaging and labelling

In order for Fiji papaya to secure a significant share of the main stream papaya market (supermarket chains) in New Zealand and Australia it is necessary to have appropriate packaging and labelling. The improvements in packaging and labelling that are described will inevitably require additional costs to the exporter.

The packaging and labelling requirements can be summarised on three levels;

1. What packaging will ensure that the fruit arrives to the customer in the best possible condition?
2. What labelling is necessary to comply with importers/retailers standards?
3. What packaging and labelling will serve to promote Fiji papaya as a high quality product?

A critical component of maintaining fruit quality through transportation is the carton. In Fiji the quality of cartons varies significantly between different exporters. Physical inspection of Fiji papaya in NZ saw the difference in the two types of cartons and how they hold up.

A more durable waxed carton of Fijian papaya that remains in good shape in an exporters cooler, Auckland (February, 2009)

A much thinner, unwaxed carton of Fijian papaya that has collapsed and started to come apart, Auckland (February, 2009)

Some Fiji exporters also use individual fruit socks to protect fruit from rubbing up against each other. This or a similar measure is considered critical to ensure the fruit arrives at the market in the best possible condition.

It should be noted that papaya is rarely displayed at the retail level with the fruit sock. This is usually taken off by the stocker at the supermarket. If socks were deemed to be cost prohibitive an exporter could consider use of paper to individually wrap the fruit as is seen in papaya exports from Hawaii and the Philippines below.

Papaya individually wrapped in newspaper from Kumu Farms, Molokai, Hawaii, ready for export to the US mainland. (March, 2009)

Dole papaya from the Philippines individually wrapped in newspaper at MG Marketing packhouse, Auckland. (February, 2009)

Labelling requirements for papaya cartons entering the mainstream market must contain the following information;

- Country of origin
- Weight of the carton (The papaya carton exported from Fiji has an average net weight of 5 kg.)
- Fruit count in carton (How many fruit are within the carton).

Individual importers retailers might also require other labelling or packaging; including,

- Individual stickers on each fruit with bar codes
- Printed boxes with promotional text
- Other appropriate labelling

4.4 Marketing

4.4.1 Branding of Fiji Red

Fijian papaya is a unique product. Fijian papaya is a red fleshed Solo Sunrise variety, whereas the main papaya in the Australia and NZ markets is a yellow fleshed fruit of the variety Kapoho which is being market as 'Pawpaw'. It is important that Fiji exporters work to promote this product differentiation. Fiji exporter, Produce Specialties Ltd. (PSL), has been involved in a number of promotional activities in the New Zealand market to promote the Fiji papaya as 'Papaya' and not 'Pawpaw'.

The branding name of Fiji Red has been developed and adopted by some exporters as a means marketing Fiji papaya. This example of a national marketing promotion was described by importers in NZ as being 'very worthwhile'.

4.4.2 In-store promotion and customer awareness

Importers and retailers in New Zealand interviewed as part of the FACT supported Papaya Market Study cited the need for more in-store promotion and customer awareness about Fiji papaya. Importers interviewed said that they would be interested in a joint promotion campaign whereby the exporter, importer and retailer share the cost of the promotion. A common in-store promotion is to have a point-of-sale demonstrations and tastings that are usually accompanied by a promotional sale price on the Fiji papaya. A promotional campaign for Fiji Papaya was staged in Auckland in November 2004 funded by the Pacific Island Trade and Investment Commission (PITIC).

It was also noted that there is still a great deal of work that needs to be done in NZ to make the customer aware of this fruit by educating the shopper how to choose a ripe fruit (customers buy with their eyes); how to eat it; how to cook with it. Other promotional activities could include TV advertisements with chefs; approach restaurants to use papaya in their menu (a customer will buy once they have eaten it in a restaurant).

In this respect the Fiji papaya industry has benefited from Dole's entrance as papaya supplier in NZ because this has brought a significant amount of promotional activity to papaya which Fiji could benefit from.

4.4.3 Food safety and quality certification

If Fiji papaya is to significantly expand its market in New Zealand and elsewhere the product must be on offer in the major supermarket chains. Those exporters who wish to sell in this expanded market will need to have in place food safety and quality

certification that meet the requirements of the supermarkets. As Kevin Nalder CEO of NZ Producer Importers Association reminded the market study team:

> Fiji papaya exporters, directly or indirectly will need to meet these standards if they are to capture a share of the supermarket trade, which currently they don't. This trend has lead to a differentiation in the market between those that supply the larger "progressive" supermarket (accredited suppliers) and those that don't. The former ground is expanding, while the later is contracting. The challenge for Fiji papaya exporters to get into the accredited supplier group. This requires establishing export standards and controlling compliance (how was the product harvested, post harvest handling etc.). The key is consistency – both in terms of supply and quality.

Dole, Fiji's main competitor has the required certification. Fiji's exporters will need to follow suit or they will remain on the "other side of the fence". EU's Facilitating Agricultural Commodity Trade (FACT) and the ACIAR Fiji Papaya Project have an important role to play in assistance the industry achieve the necessary compliance.

5 Conclusions regarding the Fiji Papaya Supply Chain

- The Fiji Papaya Supply Chain consists of a relatively large number of actors as compared to other papaya industries around the world. This fact is positive in that a larger number of people are benefiting from employment and livelihoods as a result of this industry. However, having a large number of actors has significant negative implications in regards to quality management and overall cohesion between the different actors.
- Fiji papaya has serious quality issues which are likely due to the fact that there are so many different people handling the fruit from the farm to the market that it is almost inevitable that physical damage will occur. Furthermore, because this physical damage does not show up until the fruit begins to ripen (which is usually in an overseas market) there is very little scope for the handlers who likely caused the damage to realise the result of their actions.
- With such a large number of actors in the supply chain there is a common tendency to pass off issues related to poor quality to other actors in the chain instead of assuming responsibility.
- Key issues of quality and consistency have to be addressed if Fiji is going to maintain its share of the export market and attempt to expand these markets. These issues have to be addressed by all of the actors along the chain in order to be effective.
- There is a considerable amount of confusion regarding the sex of the papaya and how this relates to seed collection and seedling propagation. This has resulted in inferior fruit being produced from low quality, impure seeds.
- In terms of production there appears to be quite a high level of understanding as to the requirements of the papaya plant.
- Despite a good understanding of the production requirements of the papaya plant farmers make decisions based on how they can save money without fully understanding the real financial implications of these decisions. Case in point is the issue of fertilisers, whereby farmers know how much fertilisers they are required to apply to the papaya plants however because they do not have the cash to buy the fertilisers or perhaps are using this cash for some other purpose the papaya plant does not receive the proper fertiliser applications. The result of this decision for the farmer is that overall yield is drastically reduced and particularly yield that is of export quality is drastically reduced.
- There are many misconceptions about other actors in the supply chain. Farmers have the idea that exporters/traders are getting rich from their fruit and exporters/traders have the idea that farmers are receiving too high a price for their fruit because the supply is so low. These misconceptions stem from the fact that there is a very poor understanding of the various costs and risks involved with growing and exporting papaya.
- These misconceptions regarding financial matters lead to strained business relationships between growers and exporters/traders.
- Papaya prices are unstable at all levels and actors need to be aware of the factors that influence price fluctuations and what they can do to properly prepare for these changes.

6 Development of training materials

Based on the outcomes of the stakeholder consultations and the findings of the value chain review, a series of training materials were developed to address the key issues. The training materials were intended to assist in the delivery of information under the training programme of the FAO/NWC Farmer Market Linkage project. The training materials developed were also intended to be used by extension partners well beyond the life of the project. On this basis a series of different training tools were produced that could be adjusted for the various training environments, i.e. classroom setting, on the farm etc.

It was decided that the information contained in the training materials would address the most relevant information gaps in the supply chain, including;

- Seeing the entire papaya value chain and all the of the associated actors
- Understanding the sex of papaya and how this affects seed collection and fruit characteristics
- Understanding quality issues related to physical damage and damage caused by disease
- Understanding more clearly the various steps in Bilateral Quarantine Agreement (BQA)
- Understanding market requirements and how this influences the supply chain
- Understanding the costs and potential returns from planting papaya under different scenarios
- Understanding the costs and potential returns from exporting papaya
- Approaching papaya farming as a business

It is important to note that issues related to production; spacing, fertiliser recommendation etc., were not included in the training materials because the coordinator felt that the information available on these issues was not reliable enough and furthermore these issues were being dealt with by the MPI and TTM.

6.1 PowerPoint presentations

PowerPoint presentations were developed to present information in a setting that had access to electricity and a suitable hall. PowerPoint presentations were designed to be mostly pictorial and offer the trainers the opportunity to present material through the use of photographs.

6.2 Information sheets

Information sheets were developed to address the key information gaps identified in the value chain mapping. Information sheets were designed to support PowerPoint presentations but also to stand alone as training tools in the farm setting or where there is no access to electricity.

Information sheets also serve as a valuable training tool because participants are able to take them home and refer to them at a later date. With this information tool could further disseminate the information, not only to members of the family but also to neighbours and prospective farmers. The exporter consultations were critical in validating the materials used to produce information sheets.

Information sheets produced were dated documents that could be changed or amended as more information is made available.

A collection of all of the information sheets produced have been attached with this report.

6.3 Budgets and financial models

A series of budgets and financial models were prepared in support of this training programme. Prior to this project there only existed a very out dated gross margin for papaya production, there had never been an attempt to calculate a budget for exporters. The budgets were instrumental in detailing all of the costs involved in either producing or exporting papaya. The financial models were designed for both current and prospective farmers and presented a clear picture of the crops financial requirements and potential returns.

A collection of all of the budgets and financial models produced is attached to this report.

7 Training programme

Based on the outcomes of the stakeholder consultations and value chain analysis a training programme was designed. Detailed reports of each workshop are provided in support of this final report. Below is a brief summary of the workshops.

7.1 Training of trainers

The training of trainers workshop occurred in the Sigatoka Valley and Nadi between April 22nd – 24th 2009.

Objective

To establish a network of trainers that can assist with the delivery of the training programme and are in a position to continue extension and training work with papaya farmers. To equip these trainers with the knowledge and tools to effectively deliver current and relevant information to farmers.

Participants

- MAPI –Extension
- Ag Trade
- NCSMED
- Private sector
- Quarantine staff
- TTM –Taiwanese technical Mission

Key outcomes

- Trainers received a full briefing on the most current and relevant information related to papaya
- Trainers were able to “walk the chain” beginning from the nursery to treatment and packing
- The key components of the value chain were identified and discussed in detail
- Key training materials were delivered and explained

7.2 Workshop for transporters and handlers

Workshop was held in Nadi on 26th May 2009.

Objectives

To bring together transporters and handlers to deliver training information regarding the papaya value chain and the critical role they play in this chain. To improve the understanding of quality management and the key factors leading to the breakdown of quality.

Participants

- NWC staff

- Exporters staff – graders, packers and sorters
- Cargo Handling agencies
- Quarantine staff

Key outcomes

- More training for farmers and handlers
- Exporters need to lift their game and implement more quality control
- ATS is not efficient in relation to their responsibilities of picking the container ASAP to storage facilities
- Handlers and graders need to wear gloves and practice personal hygiene
- The use of good protective material like sponges to cushion and protect the fruit from any form of injury
- The use of current harvesting implements plays a big factor in the rejection rate
- The use of good firm vehicles for transportation purposes rather than worn and torn vehicles which contribute to mechanical injury for the fruit The need for exporters to be present at NWC during grading, treatment and packing
- More awareness on how to minimise rejects for farmers and exporters
- NWC staff should more vigilant
- Fruit is coming in to ripe- this is a significant reject factor
- More training for transporters and handlers
- Only two exporters separate hermaphrodite and female fruit which shows the laxity and attitude of some exporters
- NWC staff have to be more careful especially during unloading and packing fruit
- There have been cases where fruit that was initially rejected are brought back in to Natures Way Treatment chamber

7.3 Workshop for papaya farmers

The following farmer workshops were held:

- Nadi and Lautoka – May 27th 2009
- West Bank Sigatoka Valley – June 1st 2009
- East Bank Sigatoka Valley – June 2nd 2009
- Tailevu area – June 18th

Objectives

To deliver key training materials to established and prospective farmers covering a range of topics. . It provided insight in the linkages in the value chain and where the costs were incurred and how to minimise those cost s in the best manner possible.

Key outcomes

- It was quite clear that that there is a great deal of misinformation between all the actors in the industry
- Farmers are not well versed with the package of practices provided by MAPI and TTM
- Communication breakdown is a major factor contributing to the inefficiency and sorry state of affairs in the industry
- Soil testing should be a standard priority that should be done to provide farmers with most recent data on the fertility of their soils and accurate fertilizer applications.
- The quality of seedlings that are being sourced s are sometimes inconsistent in size and lack vigorous growth. Single seedlings in pots have turned out to be more female than hermaphrodite
- Agro inputs have become more expensive and farmers have resorted to Sugarcane fertilizer
- A growing schedule needs to be developed so that farmers get only the maximum production levels and do not waste time on the uneconomical life span of the fruit
- Exporters need to develop a mutual relationship with the farmers and educate them with up to date harvesting skills
- Exporters need to share with the farmers information about what the market demands and what the market requires
- The inconsistency and inefficient supply of agro inputs from hardware stores and other traders

7.4 Exporter consultations

Objectives

To present outcomes of the value chain study and engage in discussion regarding this material. To get feedback on the budgets and financial models prepared. To more clearly document the issues facing exporters.

Participants

- Rams Valley Fresh
- Mahens Exports
- UNO
- Green Valley Exports
- Produce Specialists ltd

Key outcomes

- Critical feedback on the budgets and financial models presented
- Exporters gained a better appreciation for the whole value chain and circumstances surrounding various stakeholders' decision making.

7.5 Whole industry workshop.

Objectives

To bring together all the stakeholders along the Value Chain from production to marketing and everybody in between. To present the key outcomes from the various workshops. To engage the group in constructive dialogue on how best to address the issues facing the industry.

Participants

- Farmers
- Exporters
- Transporters
- Freight companies
- Department of Agriculture Staff
- FACT - SPC
- Government officials
- Quarantine
- Regional participants

Key outcomes

- The whole industry was brought together including actors that ordinarily don't attend these meetings.
- The primary issues affecting quality were raised for discussion to the whole group.
- The group acknowledged that quality management is not the responsibility of any one actor but everyone must make a concerted effort to handle the product as carefully as possible.
- The group discussed the issues of supply and pricing and how this is likely going to fluctuate in the coming months.
- Numerous questions were raised towards the coordinators, govt officials and even amongst the exporters and farmers.
- Very useful networking and dialogue took place.

8 Follow up and mentoring

Following the completion of workshops the coordinators and selected trainers initiated a programme of mentoring and follow up. This programme included.

- Field visits to the Sigatoka Valley and Nadi area
- Meetings with MPI and TTM staff
- Meeting with exporters association

Objectives

- The primary objective of this exercise was to assess the impact of the workshops and get feedback from the stakeholders in the papaya industry.
- To follow up and address issues that were submitted via the Action Plans
- Address issues affecting farmers and match these with practical solutions
- To continue networking and relationship building between the coordinators and trainers and the participants.

Methodology

- To follow up on Action plans and feedback

    1. Review Action plans with Farmer
    2. Advise Farmer on future plans
    3. Address work plan and advise accordingly

- To mentor and advise stakeholders

    1. Address issues facing farmers and help rectify problems
    2. Review the whole value chain
    3. To review the importance of careful harvesting and post harvesting handling
    4. To mentor the farmer on the impact of lowering the rejection rate for more financial gain

Feedback

Farmers in the Sigatoka Valley and Nadi areas were busy with farm work during the period of interviews and therefore the team was very brief with each meeting. Despite this, farmers were pleased with the opportunity to have a one on one session with the team. Action plans were reviewed with the farmers and they had the opportunity to explain in more detail the issues they were facing. The team worked to problem solve and set goals with the farmers.

One particular farmer shared his experiences with papaya and highlighted the high cost of inputs for this crop and despite the good returns he has not been able to expand production because he is limited by capital income. The team discussed various money management tools with the farmer.

Many farmers acknowledged the usefulness of the workshops in particular the material regarding postharvest handling and business. The present consensus among farmers is the need for more training and awareness on the business aspect of papaya farming and harvesting - post harvesting handling to try and minimise reject rates.

There were also suggestions by farmers that there should be regular meetings between the farmer groups and exporters to discuss how much papaya they are going to need and what price they anticipated to be offering. This proposed exercise should help in solving some of the supply-demand issues and assist both farmers and exporters in planning their business.

Feedback from the exporters association indicated the need for a mechanised grading system that would minimise post harvest handling by NWC staff. Stakeholders suggested that if production was to increase at farm level there was a need for the handlers at NWC to be more efficient with their work and explore investing in a mechanised system where sorting, grading and colour grading was carried out in a efficient manner.

9 Summary of key outcomes from training programme

The feedback from the workshops reveals a fragmented industry which has resulted in many misconceptions about other actors in the chain, in some instances there is great distrust that is fuelled by rumours and misconceptions. The vast majority of these misconceptions are dealing with financial matters. The presentation of the various budgets was a good initial step in addressing these misconceptions.

Regarding the issue of quality all stakeholders now recognise that there is need for improvement but there is still a tendency for stakeholders to pass on the blame to other stakeholders.

The supply of quality seedlings was an issue raised at nearly every farmer workshop and the industry needs to take serious steps towards rectifying this problem.

Communication was another major issue raised at the various workshops. The flow of information throughout the value chain is stagnant and more forums between farmer – exporter should be encouraged to address issues such as late payments, inefficient extension services, poor agronomic advice, unreliable pick up time for crops and other issues concerning maintaining quality within the entire chain. If not readily addressed, such circumstances will cause confusion and hostility and will result in farmers withdrawing from papaya farming all together.

Problems have also arisen with farmers who were unable to keep up to the agreed time of harvesting and collection dates due to social obligations. In the farming communities it is difficult to explain the importance of these issues due to customs and traditional obligations.

The sale of produce by farmers to a third party is also a major problem. This problem is not easy to control when middlemen or other actors along the chain offering cash in hand rather than the agreed understanding of end of the month payment. There is also the issue of farmers who are not registered to an exporter who take advantage of higher prices and entice the contracted farmer to sell his produce to the buyer in exchange for cash. This makes it difficult in maintaining consistency of supply.

A frequent problem was that farmers are tempted to use inputs other than what was recommended, to cut costs. Other farmers who chose to use the inputs provided from MPI or TTM programs use them for other subsistence crops or even sell them. Hence the overall production is affected. More training for farmers is needed in this area for the correct package of practices to achieve maximum and quality yields. Trainers and farmers alike need to have a good comprehension of the crop and the management aspect as well as more training on the business aspects of papaya farming.

The level of rejects at Natures way Quarantine facility is quite high. This is an indication that the supply chain is not as vigilant in grading as it should be. There seems to be a trend where more rejects are received at the NWC facility then the exporters pack house. This likely indicates that exporters are taking advantage of the fact that NWC staff will do the grading for them.

Mitigating against natural disasters was a key issue discussed at a majority of the workshops. It was agreed that farmers should use the January 2009 flood as a benchmark for the flood line and only plant in areas above this flood line or understand the risks they are taking. Another technique is to spread planting throughout the year, one planting immediately after cyclone season (April) and one planting in August – so that trees are small enough not to be affected by strong winds in the event of a cyclone.

10 Recommended interventions

Continued mentoring and follow up

It is critical that the trainers continue the activity of mentoring and follow up. The action plans that were provided at the workshops should be a basis for this work as many of the farmers had described medium and long term plans and they should be supported and guided to achieve these goals. This intervention is seen as highly achievable given that most of the trainers are involved in extension programmes and already have the mandate to assist these farmers.

Improving farmers business and management skills

Lack of business skills amongst farmers was identified as a key factor contributing to inconsistent supply and poor quality. It is proposed that NWC in cooperation with the established network of trainers and extension partners carry out further training dealing with marketing, farm management and business training. This training should be agriculture focused but not exclusively dealing with papaya. Given the diversity of crops being grown on a majority of these small farms it is important that farmers learn to plan out production of different crops and budget available resources for different inputs. It is envisioned that this training could be delivered in close collaboration with the National Center for Small and Micro Enterprise Development (NCSMED)

It is proposed that the FAO under the EU AAACP programme could assist in the preparation of training materials and delivery of training.

Improving awareness of postharvest damage through monitoring of rejects

The time and resources allocated for the value chain study limited the amount of time that could be spent on analysis of reject rates. This exercise is also limited by the fact that a large amount of the rejects happen after the fruit has arrived in the market and begins to ripen. It is recommended that a more careful study of the reject rates incurred for different exporters be undertaken. This will involve following several shipments from harvest right through to ripening of fruit to try and identify reject rates, causes of these reject rates and the financial implications for the various stakeholders.

This information could support the training materials already produced regarding postharvest losses from physical and disease damage and be used in an expanded training programme.

It is proposed that the FAO under the EU AAACP programme could assist with this study and in the preparation of training materials and delivery of training.

Support for exporter and grower associations

One of the key contributing factors to the breakdown in information flow along the papaya value chain is the fragmented nature of the industry. It is recommended that NWC and the Fiji Papaya Project offer support to the exporters association in organizing meetings and prioritizing activities. The exporters association has a real potential to spearhead initiatives dealing with Government, Quarantine, NWC and farmer groups.

At present farmer groups are very informal and limited to specific communities. It is proposed that NWC could assist in the establishment and coordination of these farmer

groups into larger geographical areas with the idea that these groups could provide feedback on the issues facing their members.