Mango Forum Report

Export 5 million cases of USDA-certified mangoes by 2015

This report and proposed strategic plan were developed with input collected during the National Mango Forum held on April 20 and 21st 2010 in Port-au-Prince, and subsequent information from the field. The forum was organized by two USAID-funded programs: Market Chain Enhancement Project (MarChE) managed by CNFA and the Watershed Initiative for National Natural Environmental Services (WINNER) implemented by Chemonics International.

Contents

Acronyms

Association des Producteurs-Vendeurs de Fruits du Sud	**ASPVEFS**
Association Nationale des Exportateurs de Mangues	**ANEM**
Association Nationale des Producteurs et Fournisseurs de Mangues	**ANAPROFOURMANG**
Coopérative de Production agricole et de Commercialisation Gros Morne	**COPACGM**
Direction de Protection des Végétaux	**DPV**
Fédération Nationale des Associations de Producteurs pour la Commercialisation de la mangue	**FENAPCOM**
Food Agriculture Organisation	**FAO**
Foreign Service National	**FSN**
Fruit Fly Control	**FFC**
Market Chain Enhancement	**MarChE**
Ministère de l'Agriculture des Ressources Naturelles et du Développement Rurale	**MARNDR**
Mobilizasyon pou Sove Pwodiksyon Agrikol	**MOSOPA**
Officer in Charge	**OIC**
Organisation for the Réhabilitation of the Environment	**ORE**
Plant Protection and Quarantaine	**PPQ**
Programme National de Détection et de Contrôle des Mouches des Fruits	**PNDCMF**
Regwoupman Pwodikte Sides Pou Pwodiksyon Ak Komesyalizasyon Agrikol	**REPSIKA**
Sosyete Agrikol pou Pwodiksyon ak Komesyalizasyon	**SAPKO**
Sosyete Komesyalization Pwodi Agrikol Kazal	**SOKOPAK**
Supply Chain Management	**SCM**
Watershed Initiative for National Natural Environmental Services	**WINNER**

TERMINOLOGY and CURRENCY

- Hectares: common land measurement unit in Haiti. 1 **hectare** = 2.471 **acres**
- Currency. USD1.00 equals Haitian Gourds (HTG) 40.00

Background

Over the past few decades, many articles address projects conducted with the Haitian "Francis" mango sector. However, the absence of a collaborative and strategic plan has led to a number of costly breaks in this value chain. As a result, the mango industry in Haiti is crippled with inefficiencies and plagued by foregone profits, leaving it to underperform relative to other mango-exporting countries. The lack of effective communication and cohesive planning has affected all the stakeholders; everyone from producers, exporters, intermediaries (such as voltigeurs[1] and suppliers (fournisseurs)), regulators (such as the Ministry of Agriculture and Natural Resources (MARNDR)) and the United States Department of Agriculture (USDA) have all fallen victim to the market inefficiencies..

The strategic plan presented here was developed with information inputs collected during the National Mango Forum held on April 20 and 21st 2010 in Port-au-Prince. This forum was organized by two USAID-funded programs:

- Market Chain Enhancement Project (MarChE) managed by CNFA
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During the forum, all the stakeholders were able to share information in order to build a consensus around the possibilities of sustainably exploiting this important natural resource.

Following the forum, the MarChE staff gathered additional data during field visits with cooperative members and interviews with exporters in order to:

- Establish realistic goals and objectives consistent with the value chain,
- Communicate those goals and objectives to the mango industry stakeholders,
- Develop a sense of ownership of the strategic plan, and
- Create a permanent structure to identify and allocate human and financial resources which could assist in the implementation and monitoring of selected programs.

[1] *Voltigeurs*: day laborers who usually travel from regions to regions as "brokers" during the mango season

I. Executive Summary

During the National Mango Forum held on April 20 and 21, 2010 in Port-au-Prince, the Haitian mango industry stakeholders, including USDA/APHIS and invited guests such as the USA National Mango Board, agreed to support the common goal of increase export 100% from 2.5[2] to 5 million cases of USDA-certified mangoes by 2015.

At the end of the Forum, a resolution to control fruit flies was debated between the representatives of ANEM, FENAPCOM, ANAPROFOURMANG, and the Ministry of Agriculture's DPV unit. A five-year budget was developed to run the program.

The mango value chain is supported by at least 150,000 economic agents (e.g., producers, intermediaries, transporters, workers, and exporters). As a condition of export into the United States, mangoes require commercial hot-water treatment. Increasingly, new entrepreneurs and organizations have started to utilize Francis mango rejects (estimated at 40% of all production). The sector is loosely organized around producer groups as the primary link in the mango chain. Among these groups, five (5) have requested help and/or are ready to follow quality control standards. These include MOSOPA, SAPKO, COPACGM, REPSIKA, and ASPVEFS.

To structure the industry, there has been discussion of advocating for the creation of an autonomous institution which will represent the mango sector. Based on the forum discussion and follow-up interviews, MarChE is proposing the establishment of a *National Mango Council*.

This council, which could raise HTG 75,000,000[3] or USD 1.8 million for 1st year operating expenses, will be created by presidential decree and managed by an appointed Executive Director. The director will oversee seven (7) committees: logistics, capacity building, research and development, finance, legal affairs, promotion and marketing, and consumer protection.

The mango sector could benefit from more cohesive activities between producers, suppliers, and exporters. The strength, weakness, opportunity, and threats analysis (SWOT) revealed the performance issues and critical success factors, which will shape the future of the mango sector

Eight (8) short-term and long-term programs were identified to help the mango industry overcome the competition from Mexico, Ecuador, Brazil, Peru, and Guatemala. The top four priorities are: fruit fly control, grafting, quality control, and traceability.

[2] *2009 figures*
[3] *HTG 75,000,000 is based on HTG 500 annual contribution by each of the 150,000 "agents" in the mango sector*

Finally, an analysis of available strategies compared with the industry forces showed that the sector should select a differentiation-focused strategy due to the availability and unique taste and of the Francis mango.

II. Vision and Mission

Vision

"To generate wealth for mango cooperatives, suppliers, and exporters"

This proposed vision will be accomplished by strengthening the industry through research and development, proper funding, consistent high-quality production, adequate local transportation, and increases in exports to the United States and Canada.

Mission

The Mission statement will be elaborated by the National Mango Council

III. Goal

The goal is to increase export 100% from 2.5 to 5 million cases of USDA-certified mangoes by 2015.

IV. Outcomes

Because the mango stakeholders support this common goal, it is likely that the sector will experience increased vertical integration and obtain better support from the future government. A goal of exporting five million cases of mangoes by 2015 will increase production and benefit alternative uses for rejected fruit. Consequently, the following outcomes are expected:

Short term

1. The Haitian government will successfully implement the national Fruit Fly control and traceability program in collaboration with grower groups, exporters, NGOs, and foreign donors
2. The exporters will pay a premium to grower groups, as they maintain production quality standards
3. Volunteers and professionals from post-earthquake NGOs in Haiti will help develop new export markets in the European Union and CARICOM to support Haitian farmers
4. The new administration will significantly reduce export fees to promote further export

Medium term

1. The mango stakeholders will obtain a presidential decree to establish the National Mango Council
2. Some exporters will establish their own orchards and export a higher percentage from these fields to increase their profit
3. The Dominican Republic will extend the use of the "couloirs de transport" for USDA-sealed containers at Malpasse for boat shipment
4. A consortium of new and existing suppliers will be able to build their own treatment plants and begin to export
5. The government will regulate the fruit suppliers because this profession is a critical element in the value chain
6. There will be an upsurge in the number of trained grafters and grafting programs nationwide

Long term

1. New technologies such as drip irrigation will be introduced to extend the mango season and develop new production centers
2. 5 million cases of USDA-certified mangoes are to be exported by 2015

V. Environmental Scan

Industry Situation Analysis

Haiti boasts 154 different varieties of mangoes, with many found nowhere else in the world. A product of cross-pollination and the God-given Haitian "terroir", the "Francis" variety is one of the few varieties capable of resisting hot-water treatment, a requisite condition for exportation into the United States.

The unit measure for the Francis mango is the dozen. The standard weight of one (1) Francis mango accepted for export is approximately 700 grams. Therefore, one (1) dozen of Francis mangos weights approximately 8.40 kilograms or 18.48 pounds. Recently, agro-entrepreneurs and organizations have started to utilize Francis mango rejects, estimated at 40% of all production. The rejects are sold locally as mangoes are the only food security during and after the dry season in Haiti. In total, the mango value chain is supported by at least 150,000 economic agents (e.g., producers, intermediaries, transporters, workers, and exporters).

Producers

The mango sector consists of sixteen (16) producer groups represented by the Fédération Nationale des Associations de Producteurs pour la Commercialisation de la mangue. (FENAPCOM), a federation established in 2005.

The producers are also organized loosely into cooperatives. During field visit and interviews, MarChE collaborated with the following:

Mobilizasyon pou Sove Pwodiksyon Agrikol (MOSOPA)

In 2008 MOSOPA produced more than 60,000 dozen Francis mangoes but only 35,000 dozen were sold to exporters as a result of a 58% post-harvest loss. MOSOPA wants to develop a quality control and assurance program to reduce its post-harvest loss to 10% by 2015. MOSOPA also wants to train 10 grafters, develop 100,000 mango seedlings, and graft 50,000 mature trees by 2015. A USAID-funded contractor, CHF International and a local exporter, JMB SA, are currently building a post-harvest/quality center for MOSOPA. The farmer association also received 400 crates and office equipment from MarChE. This center is being built on land donated by the farmers in the region. MarChE' agricultural partner, ORE, provided the logistics and required structure to obtain the land. This farmer association also obtained office equipment and will receive 400 crates from JMB once the center is ready.

Sosyete Agrikol pou Pwodiksyon ak Komesyalizasyon (SAPKO)

In 2009, SAPKO farmers were able to sell 200,000 dozens of Francis mangoes. (This is the standard unit of measurement in Haiti.) Besides technical assistance and training for grafting, and seedling preparation specialists, SAPKO would like to establish a commercial orchard on 32 hectares and purchase three 250 CC motorcycles to facilitate travel on rough terrain. A USAID-funded contractor, CHF International, and a local exporter, JMB SA, are currently building a post-harvest/quality center for SPKO. The farmer association also received 400 crates and office equipment from MarChE. This center is being built on land donated by the farmers in the region. MarChE' agricultural partner, ORE, provided the logistics and required structure to obtain the land. This farmer association also obtained office equipment and will receive 400 crates from JMB once the center is ready.

Association des Producteurs et Vendeurs de Fruits du Sud

ASPVEFS regroups all the actors who interact in the mango value chain in the locality of St Jean du Sud. Last year mango producers from the association produced over 20,000 dozen of exportable mangoes. They managed to achieve this production number due to training on techniques of harvesting, post-harvest processing and improved management principles. The cooperative also created and is selling fruits under the "*Cascade, fruits frais selectionnes*" brand.

Coopérative de Production agricole et de Commercialisation Gros Morne (COPACGM)

COPACGM is an organization bringing together more than nine localities such as (Miok, Gansel, Lacul, Kamas, etc.) in Gros Morne, a high-production area lacking proper roads and adequate storage space. The cooperative includes more than 700 members, of which one third are female. For the past three years, COPACGM was able to sell more than 100,000 dozens of mangoes per year to exporters, a result achieved by the tireless efforts of an NGO called Alternative Development which has donated three collection centers for nine areas of mango production, 600 crates, and provided training on the technique of grafting, traceability, and organic production. Last year due to damage cause by fruit flies, COPACGM only sold 10,000 dozens or 10% of their usual production. As a result, the cooperative is in desperate need of a fruit fly control program in Gros-Morne. In addition, the cooperative expressed interest in developing commercial orchards and needs help in seedling preparation, grafting, and pruning of old mango trees.

The table below represents the partial list of grower cooperatives:

Cooperative	Town	Production (in dozens)
ASPVEFS	Camp-Perrin	20,000
MOSOPA	Cazale-Kamo-Fond Blanc	60,000
COPACGM	Gros-Morne	100,000
KOPKOMFG	Gros Morne	N/A
SAPKO	Saut D'Eau	200,000
RAKKOM	Saut D'Eau	N/A
APD3	Petite-Riviere de l'Artibonite	N/A
APWOMOPA	Arcahaie	N/A
PROCARECA	Cabaret	N/A
RAPCOMOL	Leogane	N/A
REPSIKA	Cayes-Jacmel	N/A
SPAVO	Oranger	N/A
UCOOPEDSA	St Michel de l'Attalaye	N/A

Conducting a coordinated production inventory and quality control measures with the cooperatives listed above can help sustain a consistent supply for export, taking into account microclimate patterns. Depending on the availability of Francis mango trees, each cooperative could forecast 500,000 cases (*or 6,000,000 mangoes: each case holds on average a dozen mangoes depending on size*) per year (less rejects) to achieve the 5 million cases target by 2015.

Suppliers and sub-suppliers (sous-fournisseurs)

Suppliers (or "consolidators') are entrepreneurs who finance sub-suppliers to reserve and/or buy mangoes from smallholder farmers or grower cooperatives. Some of these suppliers receive their cash in advance from exporters. The suppliers usually pick up the mangoes at the collection

centers with the exporter's truck or a rental truck. Then they transport, wash and store the mangoes in their own facilities. This group forms an important link which provides the information needed on the current Traceability Form used by ANEM. The most visible and active supplier cooperative is ANAPROFOURMANG based in Gros-Morne.

Exporters

The number of exporting firms has declined from 13 to 10 (or perhaps only nine) during the 2009 export season due to the increased APHIS fees, skyrocketing transportation and energy costs, and shrinking harvest season. All of these factors have caused major financial stress to the industry. Remarkably, the earthquake on January 12, 2010 did not cause any significant damage to their treatment plants.

Currently, Haiti exports approximately two million boxes of USDA-certified Francis mangoes at an average FOB price range of $5 to $6 per 4.5kgs box. The Haitian mango usually earns close to a 50 % premium over its major competitor, the Ataulfo, from Chiapas, Mexico.

Ministère de l'Agriculture des Ressources Naturelles et du Développement Rural (MARNDR), Direction de la Protection des Végétaux

Some of the MARNDR responsibilities include the following:

- "Develop and maintain a list of mango growers that are authorized to export mangos to the United States. These growers/areas should be organized into "production units" as determined by MARNDR and ANEM. MARNDR should issue each unit a unique "Registered Production Unit Code" for traceability and sampling/inspection purposes";

- "Verify that areas whose production has been registered by MARNDR undergo plant health control measures in order to maintain low fruit fly population levels and sanitary field practices";

- "Develop and maintain a list of authorized packinghouses/hot water treatment facilities that are approved to handle and treat mangos for export to the United States These plants should be issued a "Registered Packinghouse/Treatment Facility Code" for traceability purposes"; and

- "Submit a master list of all Registered Production Units and Registered Packinghouses/Treatment Facilities, and their respective traceability codes, to APHIS thirty days before the export season begins. This list should be organized by regions".

USDA/APHIS/IS

The United States Department of Agriculture (USDA)/ and Animal and Plant Health Inspection Service (APHIS) International Service (IS) agents inspect and certify all treatment plants prior to the export season of fresh mangoes. A plant which fails inspection cannot receive a certificate or process fresh mangoes for export.

Haiti is currently benefiting from a Pre-Clearance Program, monitored by an APHIS Officer-in-Charge (OIC) or designee. This person is authorized to take necessary action to ensure acceptable pest risks found in mangoes. This person is also assisted by employed Foreign Service Nationals (FSNs) who will be trained and designated by APHIS IS to carry out specific duties under the regulations and procedures established by APHIS IS.

Some of the roles of USDA/APHIS/IS include the following:

- "Jointly with MARNDR, sample and inspect each lot of fruit intended for export to the US. Pre-treatment Sampling, Inspection, and Record Keeping for each lot should be conducted according to Appendix F of this Work Plan, "Mango Sampling, Inspection, and Record Keeping Protocol";

- "Reject any lots found to be infested with fruit fly larvae, and refuse treatment and certification";

- "Provide MARNDR with a copy of the results of the sampling/cutting record of each lot of fruit intended for export to the US";

- "Verify that loads of crates, pallets and LD3 containers for exportation are strapped and that each crate is stamped with the official APHIS seal. The stamp indicates that the fruit has undergone quarantine treatment"; and

- "Verify that all conveyances have been cleaned prior to loading certified fruit."

Haitian Mango Production

Wild harvest

Annual mango production has been estimated from 200,000 up to 400,000 MT over an area of 40,000 hectares.

The well-known Francis mango represents 15% of total production; however, approximately 75% of the Francis mangoes produced are consumed locally. To satisfy the local demand for fresh fruits and processing such as dried fruit and juice, the sector will need to triple its production. The Coca-Cola and Odwalla would need approximately 20,000 MT as raw materials for the mango juice project.

Organic

During the 2009 export season, only 2% of total production was certified as "organic". To qualify for this certification, grower cooperatives such as REPSIKA must abide by bylaws and fair trade requirements. Currently, most organizations do not have the financial, technical, and organizational capabilities to obtain and renew this prized certification.

Markets & Market Trends

The American National Mango Board (NMB), whose representatives participated at the Forum, plans to gather consumer information to develop a "full demand model" to scientifically measure the results of its promotion efforts. The NMB objectives will be to predict mango buying habits and determine driving factors of the total demand through a consumer survey and demand analysis

Since this market-trend survey and data analysis is shared with Board members, the Haitian mango sector needs a representative in the NMB to share this information with the entire value chain in Haiti.

Prior to the 2011 mango season, Haitian stakeholders must establish a partnership with the NMB to access readily-available and useful market trend data.

Value added for mango Francis

Grower cooperatives and suppliers are increasingly aware of the alternative use of the Francis mango variety. Because organizations like Delicious Fruit, ORE (dried mangoes) and the Coca-Cola Hope Project (mango juice) are interested in mango rejects for processing, smallholder farmers and voltigeurs may be reluctant to participate in the fruit fly and/or post-harvest quality control program. That said, these groups should be better informed about the two disadvantages for the Francis mango with regards to juice: not enough acid and too much fiber. The organizations willing to process mangoes should mix the Francis with other adequate varieties.

Therefore, there must be close coordination within the sector to guarantee a consistent volume for export while supporting alternative uses of rejects. While the sector awaits increased

production in the next two to three years through mature tree grafting and commercial orchards, two solutions are readily available:

- Non-export: use a higher percentage of other mango varieties for processing during the short season (October-April)
- Export: provide incentives to grower cooperatives such as COPACGM, MOSOPA, REPSIKA, SAPKO, and ASPVEFS. These cooperatives could become the exclusive producers for exportation while non-structured and non-affiliated smallholder farmers could sell to the mango processing organizations

Otherwise, the likely increase in Francis mango usage for dried fruit and juice will reduce exportable volume and create cannibalization.

Supply Chain Management

Supply chain management (SCM) involves more than simply purchasing supplies. To become a world-class producer and exporter, the mango stakeholders need to understand the basic elements of supply chain management.

Quality Control

Quality control must begin at harvest time when mangoes need to be picked in a better condition than under current methods. Therefore, the industry will need to focus heavily on quality control to reduce post-harvest losses from the farm-gate to the collection/quality centers to the treatment plants. Although there are many different uses/markets for mango rejects, a push toward quality-control will subsequently benefit the entire sector.

Since each exporter manages its own quality control program, the process rests on exporters who are willing develop such a program with their suppliers.

Demand and supply planning

With the advent of the collection centers and traceability, the mango industry could develop a database for forecasts of anticipated demand. In the post-harvest centers in Saut D'Eau and Kamo (near Cabaret), two cooperatives, SAPKO and MOSOPA will collect production data from participating farmers. This information will facilitate demand planning for exporters.

Similarly, armed with this new information, the growers will be able to monitor and plan their supply accordingly to satisfy the exporters demand requirements. The farmers will leverage the post-harvest centers as part of their logistics network where all mangoes are washed and packed in crates for the exporters.

However, to successfully execute this demand and supply plan, the growers will need adequate transport to deliver their products to the exporters in case they are unable to collect the mangoes themselves. Once a grower group feels betrayed because of the exporter's failed promise to purchase mangoes, they automatically revert to the "madame saras[4]" who sometimes will pay the same amount per dozen. Such a trend reflects a critical gap in the value chain and will result in the depletion of mango supply available for export.

Material or inventory control

At each grower cooperative, there should be a group responsible for determining the inventory level of crates prior to the harvest season. Once all crates are counted, this same group must also coordinate with the suppliers to discuss mango demand to support exporters' requirements, which includes the outbound side of the supply chain.

Order processing

Several mango suppliers complained that they are at the mercy of the exporters association, and consequently suffer when the association delays the start of the mango season. Inevitably, suppliers who do not have a long-standing relationship with the exporters will continue to locate and buy mangoes. By the time the exporters are ready to operate their plant, usually during the third week of April, some of the suppliers' mangoes are already ripe. In such cases, the suppliers have to liquidate their mangoes to "madame saras". Then, these suppliers return to the growers and purchase immature mangoes called "mango rorotte[5]". In 2010, the mango season experienced a late start, which forced producers in the Southeast to sell mangoes instead to "madame saras" for local consumption.

To help ensure that the exporters receive mangoes when they are ready, the suppliers should propose a tri-party meeting with growers and exporters and establish a just in-time (JIT) ordering process. Through more open lines of communication, the integrity of the value chain will be preserved and the asymmetries in information will be reduced.

Production planning, scheduling and control

Production planning, scheduling and control can take place during the short season (ti saison) between October and April. Currently, most of the mangoes produced and available during the short season are consumed locally. However, the exporters can leverage the short season and create a win-win for the entire sector since they could earn $12 FOB per box or case instead of $6 FOB from the "normal season" April to September.

[4] *Madame Saras*: Women who purchase mango rejects and sometimes pre-purchase mango harvest especially during the short season Oct-February
[5] *Rorotte*: Kreyol word for immature mangoes

To take advantage of the short season, the sector must significantly increase production in the West and Southeast regions where mangoes are harvested between October and April respectively. Such an upsurge could occur through grafting on mature trees and/or new orchards.

Warehousing / distribution

Three types of warehousing/ distribution centers are necessary. The first one is found at the cooperatives-level with the post-harvest centers. At these centers, under a rigorous quality-control and assurance program, the mangoes will be sorted, washed and packed in crates, thereby reducing rejects. The crates, which are also used to transport mangoes from the farm to the centers, are properly labeled according to traceability requirements. The cooperatives should instruct their farmers to gradually shift from the current method of transportation by donkey and other archaic ways during which mangoes are bruised.

The second warehousing/storage location could occur at the suppliers. This group should also abide by the quality control and assurance program established by the industry.

The final warehousing occurs at the exporters' plant for those who decide to store mangoes days before they are treated. Proper ordering and processing coordination can help exporters to reduce energy, transport and labor costs.

Customer service

Customer service is missing in the Haitian mango supply-chain link. There was no evidence of follow-up from growers to suppliers, to exporters, or to the importers. Ultimately, the industry will react when the importers begin to bypass the Francis mangoes for other competing varieties. This trend can be reversed by implementing a robust traceability program. After each transaction, the exporters should provide a product performance, which will subsequently benefit the supplier or cooperatives' rating in the form of premium prices.

Pricing

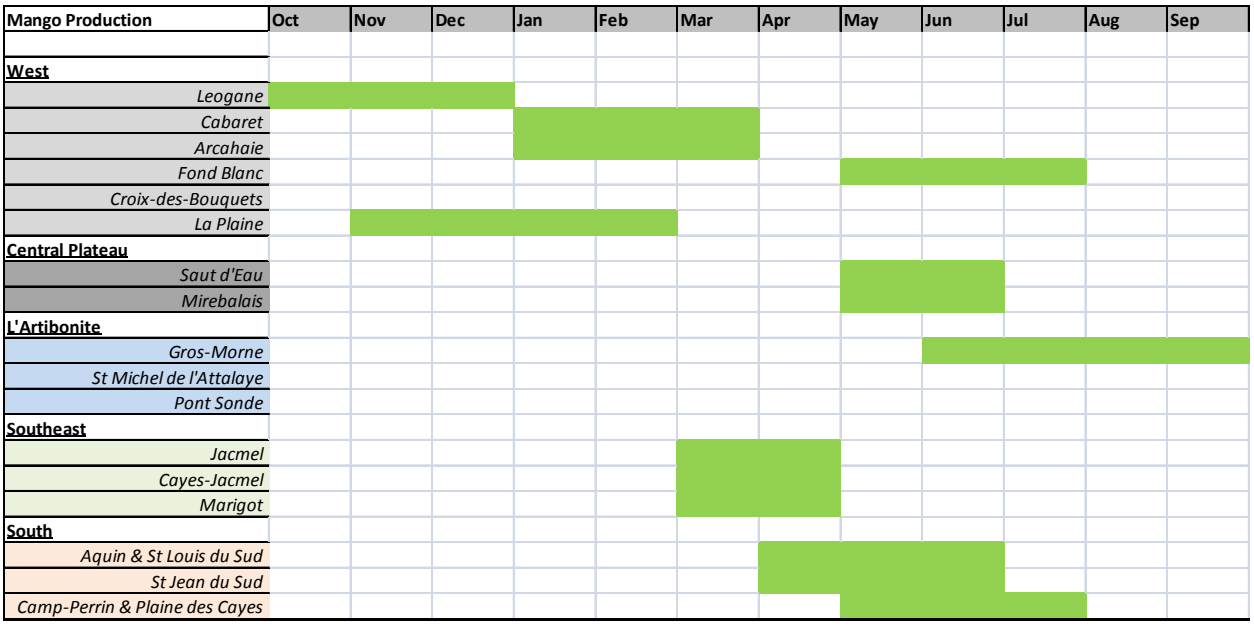
Based on the trust and type of relationship, pricing can be complicated and unpredictable. Some exporters, who are able to provide means of transportation (usually motorcycles) and financing to "trustworthy" suppliers, receive better prices from growers. These suppliers are then able to subcontract to a sub-supplier (*the sous fournisseur*) who pre-purchases the mangos still on the tree.

Many mango growers have no option but to sell their "trees" ahead of harvest time; 50% discount on expected market price is usually charged. Otherwise, the average quoted price. according to most grower cooperatives, was HTG 40 per dozen for non-organic certified mangoes.

Meanwhile, organic mangoes, sold as Fair Trade Certified at Whole Foods Markets, represent a premium for farmers who usually sell the dozens to one particular exporter at HTG55. However, at the end of April 2010, most mangoes near Cayes-Jacmel were already sold to madame saras directly by farmers for HTG40 – 50 per dozen because of high local demand. Members of REPSIPKA also sold to other local buyers who "apparently" offered a much higher price than the exporters.

Seasonality

The mango season begins in October in Leogane and ends in Gros-Morne in September as seen in the table below:



As mentioned in production planning, there is a tremendous opportunity to exploit the short season between October-April. During that time, Haiti could position itself for export between October and January and compete only against Brazil, Ecuador, and Peru as opposed to all the othert competitors. *Please see ANNEX I (courtesy of the National Mango Board)***.**

Industry Performance Issues

During the field visit and in interviews with some stakeholders, we noticed the following performance issues which could negatively affect the mango export industry:

- Inconsistent production and supply - Some exporters are now facing a supply crunch, which will affect their bottom line during the 2010 season. The exporters were unable to

meet a new importer who was ready, willing and able to purchase at least 4-5 containers per week to start; depending on sizing and cost structure. This new buyer currently imports Ataulfo, but would have preferred Francis

- Lack of knowledge base by growers in orchard management, pruning, grafting, handling, packing, and marketing
- Lack of cohesion between grower cooperatives, suppliers, ANEM members, certified-organic supporters, and the ministry of agriculture
- Too much reliance on smallholder farmers who are not willing to adopt production and post-harvest standards
- Seasonal labor with voltigeurs and sub suppliers who harvest immature mangoes
- Lack of local government oversight of suppliers
- Lack of contingency planning for production fluctuation and transportation – local and cargo space availability

Analysis Overview

It is expected that several external, uncontrollable factors will likely impact the mango industry. A high dependency on donor-led programs could curtail the sector vision for wealth creation. Nevertheless, donor countries faced with other global emergencies may significantly reduce foreign aid assistance.

As it is currently the case, cost and availability of transport - both air and sea - are negatively impacting the 2010 export. American Airlines is not transporting mangoes this season since its cargo facility was converted into the new customs arrival.

In addition, an economic slowdown in the United States could push the end-users to switch to alternative fruits. Worsening post-earthquake socio-economic conditions in rural Haiti will continue to increase local consumption and reduce the volume of mangoes available for export.

Moreover, if the future Haitian government does not improve its agricultural policy in support of the mango value chain, address land tenure issues for orchard development, and provide access to credit for farmers, the industry will remain at a roadblock and consequently lose market share in the United States.

Finally, although the exporters were spared by the earthquake, some observers believe that another major upheaval—man made, natural or biological, in the immediate future may cause the collapse of several exporting houses. This concern, shared by many lenders, has imposed higher credit costs and capital paucity in the export segment of the industry.

Key Competitors

According to the latest up-to-date information from the National Mango Board, Haiti's key competitors are as follows:

1. Mexico
2. Peru
3. Ecuador
4. Brazil
5. Guatemala

Although Haiti is currently trailing as the sixth largest importer, it is still the only country with a "backyard" smallholder mango production to benefit from the USDA pre-clearance certificate. The sector should not take this agreement for granted.

VI. SWOT – Industry Analysis

Strengths

Below are the strengths the participants identified during the forum:

Government

1- The Ministry of agriculture officials are well informed and know the mango industry
2- Representative of the agricultural ministry in all areas of mango production (DDA)
3- The government acts as a guarantor of international agreements

Producers, suppliers, and exporters

1- Low production costs
2- Favorable microclimate for production

3- Sector motivation toward quality production and profit maximization

Weaknesses

The forum participants debated over the following weaknesses in and out of breakout groups:

Government

1- Lack of human and financial resources
2- Lack of agricultural policies defined for the mango sector
3- Lack of legal framework governing the mango sector
4- Lack of infrastructure
5- Weak quarantine structure
6- Lack of research and development for the mango value chain
7- Absence of an entity or institution solely for the mango sector

Producers, suppliers, and exporters

1. Archaic technical practices at level of production
2. Absence of a pruning program
3. Livestock presence under mango trees
4. Lack of organizational structure
5. Misunderstanding about orchards exponential value
6. Mango grower groups share neither production nor price information
7. Quality standards neglected and ignored
8. Lack of participation in and understanding of Fruit Fly control
9. Lack of equipment and materials for picking, packing, and transport
10. Irresponsibility of some suppliers regarding the respect of the quality standards for export
11. Too many intermediaries between the producers and exporters: the supplier depends on a sub-supplier who in turn relies on a voltigeur
12. Ambiguity with USDA Pre Clearance Program
13. Lack of frank dialogue between exporters and producers
14. Excessive account payable from exporters to mango producers
15. Exporters not always well informed on quality standards for export
16. ANEM members do not fully comply with quality standards

Organic Market

1- Process and cost of certification.
2- Cost of maintenance.
3- Non-conformity (no other food can be grown in organic space).

Financing

1- Lack of funding
2- Lack of financial tools to support the mango industry
3- Absence of financial norm of control (accounting)
4- Lack of structure to raise funds on behalf of the sector
5- No legal recognition for the mango producers to even apply for loans/grants
6- No credit institution exclusively for the mango industry
7- No agricultural credit

Key Constraints to Industry Development

1. Lack of agricultural policy, which supports the mango sector beyond Pre Clearance Program
2. Lack of research and development facilities to prevent pest infestation
3. Lack of a consistent and well-funded National Fruit Fly Control program
4. Absence of a certification program for grower cooperatives to enforce quality control with smallholder farmers
5. Lack of available funds for training and technical assistance
6. Lack of innovation for new production center and orchards development

Opportunities

The tragic earthquake of January 2010 devastated Port-au-Prince with a domino-effect on the rest of the country. Meanwhile, not one mango tree was uprooted. The forum participants identified the following opportunities for the mango value chain:

Government

1- Promote a massive pruning and grafting program of 200,000 existing mango trees per year from 2011-2015
2- Establish seedling production centers in l'Artibonite and Plateau Central
3- Create employment for grafters

4- Improve vegetation cover
5- Encourage investment interest from multinational firms in the mango sector.

Financing (for: **inputs, supplies, nurseries, materials and equipments)**

1- Possibility to lobby for post-earthquake reconstruction and development funds
2- Coca Cola's Haiti Hope Project
3- Growing needs for organic mango

Producers, suppliers, and exporters

1- The variety of Francis mangoes Francis is very much appreciated in the American market
2- Microclimate is very favorable to the production
3- Harvest season has a comparative advantage on others competitors international
4- There is good market availability
5- There is possibility for diversification of mango products
6- Certification for bioorganic product could be easily obtained because the production system is pro-bio-organic

Threats

The forum participants identified the following threats:

Government

1- Obsolete Character of laws (the law are outdated for the mango sector)
2- Inability to implement phytosanitary standards.
3- Frontier uncontrolled by the state.
4- Lack of information and training for our brokers.
5- Widespread environmental degradation

Organic

1- Few Bio consumers
2- International Competition (Other Bio producers)
3- Other Bio Products
4- Unstable and unpredictable trend of consumption and order of Bio product

Financing

8- Lack of funding
9- Lack of financial tools to support the mango industry
10- Absence of financial norm of control (accounting)
11- Lack of structure to raise funds on behalf of the sector
12- No legal recognition for the mango producers to even apply for loans/grants
13- No credit institution exclusively for the mango industry
14- No agricultural credit

Producers, suppliers, and exporters

1- Traceability system is non-existent
2- Poor road infrastructure
3- Environment in the mango region steadily deteriorating
4- Risks of future pest outbreaks due to lack of control at Haitian custom facilities

The Anastrepha Fruit Fly factor
During the 2007 export season, the fruit fly live larvae found in some containers caused losses estimated at over USD 4 million or 40 % of the FOB price earned by mango exports in 2006.

VII. Strategy Formulation

Critical Success Factors

Since this strategic plan will need a sponsor/promoter, the following actions proposed by the stakeholders are categorized as weaknesses and threats' conversion. The implementer will prioritize the actions accordingly with local industry and global market forces:

Government

Converting weaknesses into strengths

1- Obtain a mango sector budget for the Ministry of Agriculture
2- Define a policy on the cultivation of fruit trees with all actors in the mango sector
3- Update the regulations according to the international production and export standards
4- Construct and develop pre-conditioning centers and define policy for pre-conditioning
5- Rehabilitate and/or construct infrastructure in the agricultural production areas
6- Strengthen phytosanitary and quarantine structure
7- Create forums and news bulletin specific to the mango sector
8- Create research centers for the management of fruit trees
9- Promote grafting and pruning programs nationwide

10- Create an autonomous institution, which will represent and protect the best interests of the mango sector

Converting threats into opportunities

1- Update the laws according to the market
   a) Educate the Haitian legislators about the mango sector
2- Create an awareness campaign and training session for mango suppliers/brokers
3- Develop a better agricultural and environmental policy in order to stop deforestation
   a) Promote orchards
   b) Control the reforestation process in order to prevent the spread of host plant harboring the fruit fly
4- Convert the threat of fruit flies into opportunity by creating other markets such as fruit processing

<u>Producers, suppliers, and exporters</u>

Converting weaknesses into strengths

1- Provide technical assistance for a national Fruit Fly control program
2- Promote pruning and top grafting of mature trees
3- Discontinue the tradition of livestock breeding underneath or near mango trees
4- Strengthen producers' associations
5- Establishment of commercial orchards
6- Regulate producer and supplier associations to strengthen the value chain
7- Train producers and suppliers on quality standards for export
8- Provide producers access to materials and equipment for picking, packing, and transport
9- Delegate responsibility to every supplier to meet quality control standards in the procurement process of mango
10- Establish an agreed-upon mechanism to penalize producers and suppliers who do not meet quality standards
11- Establish an open dialogue between mango producers and exporters
12- Pay producers within 24 hours after the purchase of mango
13- Inform and train exporters on quality standard processes
14- Have ANEM members comply with the Pre Clearance requirements established between the Ministry of Agriculture and USDA

Organic

Converting threats into opportunities

1- Integration of Haiti to US (KNM), to increase the size of organic product consumers
2- Exchange of Information between Bio producers worldwide.
3- Market research for Bio consumers.

Converting weaknesses into strengths

1- Increase the organic production
2- Diversify products being processed
3- Use principles for organic production

Fruit Fly Control

Unfortunately Haiti's prime production season during the summer months coincides with the presence of fruit flies, which reduce mango production, as was the case in Gros-Morne in 2009. To overcome that threat, MarChE conducted a fruit fly demonstration trial in Cayes-Jacmel between February-May 2010. The trial objective was to increase the quality and quantity of mangoes and to extend the harvest season of mangoes grown in Haiti for both domestic and export use. The pilot demonstration involved the growers and the Ministry of Agriculture.

The results of the Fruit Fly Control trial in Cayes-Jacmel clearly indicated that farmers should play a primary role in addressing the fruit fly infestation problems in the Haitian mango value chain in the next five years. These programs are designed to spray the mango trees and alternate host plants, and set traps to monitor insect populations. The results would have been more positive if producers had practiced integrated management of plantations by setting emphasis on the principles of IPM, such as:

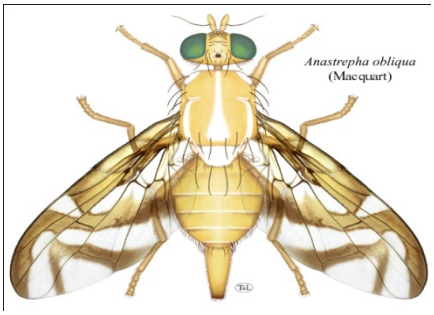
- Waste collection
- Burning infested mangoes
- Intensification of IPM during the ripening period
- Breeding pigs in remote areas of operation
- Support for detection following an approach of correlation between the level of capture and the amount of infected mango

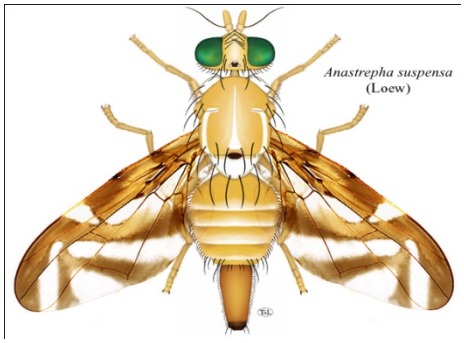
Continuing the program would require applying the FFC approach incrementally throughout the MARDNR and private sector principal mango growing areas. MARNDR would continue its fruit

fly trapping program to monitor infestation, certify fruit fly free zones, and troubleshoot areas with high fly populations, as well as cooperate with efforts in the Dominican Republic.

Fruit fly detection

In November 2009, the DPV unit at the Ministry of Agriculture organized three working sessions with the PNDCMF agents, AHIS/USDA representatives, suppliers, and ANEM members. During examination, the DPV revealed the following two types of fruit flies:





The DPV unit also published the number of traps currently in use. Between October-December 2009, the DPV captured a total of twenty-nine thousand seven hundred seventy (29,770) fruit flies as seen in the table below:

Production area	**Month**		
	October	***November***	***December***
Cabaret	359	95	279
Arcahaie	145	77	164
Montrouis	32	55	40
Léogane	1086	696	1764
Jacmel	913	386	1019
Marigot	477	291	619
Plaine du Cul de Sac	77	145	195

Production area	Month		
	October	***November***	***December***
Mirebalais	475	43	33
Saut d'Eau	1624	334	143
Boucan Carré	630	67	127
Gonaïves	458	172	520
Terre Neuve	8644	1423	1162
Gros Morne	2450	1720	831

What type of strategy?

The mango industry needs to better position itself to increase exports to the United States, Canada, CARICOM, and even the European Union. The trees are there, but the entire value chain must be motivated by quality production and profit. Together, the sector must exploit its strengths and opportunities to assume an optimum global position. Below is a table featuring the industry forces and three types of strategies the mango stakeholders should consider for the sector. The five (5) competitive forces are generally present in every industry. Although all the stakeholders in the mango sector face these forces throughout the export season, they must understand that other exporting countries are the competitors, not the farmer in Gros-Morne or Cayes-Jacmel. The information found in the table below was collected from the field and arranged to help determine the most appropriate strategy (ies) for the sector:

Industry Forces	**Generic Strategies**		
	Cost Leadership	**Differentiation**	**Focus**
Entry Barriers	<u>Local</u> Due to USDA, capital	Mango Francis' unique taste	• There isn't any local entry barrier since

Industry Forces	**Generic Strategies**		
	Cost Leadership	**Differentiation**	**Focus**
	investments to build and maintain treatment plants can affect current and/or new ANEM members		production costs will change by area depending on accessibility of product to market by smallholder mango farmers • Large landowners can raise barriers in commercial orchards where new techniques such as drip irrigation could be introduced for quality production.
Buyer Power	<u>International</u> ANEM members cannot decide to lower price per box to increase exported volume and gain global market share <u>Local</u> Growers, suppliers, and exporters could decide to pay less attention to quality production because they could sell rejects in the local market and/or for value-	<u>International</u> Because the Francis mango from Haiti is unique, importers will still be able to sell the Haitian mangoes at a premium <u>Local</u> Other fruits can offer better results for processing because they contain fewer fibers. However, the best market for the	Local Exporters will eventually establish their own orchards to control their quality production, facilitate traceability, and achieve economies of scale. In the meantime, they rely heavily on the "backyard" production of thousands of smallholder farmers

Industry Forces	**Generic Strategies**		
	Cost Leadership	**Differentiation**	**Focus**
	added utilization to organizations such as the Coca-Cola Haiti Hope Project	Francis mangoes remains the fresh market because it can easily resist the hot water treatment and have a longer shelf life, if picked at the correct maturity level	
Supplier Power	International Although Francis mangoes are unique, Haiti is not producing enough mangoes for the North American market where other competing countries are increasing their export Local Since there is consistent demand for the Francis mangoes, the local suppliers play an important role in the value chain and will most likely remain despite objections from some grower cooperatives.	Madam Saras and Exporters will continue to pass on the supplier costs to end-users	Current low production volume is an advantage to suppliers. However, this trend will change with the upsurge of exporters' commercial orchards
Threat of	Faced with rising USDA fees, higher	Although the Francis mango's taste and	The market niche within the ethnic group

Industry Forces	**Generic Strategies**		
	Cost Leadership	**Differentiation**	**Focus**
Substitutes	customs costs than other Caribbean and Meso America competitors, and a lack of supportive national agricultural and export policy, the exporters have not been able to lower their export price. In addition, Haiti does not have consistent production levels. Therefore, should the US consumers decide to switch to another fruit other than mangoes, Haiti will suffer the consequences	consumer acceptance can withstand threat of substitutes from competing foreign mangoes, the Haitian exporters should first emphasize quality control before identifying other fruits for diversification	and alternative uses for the mango both represent major advantages for the Francis mangoes
Rivalry	The export industry cannot compete on price due to low supply, customs fees, increased local consumption due to post-earthquake socio-economic conditions, and lack of government support to the sector	The Francis variety, only grown in Haiti, is recognized in the United States as one of the best mangoes	Since it is currently grown in certain areas in Haiti, the competition cannot sell a similar variety

Strategy Selection

As evidenced in the table above, the sector must protect its differentiation advantage and focus on producing high quality and quantities of Francis mangoes. As a result, a differentiation-focused strategy should be implemented to achieve the goal of exporting 5 million cases of USDA-certified mangoes by 2015.

Differentiation-focused strategy

Because of the Francis' unique attributes, the exporters can maintain a price premium to cover higher USDA, local transport, and international shipment fees. While focusing on one variety, the entire industry will benefit regardless of whether the mangoes are exported fresh as USDA-certified or processed as dried fruit, juice, or chutney. At the local level, the madame saras network and grower cooperatives will also be able to increase their income with the rejects.

Action Plan

The mango stakeholders made it clear that the sector needed an action plan to thrive. Below are eight (8) programs/activities [in no particular order], which can benefit from a differentiation-focused strategy for the mango industry:

- **Grafting onto older trees**
- **Fruit fly control**
- **Collection centers**
- **Traceability**
- **Road improvement in hard to reach production centers**
- **Research and development**
- **Reforestation with Francis mango trees**
- **Short-term loans to mango farmer associations**

Program 1: Maximize production through grafting onto non-Francis mango trees

Objective	Increase production without planting new trees
Activities	Grafting with quality budwood with the correct characteristics for export
Key Performance Indicators	Number of mangoes produced due to grafting
Output	There is an upsurge in the number of trained grafters and grafting program nationwide
Outcome	The mango production capacity on grafted trees has increased from

	1 million to 3 million dozens by year three of the program
Financial implications	Grafting of matured trees cost $4 per tree. The sector will need to secure $1,600,000 to graft 200,000 trees per year for the first two (2) years. In addition, the sector will need to train 15 trainers per cooperative at $500 per trainer for a five-day training in Camp-Perrin

Program 2: National Fruit Fly Detection and Control Program

Objective	Apply preventive measures to reduce pest infestation
Activities	Continue the Programme National de Detection et Controle de la Mouche des Fruits (PNDCMF) with 10,000 farmers in the following communities: Camp-Perrin, St Jean, Aquin, St Louis, Cayes-Jacmel, Gros-Morne, Leogane, Mirebalais, Saut D'Eau, Cabaret, and Arcahaie
Key Performance Indicators	• Number of trained farmers • Number of traps installed • Results from traps installed • Reduction in pest/fruit fly occurrences
Output	One hundred thousand Francis mangoes tress have been treated in infested areas
Outcome	Farmers in Gros-Morne are selling more Francis mangoes during the summer
Financial implications	*See Annex II for estimated 5-year budget*

Program 3: Post-harvest centers

Objective	Reduce post-harvest losses with the efficient use of collection/quality control centers
Activities	• Build collection centers in strategic locations near high volume production areas. • Distribute color-coded crates and train the farmers on proper utilization from the farm gate to the collection centers
Key Performance Indicators	Percentage decrease in post-harvest losses due to proper washing, packing, and use of crates
Output	Four grower cooperatives are trained in quality control at post-harvest centers
Outcome	Exporters are able to treat and sell 80% of the mangoes purchased from post-harvest centers

Financial implications	• Each collection center will cost approximately $65,000 • Each crate cost approximately $6.50 • Transport costs will vary based on volume

Program 4: Traceability

Objective	Track and quickly locate the origin/regions of infested mangoes
Activities	• Using information technology at the collection center to collect, maintain, and share a database of mango origin by region with the producers, suppliers, exporters and the ministry of agriculture • Provide a tracking barcode for each crate used by farmer associations
Key Performance Indicators	Quantity of infested mangoes tracked and located as a result of the traceability system
Output	Color-coded crates are distributed to four (4) grower cooperatives
Outcome	Exporters are able to locate the origin of one case of infested mangoes within two hours
Financial implications	To be determined by implementer

Program 5: Road improvement near high volume mango production regions

Objective	Facilitate sales of mangoes in hard to reach areas
Activities	Construction, rehabilitation, and maintenance of dirt road as needed in the following communities: Camp-Perrin, St Jean, Aquin, St Louis, Cayes-Jacmel, Gros-Morne, Leogane, Mirebalais, Saut D'Eau, St Michel de L'Attalaye, Cabaret, and Arcahaie
Key Performance Indicators	Sales increase due to accessibility by road
Output	Twenty kilometers of road near Gros-Morne are rehabilitated between May-September
Outcome	Farmers from Gros-Morne are selling 600,000 dozen Francis mangoes
Financial implications	To be determined by implementer

Program 6: Research and Development

Objective	Innovation within the mango sector related to pest control techniques, new production center, and discovery of other treatment-resistant mangoes
Activities	To be determined by implementer
Key Performance Indicators	Introduction of new technologies
Output	The ministry of agriculture demonstrates that Francis mangoes can grow in Jean-Rabel
Outcome	One exporter in Port-de-Paix exports 50,000 cases of Francis mangoes to Miami
Financial implications	To be determined

Program 7: Reforestation

Objective	Increase production with new mango trees in commercial orchards
Activities	• Nationwide seedling preparation including grafting • Soil conservation in selected regions • Planting campaign in selected regions • Monitoring of new plantations • Planting campaign near sites of new road construction in rural areas by mango cooperatives
Key Performance Indicators	Number of trees harvesting in year three
Output	2,000 hectares are planted with recently-grafted two-foot tall Francis mango trees
Outcome	Haiti is selling carbon offsets and exporting 5 million cases of mangoes
Financial implications	Seedling preparation cost $2 per tree. The remaining costs will vary with quantity, transport, and/or labor during planting campaign

Program 8: Short-term loan

Objective	Provide necessary funds to farmer associations for materials and equipment purchase
Activities	• Develop business plans with farmer associations • Qualify participating farmer associations

	• Disburse six-month short-term loans to qualified farmer associations
Key Performance Indicators	• Amount of short-term loans disbursed • Amount of short-term loans repaid • Number of farmer associations that receive short-term loans
Output	Short-term loan repayment is extended to one year
Outcome	Commercial banks launch new financial instruments for mango farmers at low interest rates
Financial implications	These short-term loans will benefit the entire sector in the long term

Programs Implementation

Below are the potential agencies/organizations, which could implement the aforementioned programs in the short to long-term:

Program	Budget	Organization/Agency	Procedure
Short-term			
Grafting	TBD	ORE	Competitive bid from the NMC
Fruit fly control		MARNDR and ANEM	
Collection/Quality Control Centers		WINNER and ANEM	USAID-funded program
Traceability		WINNER	USAID-funded program
Short-term loan	TBD	USAID	USAID-funded program
Long-term			
Road improvement in hard to reach production centers		NMC and TPTC	Funds from government budget, private local and international donation,

			and dues from mango sector
Research and development		NMC and MARNDR	Funds from government budget, private local and international donation, and dues from mango sector
Reforestation with Francis mango trees		NMC and MARNDR	Funds from government budget, private local and international donation, and dues from mango sector

VIII. Strategy Implementation

To achieve sustainability, the aforementioned programs should be funded and implemented through a Public Private Partnership (PPP). The mango stakeholders [ANEM, FENAPCOM, ANAPROFOURMANG, etc] with the support of the ministers of agriculture, finance, commerce, and environment, should obtain a presidential decree to establish a permanent National Mango Council (NMC). Once in place, the PPP should be developed as follows:

Private- National Mango Council (NMC) composed of mango cooperatives, suppliers, and exporters, and other stakeholders in the sector

Public- government of Haiti (Ministries of Finance, Public Works, and Agriculture), NGOs, and international donor agencies

The NMC should be an autonomous agency whose role is to enforce the PPP for the mango industry. The council should comprise the following committees under the leadership of a full-time Executive Director:

National Mango Council

Committee	Role

Committee	Role
Logistics	• Secure adequate cargo space and negotiate better international shipment terms with air and/or sea carrier on behalf of ANEM • Ensure the proper use of the NMC pick-ups and/or trucks, which would have been leased or rented by qualified cooperatives during the mango season. Qualification criteria will be determined by all representatives • Coordinate seedlings acquisition and transport to planting areas • Purchase and distribute grafting and pruning materials to grower cooperatives • Manage the data center for the traceability platform • Prepare and conduct semi-annual council gathering • Organize quarterly gathering with the mango cluster in the Dominican Republic in collaboration with the Marketing committee • Inspect, maintain, and repair collection centers
Capacity Building	• Prepare training materials and oversee agencies hired to implement training and technical assistance program for the mango industry • Certify trained post-harvest agents and other profession in the value chain • Track production level and ensure export targets are met
Research and Development	• Communicate with the Direction de Protection des Vegetaux (DPV) at the ministry of agriculture for phytosanitary issues • Participate in USDA-led events in the USA regarding new

Committee	Role
	techniques for mangoes treatment • Drive innovation within the mango sector related to pest control techniques • Develop new varieties, which could resist hot water treatment and/or be used for drying or juice • Gather production information and interact with certified organic or fair trade agencies • Identify and record all existing Francis mango trees through GPS and develop new mango producing regions with orchards using drip-irrigation if necessary
Finance	• Develop and manage a "Mango Fund" • Prepare a five year operational budget for the mango sector • Raise needed funds for mango operations • Negotiate better credit terms with commercial banks and microfinance institutions on behalf of qualified grower and supplier cooperatives, and exporters
Legal affairs	• Resolve internal disputes between the value chain stakeholders • Lobby on behalf of the mango sector to the government and international donors
Promotion and Marketing	• Liaise with the National Mango Board in the USA and share market trends with the value chain stakeholders • Represent the Haitian mango sector abroad at the mango industry international conferences • Assist, review, and approve local branding and logos for

Committee	Role
	mango-derived products • Create and maintain a national mango website • Develop promotional materials
Consumer Protection	• Receive and follow-up on customer complaints due to infested mangoes • Follow-up with major local buyers in the hospitality industry

IX. Evaluation and Control

Although this document lists intended strategies, there cannot be an evaluation and control until the strategies, which will have been selected, are actually implemented. Therefore, the implementer of this strategic plan will ultimately develop the program evaluation and control.

X. Program Promotion

While waiting for a suitable implementer and a presidential decree to create the National Mango Council, it is expected that ANEM, FENAPCOM, ANAPROFOURMANG and other stakeholders will promote the program themselves. To do so, the groups will invite the news media to plan a nationwide promotional campaign for the mango industry.

XI. Conclusion

The mango stakeholders showed that they are willing to change their sector to increase profitability. However, despite their commitment during those two days in April 2010 to contribute toward a strategy for their industry, there isn't any evidence of a readily available organization, which could focus solely on the implementation of the plan. A presidential decree will be necessary to establish and structure the proposed National Mango Council, which eventually could be in charge of the sector's future.

ANNEX I[6]: 2007-2009 mango export to the USA and Haiti's position for October-March

Year	2009												
Sum of Total Volume (MT)	Month												
Country	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Grand Total
Brazil	9,109	4,290	24	0	0	0	0	0	0	0	2,856	6,880	23,159
C. Rica	0	0	0	0	6	734	136	0	0	0	0	0	876
Colombia	0	0	0	0	0	0	0	4	0	0	0	0	4
D. Republic	0	0	0	0	0	0	10	31	54	108	0	0	203
Ecuador	3,632	12,415	13,081	5,611	566	0	0	0	0	0	0	0	35,304
Guatemala	0	0	0	0	0	1,694	7,121	5,483	407	0	0	0	14,706
Haiti	0	0	0	0	0	0	1,318	3,653	1,030	1,959	1,023	29	9,013
Honduras	0	0	0	0	0	19	0	56	0	0	20	0	94
India	0	0	0	9	4	9	21	44	67		0	0	155
Mexico	34	25	40	170	7,460	24,803	29,898	33,462	39,258	31,155	15,262	2,650	184,217
Nicaragua	0	0	0	0	0	466	1,122	765	0	0	0	0	2,352
Peru	0	81	3,893	6,929	3,674	2,583	156	0	0	0	0	0	17,315
Thailand	0	0	1	0	0	2	0	1	0	0	0	2	6
Grand Total	12,775	16,809	17,038	12,719	11,710	30,309	39,783	43,499	40,817	33,222	19,161	9,561	287,403

Year	2008												
Sum of Total Volume (MT)	Month												
Country	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Grand Total
Brazil	8,571	10,404	283	0	186	675	0	0	0	0	355	5,271	25,746
C. Rica	0	0	0	0	18	1,025	196	0	0	0	0	0	1,239
D. Republic	0	0	0	0	0	0	27	45	49	35	18	0	173
Ecuador	1,224	6,829	8,793	7,431	422	0	0	0	0	0	0	0	24,698
Guatemala	0	0	0	0	0	3,599	7,811	3,278	231	0	0	0	14,919
Haiti	0	0	0	0	0	0	2,179	2,954	1,615	1,525	0	0	8,273
Honduras	0	0	0	0	0	18	0	0	0	0	0	0	18
India	18	18	0	18	0	0	51	115	69	6	0	0	294
Mexico	1,189	53	72	0	2,844	16,760	26,065	24,216	40,716	33,224	26,123	10,327	181,589
Nicaragua	0	0	0	0	89	973	911	170	18	0	0	0	2,161
Peru	0	0	747	12,353	16,172	8,565	399	0	0	0	0	0	38,236
Philippines	0	0	0	0	1	5	3	1	0	0	0	0	10
S. Africa	0	0	0	0	0	0	0	0	0	0	54	0	54
Thailand	0	0	0	5	0	0	0	17	3	0	0	0	26
Turkey	0	0	0	36	0	0	0	0	0	29	0	0	65
Grand Total	11,002	17,304	9,895	19,843	19,733	31,620	37,641	30,797	42,700	34,818	26,549	15,598	297,499

Year	2007												
Sum of Total Volume (MT)	Month												
Country	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Grand Total
Brazil	9,470	3,323	22	417	0	231	323	0	0	0	2,973	7,920	24,678
C. Rica	0	0	0	4	131	718	481	0	0	0	0	0	1,334
D. Republic	0	0	1	0	0	0	0	67	74	25	0	0	167
Ecuador	975	10,500	14,363	5,358	42	0	0	0	0	0	0	0	31,238
Guatemala	0	0	0	0	0	1,013	7,295	4,181	392	0	0	0	12,881
Haiti	0	0	0	332	27	360	2,576	2,132	2,648	310	21	0	8,406
India	0	0	18	0	0	0	0	66	93	3	0	0	180
Mexico	734	0	0	0	1,268	14,581	24,904	27,809	36,142	38,809	30,988	9,214	184,449
Nicaragua	0	0	0	0	129	857	1,299	235	0	0	0	0	2,520
Peru	0	87	4,400	11,428	9,062	3,649	565	0	0	0	0	0	29,190
Philippines	0	0	0	0	0	1	4	4	1	0	0	0	10
S. Africa	0	1	0	0	0	0	0	0	0	0	0	0	1
S. Lanka	0	65	0	37	0	0	0	0	0	0	0	0	102
Thailand	0	12	7	0	5	0	0	0	0	0	0	0	23
Turkey	0	0	0	25	0	0	0	2	0	47	0	0	74
Grand Total	11,180	13,986	18,811	17,601	10,663	21,409	37,447	34,496	39,349	39,194	33,982	17,135	295,252

[6] Source: *National Mango Board*

ANNEX II: Fruit Fly Control 5-year budget estimate

	Unit	Quantity	Cost/unit	Total
Coordination & staff				
One (1) International Consultant	trips	10	$8,000	$80,000
Project leader ($1500 mo.)	person	1	$18,000	$90,000
Technicians ($500 mo.)	person	10	$60,000	$300,000
Subtotal				**$470,000**
Transportation				
Pick-up (double cabin)	vehicle	5	$30,000	$150,000
Fuel	Cost/mo.	60	$600	$36,000
Maintenance	Servicing	25	$200	$5,000
Subtotal				**$191,000**
Equipment & materials				
Rubber-reinforced gloves		20	$10	$200
Rubber boots		20	$50	$1,000
Masks		20	$20	$400
10 Gallon plastic container for water		100	$10	$1,000
5 Gallon bucket		100	$10	$1,000
GPS		10	$150	$1,500
Computer & software		10	$2,000	$20,000
Miscellaneous (poster boards, etc.)		600	$10	$6,000
Projector		10	$500	$5,000
Corn cobs (biodegradable substrate)				
Miscellaneous (poles, wire hangers)		20	$10	$200
Subtotal				**$36,300**
Chemicals				
Spinosad	gallon	48,000	$50	$2,400,000
Subtotal				**$2,400,000**
Training				
Baiting, GAP & BMP	sessions	5,000	$100	$500,000
Subtotal				$500,000
Estimated Total				**3,597,300$**