



## **Workshop Report**

### **Coconut Industry Development for the Caribbean: Towards a Shared Vision and Road Map**

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Georgetown Guyana**

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"Linking the Caribbean for Regional Food and  
Nutrition Security and Rural Development"



## Contents

List of Acronyms.....	3
1 Introduction .....	4
2 Workshop Context .....	5
2.1 Background .....	5
2.2 Workshop Objectives .....	6
2.3 Expected Results.....	6
2.4 Workshop Organization and Participants .....	6
3 Summary of Workshop Proceedings.....	7
3.1 Opening Session.....	7
3.2 Technical Presentations.....	11
3.3 Issues and Gaps for Consideration .....	25
4 Workshop Proceedings - Day 2 .....	27
4.1 Recap of Day 1 and Setting the Scene .....	27
4.2 Working Group Session 1 – Identifying Possible Solutions .....	27
4.3 Working Group Session 2 – Accountabilities and Responsibilities.....	28
4.4 Working Group Session 3 – The Basis of a 3 – 5 Year Road Map .....	28
4.5 Consolidated Road Map.....	28
5 Plenary Discussion and Closing Remarks .....	28
6 Recommendations .....	29
7 Conclusions .....	30
Annex I: Workshop Programme.....	31
Annex II: List of Participants.....	35
Annex IV: Consolidated Coconut Industry Road Map for the Caribbean .....	44
Annex V: Technical Workshop Report Presentation to the Alliance.....	48

## List of Acronyms

ACP	African, Caribbean and Pacific
APCC	Asian Pacific Coconut Community
BCA	Biological Control Agent
BoS	Bureau of Standards
CABI	Centre for Agriculture and Biosciences International
CAEP	Caribbean Agricultural Extension Program
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum
CARINET	Caribbean Taxonomic Network
CDB	Caribbean Development Bank
CEDA	Caribbean Export Development Agency
CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement
COGENT	Coconut Genetic Resources Network
CPHD	Caribbean Plant Health Directors' Forum
CROSQ	CARICOM Regional Organisation for Standards and Quality
CTA	Technical Centre for Agricultural and Rural Cooperation ACP-EU
CWA	Caribbean Week of Agriculture
DEVCO	–Development and Cooperation EuropeAid
DEXIA	Dominica Export Import Agency
DHEA	Dehydroepiandrosterone
DR	Dominican Republic
EDF	European Development Fund
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GCW	Green Coconut Water
GMC	Guyana Marketing Corporation
IFAD	International Fund for Agricultural Development
IICA	Inter-American Institute for Cooperation on Agriculture
ISO	International Standards Organisation
JIPCO	Jamaica Investment Promotion Company
LY	Lethal Yellowing
MoA	Ministry of Agriculture
MCTs	Medium Chain Triglycerides
NAMDEVCO	National Agricultural Market Development Company
NAREI	National Agricultural Research and Extension Institute
NARI	National Agricultural Research Institute
NGO	Non-governmental Organisation
NPPO	National Plant Protection Organisation
OECS	Organisation of Eastern Caribbean States
R&D	Research and Development
RPM	Red Palm Mite
RR	Red Ring
SRC	Scientific Research Council
TT	Trinidad and Tobago
UWI	University of the West Indies
VCO	Virgin Coconut Oil
WGS	Working Group Session

## 1 Introduction

The Coconut Industry is an important economic activity in the Caribbean region. However, since the 1980's the industry has been in decline due to a number of factors including:

1. Loss in consumer confidence.
2. Loss of international markets for traditional products e.g. copra and coconut oil due to the promotion of the negative health impacts associated with the consumption of coconut products which were subsequently refuted.
3. Serious pest and disease problems, aging coconut palms, and low productivity.
4. Lack of investments in new plantations, research and development for new products and modern processing facilities.

The market situation has changed in recent years. Coconuts and their derivatives are now regarded as being beneficial to human health and wellness and this has led to a strong growth in demand for both raw materials and value added products in local, regional and international markets. Demand now exceeds supply and the production base is lagging behind.

To benefit from the strong growth in demand, a number of major challenges need to be addressed. These include the high cost of inputs and labour, ageing plantations, the limited coconut palm gene pool, major pests and diseases, lack of quality planting material, inadequate research and development, antiquated infrastructure, poor agronomic practices, fragmented industry organisational structures and the lack of an integrated approach for transforming the industry at both the national and regional levels.

This requires policy intervention, broad-based stakeholder engagement and public and private sector investment.

## 2 Workshop Context

### 2.1 Background

The European Commission on behalf of the Secretariat of the African, Caribbean and Pacific Group of States (ACP) and the Caribbean Forum (CARIFORUM) missions funded a needs assessment study which aimed to assess the social, economic and environmental relevance of revitalizing the Caribbean coconut industry. The consultancy assignment was completed in May 2013 and the main challenges as well as opportunities, priority intervention areas for moving the industry forward and a strategy for implementation were identified. The priority interventions were divided into two main streams, namely:

1. Enhancing the range of value added products, particularly higher value products and growing business and entrepreneurial activities and;
2. Improving production, productivity and efficiency.

Within the framework of strategic intervention area 1 - *enhancing/developing coconut based value added products* - the following activities were indicated: (i) product and process technology improvement in cottage scale coconut water and virgin coconut oil; (ii) developing other cottage/artisan value added products in coconuts; and (iii) modernization and upgrade of value added processing plants to improve efficiency as well as competitiveness and consumer awareness campaigns.

Within the framework of intervention area 2 - *improving production, productivity and efficiency* - the following core activities were indicated: (i) widening the gene pool, phased rehabilitation of plantations and special development projects in St. Lucia and Guyana; (ii) enhancing the scientific capacity in coconut within countries; and (iii) conducting collaborative research and development on lethal yellowing, red palm mite and red ring diseases.

These interventions, if successfully implemented, are expected to lead to: (i) improved and enhanced sustainability in production and productivity of coconuts; and (ii) expansion of the range, quality and marketability of coconut based value added products. The study report further recommended that each country develop a Coconut Industry Road Map and business plan with the involvement of stakeholders along the value chain.

CTA and CARDI, in consultation with the CARIFORUM Ambassadors based in Brussels, agreed to host a two-day workshop on 7<sup>th</sup> and 8<sup>th</sup> October, 2013 during the 12<sup>th</sup> Caribbean Week of Agriculture (CWA) to share the findings and recommendations and gain buy-in for future action from a diverse group of Caribbean stakeholders. The outputs of the workshop were presented to Ministers of Agriculture and their senior representatives as well as delegates from national regional and international organizations and civil society attending the Alliance meeting on 9<sup>th</sup> October and subsequently for endorsement by the Council for Trade and Economic Development (COTED) on the 12<sup>th</sup> October, 2013.

## **2.2 Workshop Objectives**

The workshop objectives were:

- To review in-depth the results of the Intra-ACP 10th EDF needs assessment study on the coconut industry in the Caribbean region.
- To agree on the priority interventions and a Road Map for developing the Caribbean coconut industry within a three to five year period at national and regional level.
- To seek endorsement from Caribbean ministers attending the CWA on the indicative Road Map for developing the Caribbean coconut industry over the next three to five years.

## **2.3 Expected Results**

The expected results were:

- Endorsement of the findings of the Intra-ACP 10th EDF needs assessment study.
- Consensus achieved on the strategic interventions and an indicative three to five year Road Map for coordinated regional and national action for developing the Caribbean coconut industry for presentation to Caribbean Ministers of Agriculture represented at the CWA.
- Endorsement of the three to five year coconut industry Road Map by Ministers attending the CWA for further consideration by national governments and industry stakeholders

## **2.4 Workshop Organization and Participants**

The workshop programme was divided into two parts (see Annex I). Day 1 was devoted to setting the scene and involved a series of expert and industry presentations. Day 2 was devoted to working group sessions (WGS) to develop the basis for a three to five year Coconut Industry Road Map for the CARIFORUM countries.

Approximately 80 persons participated in the workshop. They included small, medium, and large scale producers and processors; national, regional, and international experts (plant health specialists, food technologists, agronomists and geneticists) representing a wide range of specialist disciplines; private sector and public sector representatives and regional and international technical, developmental and donor organizations. Nine CARIFORUM countries and five Pacific Island Nation States were represented at the workshop.

Details of the workshop participants are provided in Annex II.

## 3 Summary of Workshop Proceedings

### 3.1 Opening Session

#### 3.1.1 Welcome and Introductory Remarks

Dr H A D Chesney, the Executive Director of CARDI, opened the workshop and welcomed the participants. He was followed by Mr Robert Baldwin, who represented Ambassador Robert Kopecky, the Head of Delegation for the European Union in Guyana. He stated that, *"Under the 11<sup>th</sup> European Development Fund, 1 billion Euro have been set aside for the Caribbean Region, for both national and regional programmes, of which 350 million Euro have been earmarked for Caribbean Regional programming. In line with the Joint EU/Caribbean Strategy three focal sectors have been identified as the most likely areas within which this envelope can be utilized. The first focal sector is Economic Integration, including implementation of the EPA. Although the 11<sup>th</sup> EDF is still at the beginning of the programming phase, it is nevertheless plausible that when the 11<sup>th</sup> EDF programming has been concluded and the actual individual programmes are decided, that the agricultural sector may be able to benefit under the umbrella of the relationship to the EPA aspects of the first focal sector, as the current Sanitary Phytosanitary Programme, previously mentioned, did under the 10<sup>th</sup> EDF."*

Mr Michael Hailu, Director, CTA, Netherlands, reinforced the Centre's ongoing support for agricultural sector development in the ACP countries. He expressed the desire to strengthen the relationships and experiences of sector stakeholders working in both the Pacific and Caribbean regions to stimulate more innovative thinking. To this end, Ministers from both Tonga and Samoa and a number of senior public sector and private sector stakeholders active in the Pacific islands were participating in the workshop and other related CWA events.

#### 3.1.2 Keynote presentation - Industry Needs Assessment Study

This presentation titled 'Development of the Coconut Industry in the Region: Lessons from a Regional Study' was made by Dr Ranjit Singh, co-author of the 'Development of the Coconut Industry in the Caribbean Region' Intra-ACP 10th EDF needs assessment study, with assistance of Dr Simon-Eden Green, the other co-author. The study included interviews with a wide range of stakeholders (farmers, processors, institutional, R&D, public sector) from several Caribbean countries and field visits. Historically the industry consisted mainly of large monoculture plantations and processing plants producing copra and coconut oil. Value adding was largely confined to first stage processing. Some small scale processing occurred at the community level.

From an economic perspective, the coconut industry has been an important contributor to foreign exchange earnings, rural employment and livelihoods, and a source of employment for rural women. However, it suffered a major decline commencing in the 1970s and 1980s. That decline was caused by the availability of cheaper vegetable oils produced using modern high technology production and processing systems. In addition, the purported link between coconut oil and cardio-vascular diseases had a serious negative impact on the market for coconut oil internationally.

Today, the international market for coconut and coconut derived products has changed. Positive human health and wellness benefits have become associated with strong growth market opportunity leading to a number of new developments in the region including:

- A high and growing demand for green coconut water (GCW).

- A shift from copra to green coconut and high value products.
- A number of new investments to establish coconut groves, particularly for GCW production.
- Inter-cropping and mixed cultivation.
- A number of small scale and artisanal entrepreneurs engaged in the production of Virgin Coconut Oil (VCO); high quality value added health and beauty products; coconut crafts; coconut milk, cream and frozen shredded products; and coconut-based food enhancers.

The following issues and challenges were identified.

From the production end:

- The age of many coconut palms– typically over 50 years with little replacement planting having been undertaken over a long period of time.
- A range of pests and diseases, some of which are lethal and difficult to manage.
- A limited gene pool of coconut varieties, which has relevance for breeding when it comes to developing disease resistant varieties and varieties with greater productivity and more desirable traits.
- The abandoned/semi-abandoned state of coconut groves in some countries.
- Poor field husbandry practices by many growers, including poor field sanitation (partly due to the low returns that have been received for traditional copra).

From the value adding perspective:

- The limited number of coconut based value-added products emanating from the region.
- The generally poor environmental conditions under which cottage scale artisanal processing of oil/virgin coconut oil takes place. Many use antiquated techniques and technologies.
- Food safety concerns and the limited shelf life of small-scale GCW bottling.
- The absence of business and marketing support for the coconut-based craft industry in the Caribbean region, an area that the authors consider offers significant potential.

Others included:

- **Marketing** – limited marketing and other strategic entrepreneurial support for small scale/artisanal processors of value added products.
- **Technology** – a lack of suitable labour saving technologies for processing operations. Much of the current technology is labour intensive, antiquated and low technology.
- **Competitiveness/profitability** – in particular of traditional copra production.
- **Industry Organisation** – stakeholders are unorganised in most Caribbean countries, except in Jamaica and the Dominica Republic.

Three product areas were identified as offering opportunities. They are:

- Products which require larger volumes of both green and dry coconuts e.g. flavoured coconut water beverages, coconut milk, coconut cream, frozen coconut and desiccated coconut.
- Products for small but growing markets and are suitable for low-volume or artisanal production e.g. Virgin Coconut Oil (VCO), coconut craftwork, gourmet food/flavour enhancers, and boutique products such as soaps and moisturisers.

- High end products such as cosmeceuticals (e.g. coconut-based cosmetic products in which the bio-active ingredients deliver additional health benefits) and nutraceuticals (coconut-based bio-ingredients which offer health and wellness benefits).

Four strategic intervention areas for developing a profitable and competitive coconut industry were proposed:

1. **Stakeholder Organising/Industry Development Planning.** Key areas included in this category are:
  - a. Strengthening the supply chain through stakeholder collaboration at the national and regional levels.
  - b. Developing an Industry Business Plan and Road Map.
  - c. Creating a conducive policy environment – national and regional (including a review of the CARICOM Oils and Fats Agreement).
2. **Production Oriented Interventions** – including:
  - a. Direct improvement of production and productivity (financial and technical assistance).
  - b. R&D to address key pests and diseases.
  - c. Strengthening R&D capacity at the national level to effectively manage pest and diseases.
  - d. Specific community-based case studies to promote the development of the industry in local communities.
3. **Value-Added Oriented Interventions** – including:
  - a. Capacity building for value-adding entrepreneurs as well as the provision of business support services including financing.
  - b. Technical assistance in product and process development with respect to value-adding.
4. **Marketing / Business Oriented Interventions** – including:
  - a. Business support including assistance with market development for coconut-based value added products made by small scale/artisanal entrepreneurs.
  - b. Consumer awareness and sensitisation regarding the range of coconut value added products and their attributes.

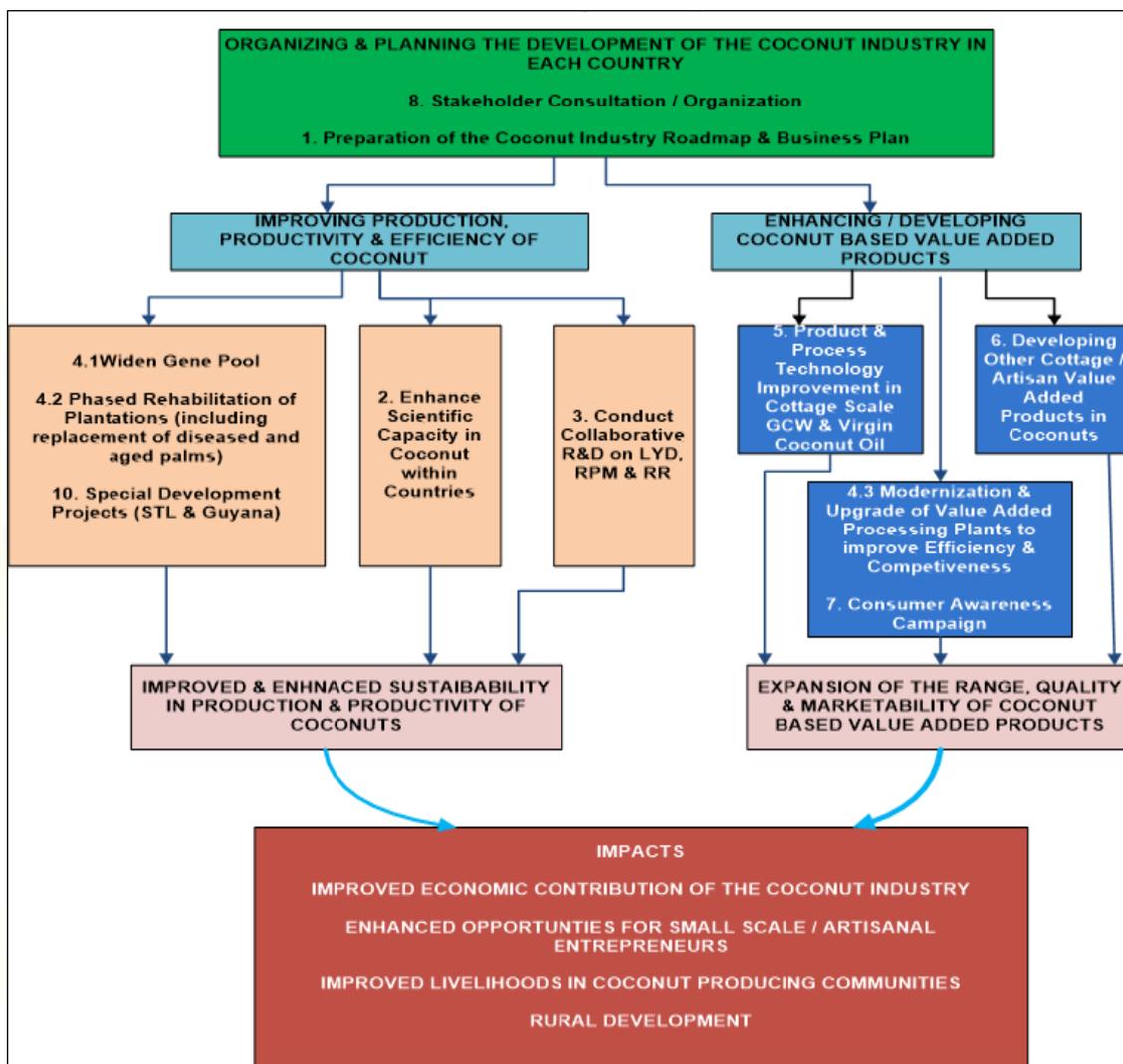
A schematic summarising and integrating the proposed interventions and processes for ensuring a positive outcome for the Caribbean Coconut Industry is shown in Figure 1.

The authors recommended that a Coconut Industry Project Development Steering Committee made up of industry representatives from all the coconut producing CARIFORUM countries, chaired by a private sector representative, be set up. It was also recommended that regional institutions, including universities, hold associate status, and that donor funding be sought and a Technical Project Manager be appointed.

The following target timeframes (starting January 2014) were indicated:

- For national level initiatives requiring local resources only – months 1 to 6.
- For national level initiatives requiring donor technical assistance – months 1 to 12.
- For regional projects requiring donor financial support – months 12 to 60 (with possible 11<sup>th</sup> EDF funding support).

**Figure 1: Overview of the proposed interventions and the processes for achieving the desired impacts**



### 3.1.3 Feature Address

The Honourable Minister of Agriculture for Guyana, Dr Leslie Ramsammy, gave the participants a great deal to think about. Three quotes from his address are of particular note.

*“The Caribbean must embrace coconut with the enthusiasm it deserves.”*

*“You cannot use old infrastructure to develop an important new industry.”*

*“We need policy, science, farm, and market linkages.”*

The quotes were illustrated with some specific examples. The first was of a new planting of 10,000 coconut trees which had been completed in Guyana. All the seed nuts used were of a random genetic origin, uncertified, and simply gathered from ‘anywhere and everywhere’ in the local area. According to the Minister, this was a reflection of the general ad hoc approach being taken towards development of the coconut industry. Another example was that of Guyana’s rice industry. By adopting a planned and integrated approach to its development, including investing in research and development (R&D), rice yields rose from 1.5 tons/ha in 1990 to 6 tons/ha today.

He cautioned that any Road Map developed at the workshop would be of little value unless the coconut industry is organised so that its implementation can be realised. He challenged those present to ensure that the necessary organisational structure is put in place, both nationally and regionally.

He further challenged the workshop participants to set up one model coconut farm each in four countries; Trinidad and Tobago, Guyana, Jamaica and Suriname. Each model coconut farm should be planted with selected and certified planting material and developed according to a well-defined industry plan.

Land tenure is a major issue in many Caribbean countries and is something that needs to be addressed, as does praedial larceny. In addition, whilst there are many current pest and disease challenges facing the industry in the region, he says there is a need to be vigilant against new pest threats.

In Guyana, the National Agricultural Research and Extension Institute (NAREI) has appointed a Coconut Sector Leader. In addition, the government of Mexico is helping Guyana resurrect the coconut industry. Dr Ramsammy said that more collaborative partnerships are needed.

### **3.1.4 Vote of Thanks**

Ms Nisa Surujbally, Programme Manager, Agriculture and Industry of the CARICOM Secretariat, delivered the vote of thanks on behalf of the CARICOM Secretariat, and particularly commended the key note presentation. She urged stakeholders to convene a regional body that can convey the plans and requirements of the industry to the policy makers, facilitated by the CACRICOM Secretariat. She indicated that a strengthened intra-regional collaborating mechanism which embraces all the needs of the industry will support the growth and expansion of the sector and facilitate cross boundary movement of planting material. In this regard, she assured the workshop of the Secretariat's support and guidance in ensuring that their interests are delivered to the relevant organs of CARICOM.

## **3.2 Technical Presentations**

Summaries of the presentations are provided in the following sections. Links to the full presentations can be found in Annex III.

### **3.2.1 Technical Session 1: Strategic Intervention 1 - Enhancing/developing coconut-based value-added products**

Three presentations were made during this session.

Challenges and Opportunities Penetrating Local, Regional and International Markets – Mr Jose Antonio Flaquer, Coconut Cluster, Junta Agroempresarial Dominicana Inc., Dominican Republic

In the 1960's the Dominican Republic (DR) coconut industry was heavily reliant on copra and coconut oil production. No vegetable oils were imported and the DR produced all its needs for oils from peanuts and copra (50% from each). However, by the 1990s imported vegetable oils accounted for 98% of the market. As a result, the DR coconut industry changed its focus and shifted towards the production of a range of other processed products including coconut milk, coconut cream, frozen coconut products, piña colada, and coconut fibre-based products. Five processors account for the majority of these products with four producing three different types and one specialising in frozen shredded coconut.

Of particular interest was data which illustrated the type of coconut products exported from the DR in 2012 along with the total export value associated with each category (Table 1).

**Table 1: Exports of Fresh and Processed Coconuts from the DR in 2012**

<b>PRODUCT</b>	<b>TOTAL JAN - DEC in USD</b>	<b>% OF TOTAL</b>
<b>FRESH COCONUT</b>	<b>9,323,459.87</b>	<b>23.10%</b>
<b>COCONUT CREAM</b>	<b>19,553,719.74</b>	<b>48.46%</b>
<b>COCONUT OIL</b>	<b>166,096.78</b>	<b>0.41%</b>
<b>COCONUT MILK</b>	<b>10,870,052.09</b>	<b>26.94%</b>
<b>GWC</b>	<b>3,109.07</b>	<b>0.01%</b>
<b>FROZEN SHREDDED COCONUT</b>	<b>384,789.29</b>	<b>0.95%</b>
<b>COCO DESSERTS</b>	<b>50,598.50</b>	<b>0.13%</b>
<b>TOTAL USD</b>	<b>40,353,674.09</b>	<b>100.00%</b>

Coconut milk and coconut cream accounted for over 75% of the DR coconut exports in 2012 and coconut oil was insignificant, less than half a percent.

In spite of this transition to a broader range of value-added products, the production of coconuts has been in dramatic decline. In the 1970s, annual nut production averaged 250 million nuts. The production projection for 2013 is estimated to be 80 million nuts. As a result, DR processors import about 50% of their nuts, mainly from Guyana.

There are a number of positive features associated with the DR industry coconut industry including:

- Logistical advantages when it comes to proximity to markets.
- A strong processing sector.
- An entrepreneurial interest in resuscitating the industry.

However, these are counter-balanced by a number of challenges including:

- Aged palms (the majority are over 50 years old).
- An inability to replant due to a lack of adequate financing and intercropping options/experience.
- Pest and disease impacts.
- Limited support for small scale producers and value-added enterprises.
- A need to develop small scale value-added business.
- Loss in acreage as a result of hurricanes and tourism development, especially in coastal areas.

An overview of opportunities (not quantified) for a range of products in national, regional and extra-regional markets is presented in Table 2.

**Table 2: Future product opportunity areas for the coconut industry in the DR**

Product	National Market	Regional Market	Extra Regional Market
Organic coconut			X
Desiccated coconut	X	X	X
Virgin oil	X	X	X
Margarine	X	X	X
Cake of coconut	X		
Coconut cream	X	X	X
Coconut milk	X	X	X
Frozen coconut	X	X	X
Coconut beverages	X	X	X
Soap	X	X	
Crude coconut oil	X	X	
GWC	X	X	X

In conclusion, demand for added value products is increasing and the shortfall in the supply of nuts in the DR is becoming a significant constraint for the coconut industry in that country.

Research and Development Requirements for Higher Value Coconut Products: Nutraceuticals and Cosmetics – Professor Wayne McLaughlin, UWI, Mona Campus, Jamaica

GCW is a rapid growth market area with the brand ‘Vita Coco’ leading the way in the US market. Sales of coconut water in the USA in 2012 totalled USD 150 million and are forecast to reach USD 250 million in 2013. Both Coca Cola and Pepsi are making large investments in this growth market area – the former by acquiring ZICO in Brazil and the latter by increasing its investment in O.N.E. coconut water.

The Philippines has become one of the world’s largest exporters of coconut oil with sales in February 2013 being up 44% on the same month a year previous and export sales for 2013 forecast to reach 925,000 metric tons. It is used for a wide range of purposes in the home, food processing, industrial, and health and wellness areas. Of particular interest are the health and wellness benefits that coconut and derivatives are claimed to provide e.g. weight control, reducing hypertension and

providing benefits to persons suffering from Alzheimer's disease. Many of these claims have not been substantiated by clinical proof testing.

Professor McLaughlin also presented an overview of the chemical profile of coconut kernels, green coconuts and coconut water. He pointed out that the potassium/sodium balance was around 2:1 and that crude coconut oil contains mono, di and triacylglycerides; fatty acids; phospholipids; tocopherols; sterols; volatiles; and trace metals. He also explained that 67% of the fatty acids in coconut oil were medium chain types – namely lauric (46.5%) and myristic (20.6%) acids. Research has shown that such fatty acids do not impact negatively on human health and, in fact, tend to be beneficial. The oil is highly stable and a commercially important source of medium chain triglycerides (MCTs) which are soluble in oils, ketones and acids. They are easily digested and absorbed providing a quick source of energy and are excellent carriers for flavours and vitamins. In addition, they can be used for a range of purposes in the research, medical, cosmetic and food product areas.

The international market for nutraceutical ingredients is expected to grow 7% annually to reach USD 24 billion by 2015. The greatest growth area is expected to be in ingredients that have clinically-proven health benefits and which can be used in a broad range of functional products that help in the prevention of potential disease impacts as well as assisting with the healing of existing diseases. Such product areas include dietary supplements, drinks, foods, and nutritional preparations for children and adults.

The nutricosmetic or cosmeceuticals market is already well-established in Asia and is growing in the USA. Products of this type can either be ingested or applied topically to 'promote beauty'. In 2012, sales of nutraceuticals in the US increased 9.4% over a year earlier and reached USD 1.1 billion in value.

The Caribbean Coconut Industry needs to develop a greater number of low volume, high priced products as part of its future strategy and both nutraceuticals and cosmeceuticals should be considered. The strategy should focus on targeting a specific disease or group of diseases, the development of supplements, laboratory testing and clinical trials, and include collaboration with universities, research centres, and the private sector. In terms of coconut oil, the best way is to promote its unique health benefits as a supplement e.g. concentrated soft gels which may include other additives. More rigorous scientific studies are needed to ensure that biological activity is not lost during processing.

Virgin coconut oil (VCO) may offer special opportunities in both the health and cosmeceutical areas. An initial piece of research suggests VCO may help in treating Alzheimer's disease. In the cosmeceutical area, it can be used as the base for many body care and cosmetic products, hair treatment products, as a non-greasy non-staining massage oil, and for cold soap-making and natural lip balms. The degree of value-adding will depend upon the R&D input which provides proof of effect.

#### Small-scale Processing of Coconuts: Challenges and Perspectives from a Small Agro-entrepreneur – Mrs Rosamund Benn, Pomeroun Women's Agro-Processors Association, Guyana.

In 2010, the Pomeroun Women's Agro-Processors Association of Guyana grew 50 acres of coconuts but the price for dry nuts was low as was the price for traditional coconut oil. Mrs Benn and other women in the group were approached by a customer from the USA to supply VCO for use as an ingredient in a cosmetic business. The demand is greater than they can supply. The challenge is the old, manual processing equipment and practices that are used as they can only produce limited quantities of VCO each week. It takes around 400 nuts to make 5 gallons of VCO and it takes 3

persons three days to complete a batch. They can produce three batches a week i.e. a total production of 15 gallons of VCO per week. The local market for VCO is small in Guyana compared to the market for traditional coconut oil.

The Association members face several challenges in expanding their business, namely:

- A lack of grating equipment. A cold press machine would enhance their operations.
- Finance to purchase equipment.
- Marketing and market development.

Through experience they have learned that the oil yield is higher in hot weather and that the oil produced does not have any unpleasant odours. For the future they suggest the following approach be taken to expand their business:

- Secure market opportunities and then work towards fulfilling those requests i.e. become more market-driven.
- Build their own local factory (with modern technology).
- Expand their commercial activities.
- Supplement their own supplies of coconuts with supplies bought from non-Association growers.

#### Technical Session 1 Discussion

A few key points made during the discussion session included:

- The need for greater information sharing e.g. about modern small-scale processing technologies among regional stakeholders.
- The need for more market research and quantitative market data.
- The need to value local knowledge, which is considered a valuable resource, e.g. on indigenous varieties and disease free growing areas.

#### **3.2.2. Technical Session II: Strategic Intervention 2 - Improving Production, Productivity and Efficiency. Managing Pests and Diseases**

Four presentations focusing on major pest and disease problems and ongoing research and management strategies were made.

#### Challenges of Coconut Pests and Diseases for the Caribbean Region – Dr Simon Eden-Green, ECG Consulting, United Kingdom.

The Caribbean Coconut industry had evolved around a very narrow genetic base, namely the traditional 'Atlantic Talls' and later complemented by Malayan Dwarfs (MDs) and Pacific Tall (Maypan) hybrids in Jamaica and the northern Caribbean. Focus was placed on the four main pest and disease problems plaguing the region.

The Red Palm Mite (RPM) was first seen in 2004 and has now become widespread. In Trinidad and Tobago yield losses in excess of 75% have been recorded and heavy losses have been seen in other Caribbean countries. There is a good knowledge base available regarding this pest but a lack of awareness at the farmer level. Biological control is being investigated as a possible means of control. There is also a need to assess possible varietal tolerance variations.

Lethal yellowing (LY) is particularly destructive in the north-western part of the Caribbean, in particular Jamaica, Cuba, Haiti, Belize, and the Bahamas. It has recently spread to St. Kitts and Nevis and Antigua and Barbuda but it is not yet widespread in the DR. There appears to be some variation in varietal susceptibility to the disease and there is evidence that good management and rigorous phytosanitary strategies can be used to minimise the impacts of LY – as evidenced by the ‘Black’s method’ (described in more detail by a later presenter). Selections and hybrids showing better resistance to LY are being developed but still require further testing before they can be released into the field.

Red Ring (RR) disease is a particular problem in Trinidad and Tobago, Guyana, Suriname and Belize. It is a major threat when replanting, particularly if stringent phytosanitary practices are not employed. There is a need to control the disease and its pest vectors and research is required to determine the most effective approach – chemical, integrated, as well as biological.

Bud rot is another disease problem that occurs in the region but outbreaks are often sporadic and can be difficult to diagnose. The introduction of hybrids from West Africa into the DR are thought to have been the reason for outbreaks in that country.

To deal with these major pest and disease challenges, Dr Eden-Green proposed a three-pronged approach:

1. Enhance scientific capacity in coconuts at the national and regional level.
2. Support important ongoing research initiatives on RPM, LY and RR/borer pests in designated Caribbean countries.
3. Improve productivity, production and competitiveness by:
  - a. Improving access to disease-free planting materials and widening the varietal gene pool.
  - b. Phased rehabilitation of existing coconut cultivation.

He further proposed that a Caribbean Coconut Research and Development Project (CARICORD) be set up to ‘to revitalise, safeguard and support the coconut production base in the region’.

Status Report on the Biological Control of RPM – Mr Farzan Hosein, Ministry of Food Production, Trinidad and Tobago.

Mr Hosein presented some striking images and data relating to the impact of RPM on coconut production in TT, in particular in the Cedros / Icacos areas in the south west of the country. Between 2005 and 2011 the production of nuts declined substantially from 4.6 million nuts in 2005 to 50,000 (.05 million) in 2011. The labour force also declined significantly. The RPM also affected other palm species, including the Mariche palm.

The combination of good agronomic practises with natural control methods is being explored by Mr Hosein and his colleagues. There are two prongs to the natural control approach:

1. Abiotic: climate (rainfall, temperature and humidity) and soil related.
2. Biotic: host plant resistance, natural enemies and host population.

In terms of abiotic control, it was observed that rainfall has a negative impact on RPM populations and can reduce them substantially on the coconut palm leaves. However, this is highly weather dependent. There appears to be greater potential to manage RPM through the use of biological control agents (BCAs); predators, parasitoids and pathogens (including nematodes).

A number of natural enemies of RPM and related pests were presented. These include: *Phytoseiid* mites such as *Amblyseius largoensis* found on a number of ornamental and coconut palms; different types of ladybirds; parasitic insects and several types of fungal pathogens. Biopesticides are also potential control agents and are safer to use, have few (if any) environmental impacts, and can have long-term effects.

Techniques for digitally monitoring RPM infestations and identifying the impacts of natural BCAs have been piloted. The levels of leaf damage caused by RPM were reduced when natural predator and parasite levels were significant. A predator rearing technique for *A. largoensis* in a laboratory environment has been developed.

Key findings are summarized as follows:

- A number of natural enemies of RPM exist.
- Exploration of the potential of indigenous predators should be given a priority.
- Predators may act singly or in combination (e.g. predators/parasitoids and disease agents).
- The use of chemicals is impractical in coconut plantations.
- Digital and video techniques can be used for monitoring and studying the effectiveness of natural enemies.

The following areas were identified for the future:

- Identification and monitoring of the efficiency of natural enemies.
- Sourcing funding for facilities, material and equipment for rearing of appropriate host and the multiplication of natural enemies.
- Human resources development (dedicated, trained technicians).
- Collaboration between industry stakeholders.

#### Managing Lethal Yellowing – Experience from Jamaica (Black’s Method) – Dr Wayne Myrie, Coconut Industry Board, Jamaica.

This presentation illustrated the important role of excellent agronomic practices in controlling coconut pest and disease, including LY. New product and market opportunities can only be exploited if the disease and production issues are effectively addressed.

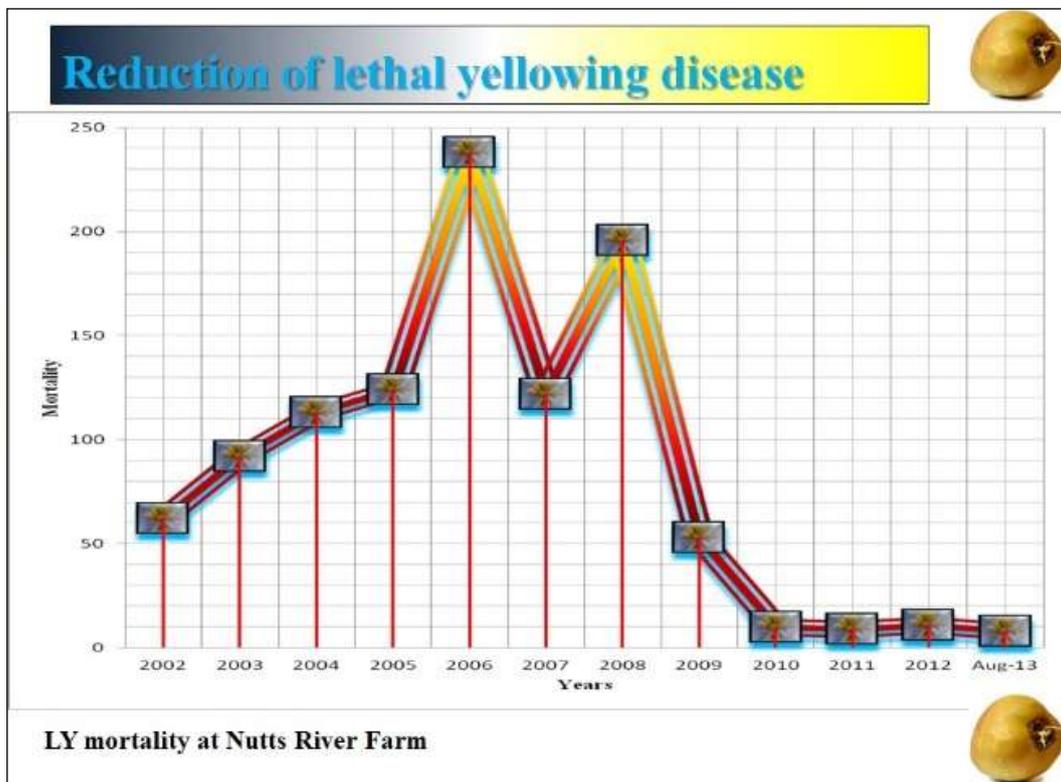
LY first began to impact on Jamaica’s coconut industry in 1951, but only in areas where it had limited economic importance. Between 1961 and 1981 it had spread to the main plantation areas in the north eastern parts of the country. Between 1961 and 1981, LY destroyed 7 million coconut palms. During the 1990s, a million trees were destroyed. It has affected the livelihoods of 8,000 coconut growers and their dependents and had a major impact on production and revenue generation. Jamaica has been developing and piloting techniques to manage LY, including an island-wide felling of diseased trees and developing hybrids through molecular laboratory work. Of particular note is the success achieved by a farmer (Mr Black) in controlling this disease– the so-called ‘Black’s approach’. This aggressive agronomic approach involves:

- Weekly monitoring of every coconut tree on the farm to detect trees showing any signs of LY.
- The **immediate removal** of any infected trees.
- The replacement of infected trees.
- Excellent weed control, which reduces the availability alternative hosts for the vector.

- Proper plant nutrition.

The mortality levels caused by LY have been reduced significantly. The success in reducing LY by adopting good agronomic practices on the Nutts River Farm property is shown in Figure 2.

**Figure 2: The reduction of LY mortality levels of coconut palms using ‘Black’s Approach’.**



Red Ring Management: Trinidad Strategy Mr Assim Dilbar, Ministry of Food Production, Trinidad and Tobago.

The disease is caused by a nematode (*Bursaphelencus cocophilus*) which is transmitted by an insect vector, the palm weevil (*Rhynchophorus palmarum*). Whilst the weevil is present throughout the Caribbean region, the nematode is only present in the Central and South American Caribbean countries as well as TT, Grenada and St. Vincent and the Grenadines. It has not been detected so far in the other northern and eastern Caribbean island nations.

The disease is serious, particularly because it tends to affect young trees between 2.5 – 10 years of age. The trees are severely impacted and can be identified by a number of symptoms of ‘collapse’, including the characteristic brick-red ring around the outer edge of the trunk when an affected palm is cut down. In terms of management, Mr Dilbar repeated what previous presenters had said – aggressive phytosanitation is a key component of any control program. In TT they have also been using baited traps (using chopped sugarcane and a synthetic aggregation pheromone – Rhynocolure®) placed around the perimeter and within coconut groves to control the vector weevil. They have also added insecticide to the traps to kill the weevils once trapped.

RR control is part of the TT Coconut Industry Transformation Committee’s strategy which includes the identification of critical areas, developing project proposals, seeking funding and identifying areas of responsibility for implementation, operations and the implementation of work programs.

### **3.2.3. Technical Session II: Strategic Intervention 2 - Improving Production, Productivity and Efficiency. Managing Production**

Two presentations were made during this session.

Current Status of the Coconut Industry in the Republic of Fiji. Lessons for the Caribbean countries – Mr Vatimi Rayalu and Dr Ravindra Joshi, Ministry of Agriculture, Fiji.

Fiji has a small land mass but a large oceanic economic zone. The area currently under coconuts is 65,000 ha and the crop contributes 0.6% to the country's export earnings

In the colonial and early post-colonial era, coconut was produced on estate plantations owned by Europeans and part-Europeans. As time progressed copra yields declined. This led to a government intervention which subsidised coconut plantings with an emphasis on lands owned by the indigenous population and village small holders. This program resulted in a doubling of copra production off smallholder blocks whilst production from the large estates stagnated.

To provide stability, the government established a stabilisation fund that ensured the copra price was maintained at \$500/ton. The price stabilisation scheme also included a levy of 10% on all revenues received by coconut growers that was used to provide educational and social support for the growers and their dependents. The national Coconut Development Authority had failed to deliver and was disbanded. 70% of the country's 6.8 million palms are 'senile' (over 100 years old), 6% are 50 years and older (and include a mix of Fiji Tall and Malayan Dwarf types) and only 16% are less than 30 years old. 'Senile' palms have low levels of productivity – only 25 – 30 nuts per year compared to 30 - 40 nuts per year for trees 50 years of age or less. Copra yields per ha range from 0.4 – 1 ton depending upon the palm age, variety and soil type. Total current annual estimated nut production is 165 million with 35% being used at the household level, 35% for copra production and 30% remaining unharvested and germinating in plantations.

The greatest constraints the Fijian coconut industry has been facing include:

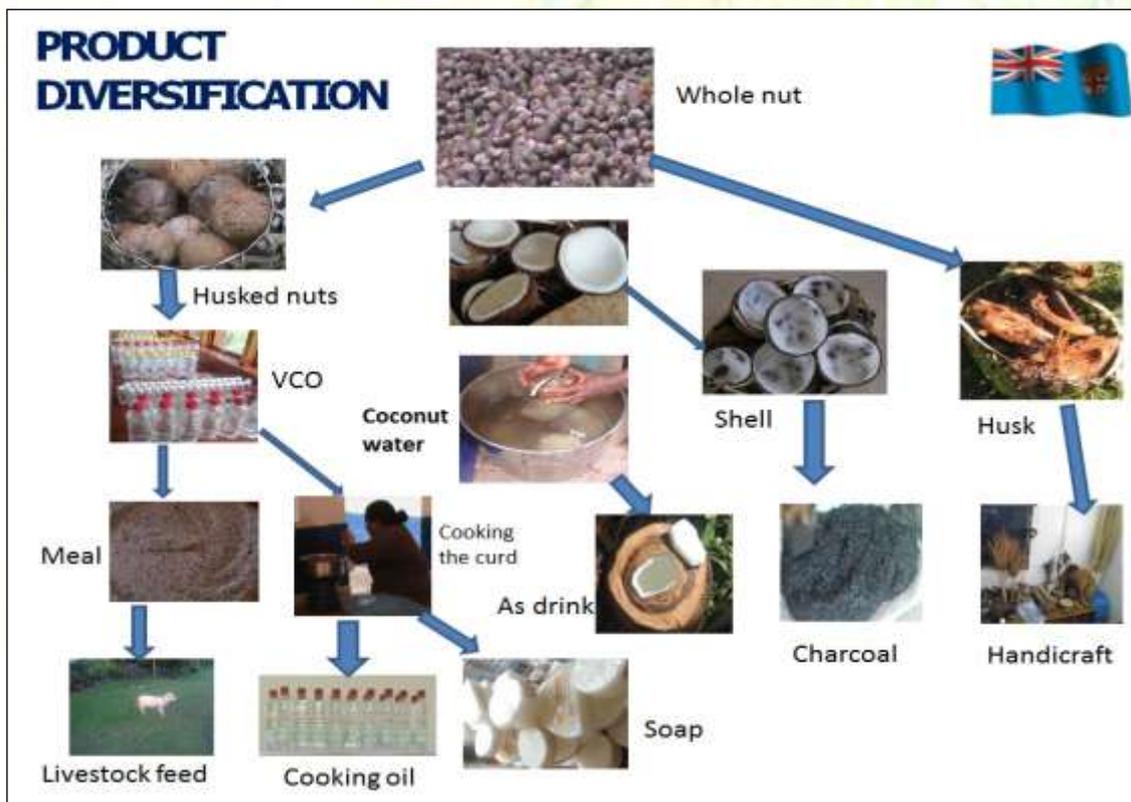
- An over-dependence upon copra and coconut oil production and a slow rate of diversification into other product and by-product opportunity areas.
- A mono-cropping approach – slow adoption of coconut as a part of integrated farming systems.
- The high cost of production and freight for copra.
- The slow rate of replanting.
- Poor quality standards due to poor shipping services and handling.
- Lack of motivation and training at the production level. Finding labour has been a problem.
- A lack of capacity to identify the right varieties for different market needs.
- Poor infrastructure (old and not suitable for modern world products and markets), research and financial resources.

Amongst the lessons learnt by the Fijian coconut industry are the following:

- The importance of diversification at both the primary and secondary levels to stay competitive.
- The need to build up capacity in areas that support industry expansion e.g. R&D, human resource development, market intelligence and new product development.
- The provision of resources to support the coconut industry e.g. financial and infrastructure.

The go-forward strategy for Fiji is to diversify the product range by using all parts of the nut, as shown in Figure 3. The diversification process is now well underway and being driven by both private sector businesses and brands such as 'Pure Fiji' and companies such as Punjas Fiji Limited (which also has a strong presence in the Australian market and recently opened up a product manufacturing facility in Fiji). Several food processors are also manufacturing value added products and an exporter, Gary Tarte, is involved in export market development. Examples of value added products include soaps and body care products, virgin coconut oil, and unique craft items. Mr Rayalu completed his presentation with a photo of the internationally successful Fiji Rugby Sevens Team and the comment – 'Industry Champions for Coconuts in Fiji!'

**Figure 3: Product diversification options being pursued in Fiji**



Phased Rehabilitation vs. New Cultivations or Both. What is presently being done and what has been achieved in rehabilitating estates or establishing new plantations? Mr Ricardo Montero, Textel Agricultural Investment Limited (TAI), Belize.

The images on the opening slide set the scene for this thought provoking presentation (see Figure 4). It showed large areas of young coconut palms growing in clean, well-managed environments using modern agronomic practices. Mr Montero was first involved with the establishment of a 500 acre coconut plantation in Belize funded by US investors about 8 years ago and is currently involved with the development of a new 1,000 acre plantation, also funded from the US. Nutrient profile analyses of both copra and coconut water provided by the University of Florida IFAS Extension service illustrated that products derived from raw coconuts supported nutrition claims and this has spurred the US investments.

It was the agronomic practices being utilised and the productivity results being achieved on these young plantations that were discussed in some detail.

**Figure 4: An illustration of the high standard of agronomic practice being pursued by Textel in Belize**



One of the most important areas that TAI focuses on when establishing new plantations is the use of **certified planting material**. This is vital for the maintenance of the health and high productivity of plantations. They have been working closely with Mexican R&D centres which have developed a number of registered cultivars and hybrid types of coconuts. They include a mix of traditional tall, semi-dwarf and dwarf types. The nuts produced by each cultivar type have quite different characteristics including the overall nut weight (ranging from 685 – 1,793 gm on average for different cultivars), the volume of coconut water (ranging from 236ml – 601 ml on average), the Brix level (ranging from 6.2 - 7.9 on average) and copra yield (ranging from 126 gm – 257 gm on average). A mix of varieties with differing characteristics is planted on these large plantations so that they are in a position to satisfy different market and product needs. Photos of some of the coconut cultivars illustrated that by age eight their best trees were producing 17 - 18 stems with up to 19 nuts per stem per year – very high levels of productivity. An example of the high productivity hybrids included in the varietal mix is shown in Figure 5.

**Figure 5: An example of a high productivity hybrid from Mexico being planted by Textel in Belize**



One of the first considerations before planting coconuts is the suitability of the location. Coconut palms grow only in the tropics at lower altitudes with a temperature range of 20 – 33 °C. They grow best in higher rainfall environments in soils with a pH of 5.5. – 7.5.

Good weed control is vital for ensuring high productivity and keeping pests and diseases under control. Good nutrition is also fundamental for achieving high levels of productivity and maintaining plant health. Potassium is one nutrient that is especially important as the annual extraction rate for this element per hectare in coconut groves is 85 kg, far more than nitrogen at 56 kg and phosphorus at 27 kg. Nutrient leaf analyses are performed on a regular basis, with a particular focus on leaf calcium and magnesium levels which have been found to be of great importance. To ensure levels of these elements are maintained, foliar nutrients containing both are applied on a 3 – 6 monthly cycle.

Whilst RPM is not currently a problem in Belize, LY and RR are of major importance as are mites (which damage the coconut outer skin and diminish the flesh and coconut water quality substantially), palm tree heart rot and pencil point. Control is achieved through a combination of excellent agronomic practices (weed control, nutrition, and plantation maintenance) and largely biological control methods. For example, RR control is achieved by placing pheromone-baited traps (made from used 2 and 3 litre plastic soda bottles – see Figure 6) every 200 metres around the perimeter of the plantation to catch the weevil vector before it can actually enter the plantation. He explained that placing such traps within the plantation was not a good practice because the weevils could already have transferred the nematode into trees before being caught in the traps. The traps are emptied every two weeks and the weevils killed by non-chemical means. The pheromone baits, ‘Rhyncolure’, are replaced every three months.

**Figure 6: Examples of the pheromone traps used in Belize by Textel. The preferred soda bottle trap is shown in the left of the image.**



This plantation uses a holistic approach– from the selection of cultivars for planting, the planting pattern layout, the planting process itself, and then the ongoing agronomic management practices employed, for ensuring success. Once they have selected the cultivars they wish to plant (Mexican registered certified cultivars), they then look at what is required for establishing new plantings or for replanting existing coconut groves.

For new plantings, they use a triangular planting pattern with 9 metre dimensions compared to the traditional 10 metre square planting. This results in a better spatial arrangement and an increase in the number of trees producing per ha. In a replanting situation they replace 15% of the existing grove per year in each of six years and the final 10% in year 10. That way some level of ongoing production is maintained during the replanting process and it never falls below 55% of the original production level at any time during the transition. By year 10, 100% production levels are regained.

A large hole is dug prior to planting the certified seedlings. Fertiliser is placed between layers of soil at a lower level in the planting hole (so that the coconut roots do not contact it directly) and then the nut is planted so that it is just covered by soil and only the emerging leaves are above ground.

From the start, the coconut palms are subjected to the best possible agronomic practices. This ensures that some of the trees are flowering within 2.5 years and by 3.5 years virtually all the planted trees are in production. Mr Montero concluded that to achieve success in the coconut industry, it was essential to adopt a holistic approach, coupled with first class agronomic practices, which embraces the use of certified planting material, good weed control, optimal nutrition and an innovative 'bio-assisted' approach towards pest and disease management.

#### **3.2.4. Technical Session II: Strategic Intervention 2 - Improving Production, Productivity and Efficiency. Ensuring Access to Improved Genetic Resources**

One presentation was made in this theme area.

##### Facilitating Cross-Border Movement of Improved Genetic Resources – Mr Everton Hunte, Ministry of Agriculture, Food, Fisheries and Water Resource Management in Barbados and Representative of the Caribbean Plant Health Directors' Forum

Access to quality certified planting material is a theme that featured strongly during the day. However, how such material can be accessed and how each country can be protected against the accidental importation of pests and diseases that may pose a new threat has been a major barrier to such transfers.

In addition to the existing serious pests and diseases, there are a number of other emerging pest and disease problems that are of concern to plant health officials, including the following: Coconut whitefly, *Aleurodicus cocois*; Coconut mite, *Aceria guereronis*; Coconut mealybug, *Nipaecoccus nipae*; Coconut caterpillar, *Brassolis sophorae*; Coconut scale, *Aspidiotus desructus*; Coconut moth borer *Castnia Daedalus*; and Coconut inflorescence moth, *Batrachedra nucifera*

The current situation in Caribbean region is that there are severe restrictions in place regarding the movement of coconut (and related species) planting material and products between countries. Plant health officials in the region are aware of how important coconuts are to 'the social, environmental and economic life of their respective countries', but are also conscious of their role in protecting their countries from the devastating impacts caused by the introduction of a new pest or disease. They acknowledge that plant health officers must act in partnership with industry players to assist with the process.

One of the key requirements for facilitating the transfer of genetic material between countries in the region is the availability of a recognised and fully accredited entity (or entities) for developing, testing and certifying such material. Such an entity (or entities) must be willing to involve Caribbean plant health officials in their deliberations in order to build confidence with regard to the implementation of any program aimed at sharing plant material.

Because some types of disease threats can be symptomless (e.g. viruses), robust testing and indexing procedures need to be in place to ensure that any plant material released is free of pests and diseases that pose plant health / quarantine risks. The FAO / IBPGR 'Technical Guidelines for the Safe Movement of Coconut Germplasm' could be used as a basis for developing the system that needs to be in place to provide such assurances. The recommendations in this document include:

- Germplasm should be collected from palms that appear healthy.
- Germplasm should not be removed from sites at which diseases of unknown etiology occur.
- Germplasm should preferably be moved as embryo cultures or pollen.
- Seednuts may be transferred under certain conditions e.g.:
  - When a thorough pest risk assessment indicates that there are no problems of a quarantine concern in the area from which they were collected, or
  - From areas where diseases of quarantine concern are present only when embryo culture is not possible, and as long as they are germinated in quarantine.

It was recommended that seednuts should not be moved from areas where non-cultivable mollicutes or *Phytomas* occur to areas not affected by these pathogens. Seedlings, embryos and palms from which pollen is collected should be indexed for cadang-cadang and other viroids as well as coconut foliar decay virus (CFDV). All coconut material transfers should be accompanied by the necessary documentation.

Plant health officers and the Plant Health Directors Forum are prepared to work alongside those responsible for the resuscitation of the coconut industry in the Caribbean by:

- Offering technical support.
- Testing and indexing where possible and necessary.
- Assisting in the development of monitoring, surveillance and quarantine protocols.

#### Technical Session 2: Parts 2, 3 and end of Day 1 Discussion

A number of comments were made relating to some key areas of importance on rejuvenating the Caribbean Coconut Industry. In summary they included;

- The Belizean experience in rehabilitating and establishing new plantations was lauded as a model which could be followed.
- The Fijian model of intercropping and grazing in coconut groves offers opportunities to increase returns to farmers.
- The risk of moving diseased planting material from one country to another was acknowledged.
- Importing exotic material without due care and attention into the region may not deliver the desired results and industry stakeholders should be wary of doing so.
- The availability of certified planting material and a process for improving the health and quality of planting material nationally and regionally were considered priorities.
- Plant health officials and those charged with resuscitating the coconut industry should organise a visit to see how the New Zealand cross-border quarantine and plant health system is set up and managed for facilitating cross-border transfers of plant material using established protocols and approaches. It is a very stringent system that provides an effective model for dealing the concerns raised.

- A number of tissue culture laboratories and facilities have already been set up and are operational in the region. One or more could become accredited to address the certification, plant quarantine and cross-border issues.
- The need for more collaboration between different stakeholder groups within the region and for capacity building were raised.

### 3.3 Issues and Gaps for Consideration

The key issues and gaps raised during the technical presentations and the discussion sessions were assessed and summarised as shown in Table 3.

**Table 3: The key issues and gaps identified from the Day 1 proceedings**

Issues & Gaps
<p><b>Marketing</b></p> <ul style="list-style-type: none"> <li>• Insufficient data on markets in all product areas. A lot of anecdotal information.</li> <li>• Some market information is not being shared.</li> <li>• A lack of understanding of local markets.</li> </ul>
<p><b>Processing</b></p> <ul style="list-style-type: none"> <li>• A lack of small scale equipment or knowledge about where to access.</li> <li>• A lack of raw materials for existing processing plants.</li> </ul>
<p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• A lack of modern infrastructure at all levels in the value chain from production to marketing. ‘You cannot use old infrastructure to service new markets’ (Honourable Minister Ramsammy).</li> </ul>
<p><b>Inadequate Research</b></p> <ul style="list-style-type: none"> <li>• Production constraints and genetic material status – especially within the region.</li> <li>• New and unique products and establishing proof of effect, clinical trials, research data.</li> </ul>
<p><b>An Integrated Approach</b></p> <ul style="list-style-type: none"> <li>• A lack of an integrated sector approach in terms of policy, science and farm to market.</li> </ul>
<p><b>Local Knowledge</b></p> <ul style="list-style-type: none"> <li>• A lack of knowledge about existing areas where coconut growing is doing well e.g. Pomeroun in Guyana where trees are high yielding and there are few pest and disease issues. It needs researching.</li> </ul>
<p><b>Knowledge Gaps</b></p> <ul style="list-style-type: none"> <li>• Pest and disease knowledge good in some areas in the region but lacking in areas such as varieties and technologies.</li> <li>• Capacity building needed.</li> </ul>
<p><b>Labour</b></p> <ul style="list-style-type: none"> <li>• The cost and availability of labour.</li> </ul>
<p><b>Leadership</b></p> <ul style="list-style-type: none"> <li>• At government and policy level, industry champions, farmer organisations and clusters and in the research sector.</li> </ul>

## Issues & Gaps (continued)

### ***Certification and Accreditation***

- Certified material – both endemic and exotic.
- Accredited laboratory and quarantine services.
- Timelines for implementation of actions in both the above.
- Emergency response.

### ***Integrated Production Systems***

- Intercropping/grazing.
- Multiple coconut variety plantings – risk minimization.

### ***Diagnostics and Management***

This summary was further synthesized into the four gap thematic areas (refer Table 4) which were addressed by the workshop participants on Day 2.

## 4 Workshop Proceedings - Day 2

The focus of Day 2 was to develop a Road Map for the Caribbean Coconut Industry building on the four key gap areas identified (see Table 4 below). Workshop participants were allocated to one of the four thematic groups associated with each of the specific gap areas using a random number system. There were 3 Working Group Sessions (WGS), followed by Plenary Discussion.

### 4.1 Recap of Day 1 and Setting the Scene

The four gap areas identified in Day 1 were summarised into four thematic groups (Table 4).

**Table 4: The Consolidated Thematic Gap.**

		Gap Areas
<b>NATIONAL AND REGIONAL</b> Short, Medium and Long Term	1	Improving access to planting material and widening the genetic pool. Certified material from endemic and exotic sources and accredited facilities.
	2	Market intelligence, local and offshore, for both mainstream and niche products.
	3	Scientific capacity e.g. in production, pest and disease, processing, new product and development and related areas.
	4	Finance and business development.

The context (vertical text on the left of the table) required each group to consider their allocated gap area from both a national and regional perspective as well as in short (<12 months), medium (12 months to 3 years) and longer term (3 years +) horizons.

### 4.2 Working Group Session 1 – Identifying Possible Solutions

The Groups were asked to bear in mind ‘what is needed to address the issues / priorities identified by the Consultants in the Needs Assessment Study and complemented by the presentations and discussions on Day 1?’ They determined the specific gaps, developed a consensus position regarding possible solutions and provided working examples that could be considered. Each Group’s output was recorded in an electronic template and presented to the plenary and, if agreed, modifications were made to reflect the overall views of the majority workshop participants.

### **4.3 Working Group Session 2 – Accountabilities and Responsibilities**

Building upon the outputs from WGS 1, each group was tasked to identify which agencies, enterprises, institutions and individuals should be responsible and accountable for implementing the solutions identified in the preceding session. They were also asked to consider what should be delivered on a short-, medium-, and long-term basis. The needs assessment study report was also used as back ground material. Each Group's output was recorded in a second electronic template and presented in plenary and modified to reflect the overall views of the majority of participants.

### **4.4 Working Group Session 3 – The Basis of a 3 – 5 Year Road Map**

In this session, each Group finalised their contribution for their allocated Gap area using an overall Road Map template. They were also asked to develop a 5 year vision with stated empirical targets to provide an overarching context for the Road Map and its implementation. As was the case for the previous two WGSs, each Group's output was recorded in a third electronic template and presented to the plenary and modified to reflect the overall views of the majority workshop participants.

### **4.5 Consolidated Road Map**

The Road Map developed through the WGS was compared with that which was proposed by the authors of the 'needs assessment study' and a final integrated Road Map was developed (Annex IV).

## **5 Plenary Discussion and Closing Remarks**

Dr Ranjit Singh and Dr Simon Eden-Green were invited to make some closing remarks. The key points raised included:

- Cooperatives may not be a good model to pursue as they do not have a good track record in the Caribbean region. There is a need to develop the most appropriate business models and perhaps develop clusters rather than cooperatives.
- In terms of tissue culture requirements for the production of high quality healthy coconut planting material, this could be provided by a private sector tissue culture laboratory. The Asian Pacific Coconut Community (APCC) is important in any go-forward plan.
- Market research is needed but it is important not to duplicate existing services. The ITC database provided by the World Bank is very good value. Data and market intelligence are two different things. Capacity needs to be built for interpretation.
- There should be a coconut germplasm bank in every relevant Caribbean country.
- Traceability technologies and systems may be an answer to praedial larceny.

Mr Phillipe Agostini, CEO, CGA Limited , Trinidad and Tobago, delivered remarks on behalf of the private sector. These were as follows:

- The Caribbean Coconut Industry is facing a serious shortfall in raw material supplies.
- There is a need for more commitment and real action by the majority of the region's agencies and institutions.
- More support for R&D is needed as the amount of GDP invested in R&D in the region is typically a fraction of a percent of national GDPs.
- The private sector needs to play a bigger role in all aspects of industry development, including in determining how R&D funds are allocated and for what purpose.

Dr Arlington Chesney, Executive Director, CARDI, and Mr Michael Hailu, Director CTA, formally closed the workshop and assured delegates of the continued support of both organizations.

## 6 Recommendations

The recommendations emanating from the workshop were synthesized and presented to the Eleventh Meeting of the Alliance by Judith Francis, Senior Programme Coordinator, Science and Technology Policy, CTA (Annex VI). In summary they are as follows:

1. **Certified Quality Planting Material** - for rehabilitation and new plantings, both endemic and exotic:
  - a. Stock assessment of indigenous / local varieties.
  - b. Quality assurance system.
  - c. Capacity building.

**Manage Pests** - Caribbean Plant Health Directors to develop and implement strategies to safeguard and manage major pests of coconuts at national and regional level:

  - a. Surveillance.
  - b. Pest risk analysis.
  - c. Integrated pest management.
2. **Enhance Scientific Capacity**
  - a. Strengthen and support ongoing research and development initiatives on major pests - Red Palm Mite (T&T, Dominica, DR, Jamaica, and St. Lucia); Lethal Yellowing (Jamaica, Belize, DR); Red Ring and trunk boring insects (T&T, Guyana, DR and Belize).
  - b. Build capability for characterizing genetic resources (laboratories and human resources).
  - c. Support research and development for new niche products and improving production efficiencies.
3. **Market Intelligence** - Intensify efforts to gather evidence-based market intelligence for growth opportunities:
  - a. For local consumption.
  - b. For regional consumption / markets.
  - c. For international markets.
  - d. For mainstream and value-added niche markets (CARICOM Oils & Fats).
4. **Finance and Business Development** - Prioritisation of the key issues for improving the competitiveness of coconuts:
  - a. Mobilisation of private and public sector funding.
  - b. Supporting industry clustering , capacity building (scientific research, laboratory facilities, new product development).
  - c. Explore opportunities for international funding including the 11<sup>th</sup> EDF.

## 7 Conclusions

This purpose of this workshop was to bring together a broad range of sector stakeholders associated with the Coconut Industry (from both the Caribbean and the Pacific region) to consider and validate the recommendations put forward by the authors of the EU-funded 'Development of the Coconut Industry in the Caribbean' needs assessment study and build consensus on the way forward to enhance the future prospects of the industry. A Coconut Industry Road Map was developed which builds on the outputs and the recommendations of the consultants involved in the needs assessment study and prioritised within the context of an overarching vision, namely:

*'To develop a highly competitive, integrated, sustainable regional coconut industry which grows 30% within 5 years and delivers benefits to all stakeholders throughout the value chain.'*

This is a bold vision and will require a concerted collaborative effort by the Coconut Industry stakeholders from the public and private sectors, at both the national and regional levels and with support of the international community, for the vision to be realised.

The action items described in the Road Map are all quite specific areas that require investments in both financial and human resources and coordination and commitment from public and private stakeholders to move the industry towards the end goals. Industry stakeholders recognise that a well-organised collaborative approach needs to be adopted throughout the entire value chain as well as at the national and regional levels. There also needs to be a degree of rationalisation and a strengthening of the existing organisational and institutional structures in place rather than the creation of additional entities. The consensus view of those attending the workshop is that there are real opportunities for a rejuvenated Caribbean coconut industry if the various action items identified in the Road Map are addressed.

In conclusion it is worth repeating three quotes from Minister Ramsammy which he made during his Feature Address to the Workshop Participants at the start of Day 1:

*'The Caribbean must embrace coconut with the enthusiasm it deserves.'*

*'You cannot use old infrastructure to develop an important new industry.'*

*'We need policy, science, farm, and market linkages.'*

The re-emergence of a highly competitive, integrated, sustainable industry delivering economic, social and environmental benefits to the citizens of the CARIFORUM countries will depend upon combining best practice; using high quality (certified) plating materials, effective management of pest and diseases, investing in research and development initiatives – in particular new product development; the adoption of modern technologies and industry standards; greater private sector involvement and investment; and improved processing and marketing .

The next step will involve assessing how such implementation can be funded and facilitated at national and regional levels by both government agencies and the private sector and sourcing international funding. A coordinating unit with a designated lead organization should be appointed to move the process forward in collaboration with government representatives, the private sector and international partners. Industry leadership is critical.

## Annex I: Workshop Programme

### Day 1: Strategic Interventions

(7<sup>th</sup> October, 2013)

8:30 – 9:00	Registration
9:00 – 10:30	Opening Ceremony  <b>Chairman:</b>  Dr H. Arlington D. Chesney  Executive Director, CARDI
9:00 – 9:10	<b>Welcome Remarks</b> – Dr H.A.D. Chesney, CARDI, Trinidad and Tobago
9:10 – 9:20	<b>Remarks</b> – Ambassador Robert Kopecky, Head of Delegation, European Union, Guyana
9:20 – 9:30	<b>Setting the Scene</b> – Mr Michael Hailu, Director, CTA, The Netherlands
9:30 – 9:50	<b>Development of the Coconut Industry in the Caribbean: Lessons from a Regional Study</b> – Dr Ranjit Singh, Lead Consultant & Senior Lecturer, UWI, St Augustine Campus, Trinidad & Tobago & Dr Simon Eden-Green, Lead Consultant and Plant Health Specialist in Coconuts, United Kingdom
9:50 – 10:00	Discussion
10:10 -10:30	<b>Feature Address:</b> Dr Leslie Ramsammy Honourable Minister of Agriculture, Guyana
10:30 – 10:40	<b>Vote of Thanks:</b> Ms Nisa Surujbally, CARICOM Secretariat, Guyana
10:40 – 11:00	Coffee Break
 <b>Technical Session 1: Strategic Intervention 1</b>  <b><i>Enhancing/developing coconut based value added products</i></b>	
<b>Chairman:</b> Mr Lamon Rutten, Manager Policy, Markets and ICTs, CTA	
<b>Rapporteur:</b> Mr Ian Ivey, CARDI/CTA Consultant	
11:00 – 11:15	<i>Challenges and Opportunities penetrating Local, Regional and International Markets</i> – Mr Jose Antonio Flaquer, Coconut Cluster, Junta Agroempresarial Dominicana Inc. Dominican Republic
11:15 – 11:30	<i>Research &amp; Development Requirements for Higher Value Coconut Products: Nutraceuticals and Cosmetics</i> – Professor Wayne McLaughlin, University of the West Indies, Mona Campus, Jamaica
11:30 - 11:45	<i>Small-scale Processing of Coconuts: Challenges and Perspectives from Small Agro-entrepreneur</i> – Mrs Rose Benn, Pomeroon Women's Agro-Processors Association, Guyana

11:45 – 12:30 *Guided Discussion*

Issues & Gaps: Is there sufficient market intelligence and opportunity at national, regional and international level on existing and new markets for Caribbean coconut products to spur growth. What is assured and what needs to be done?

12:30 – 14:00 Lunch

## **Technical Session 2: Strategic Intervention 2**

### ***Improving production, productivity and efficiency***

#### **Managing Pest and Diseases**

**Chairman:** Dr Janet Lawrence, *CARDI Trinidad and Tobago*

**Rapporteur:** Mr Ian Ivey, *CARDI/CTA Consultant*

14:00 – 14:15 *Challenges of Coconut Pests and Diseases for the Caribbean Region – Dr Simon Eden-Green, ECG Consulting, United Kingdom*

14:15 – 14:45 *What is presently being done & what has been achieved in managing pest and disease? (Short interventions)*

- *Status Report on the Biological Control of Red Palm Mite – Mr Farzan Hosein, Ministry of Food Production, Trinidad and Tobago*
- *Managing Lethal Yellowing – Experience from Jamaica (Black’s Method) – Dr Wayne Myrie, Coconut Industry Board, Jamaica*
- *Red Ring Management: Trinidad Strategy – Mr Assim Dilbar, Ministry of Food Production, Trinidad and Tobago*

14:45 – 15:00 Discussion

#### **Managing Production**

**Chairman:** Dr Ranjit Singh, Lead Consultant

**Rapporteur:** Mr Ian Ivey, *CARDI/CTA Consultant*

15:00 – 15:15 *Current Status of the Coconut Industry in the Republic of Fiji: Lessons for the Caribbean Countries - Mr. Vatimi Rayalu, Ministry of Agriculture, Fiji*

15:15 – 15:45 *Phased Rehabilitation vs New Cultivations or Both - What is presently being done & what has been achieved in rehabilitating estates or establishing new plantations? - Mr. Ricardo Montero, Textel Agricultural Investment Limited, Belize*

15:45 – 16:00 Discussion

16:00 – 16:30 Coffee Break

## **Ensuring Access to Improved Genetic Resources**

**Chairman:** Dr Ranjit Singh, Lead Consultant

**Rapporteur:** Mr Ian Ivey, CARDI/CTA Consultant

16:30 – 16:45

*Facilitating Cross-Border Movement of Improved Genetic Resources* – Mr. Everton Hunte, Ministry of Agriculture, Food, Fisheries and Water Resource Management and Representative of the Caribbean Plant Health Directors' Forum

16:45 – 17:00

Discussion

17:00 – 18:00

Guided Discussion

Issues & Gaps: Is there sufficient technical expertise at national, regional and international level to enhance production, productivity and efficiency and spur growth. What additional capacity and support are needed - scientific, technical, infrastructural and financial? What policy and institutional incentives are needed and how can these be mobilized? How can the Caribbean move forward as a united group and at the same time address national priorities?

## DAY 2: Road Map Development

(8<sup>th</sup> October, 2013)

**Chairperson:** Mrs Judith Ann Francis, CTA

**Rapporteur:** Mr Ian Ivey, CARDI/CTA Consultant

8:30 - 8:45	Brief Scene Setter and Recap Day 1– Mr Ian Ivey, CARDI/CTA Facilitator
8:45 – 10:00	<p><i>Working Group Session 1 (WGS1)</i> - What is needed to address the issues / priorities identified in consultants' report and further discussed on Day 1?</p> <p>Group sessions to identify ways to address specific issues. Individual groups will be allocated one – two issues areas to consider based upon the issues identified on Day 1. They will be asked to identify the gaps, possible solutions and give examples of something working in practice if possible using the template in Appendix 1.</p>
10:00 – 10:30	Coffee Break
10:30 – 11:00	Group Reports and Plenary Discussion (WGS1) -
11:00 – 12:30	<p><i>Working Group Session 2 (WGS2)</i> - Participants will be re-allocated to different groups. Agencies, enterprises, individual experts will be encouraged to think about their responsibilities and areas of accountability as a progression of the solutions identified to address the gaps and issues in WG1 using a template similar to that in Appendix 2</p>
12.30 - 13:00	Group reports and Plenary Discussion
13:00 - 14:30	Lunch
14:30 - 15:30	<p><i>Working Group Session 3 (WGS3)</i> - Towards a 3-5 year Road Map – This is a consensus based exercise which requires developing a Road Map that provides a specific timeline for delivering the solutions by those who can be held accountable. The output will be a 3-5 year Road Map with milestones for what can be done at regional and national level and who is going to do what and by when to make things happen. Some specific empirical targets of achievement need to be set along with accountability of progressing towards it. A suggested template for this session is shown in Appendix 3.</p>
15:30 – 16:00	Coffee Break
16:00 – 17:00	WGS 3 Continuation of the Road Map Process including finalization of the long medium and short term empirical targets for achievement and the election of the support group. Key messages to policy makers
17.00 - 18:00 pm	Plenary Discussion & Closing Ceremony

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## **Annex III: List of Presentations with Associated Links**

### **Technical Session 1**

*Challenges and Opportunities penetrating Local, Regional and International Markets* – Mr Jose Antonio Flaquer, Coconut Cluster, Junta Agroempresarial Dominicana Inc. Dominican Republic

[Challenges and Opportunities Penetrating Local, Regional Markets \(Dom Rep\).pdf](#)

*Research & Development Requirements for Higher Value Coconut Products: Nutraceuticals and Cosmetics* – Professor Wayne McLaughlin, University of the West Indies, Mona Campus, Jamaica

[High Value Product Development - R&D Requirements \(UWI\).pdf](#)

*Small-scale Processing of Coconuts: Challenges and Perspectives from Small Agro-entrepreneur* – Mrs Rose Benn, Pomeroun Women's Agro-Processors Association, Guyana

[Small Scale Processing of Coconuts - Small Agro-Entrepreneur \(Guyana\).pdf](#)

### **Technical Session 2 Part 1**

*Challenges of Coconut Pests and Diseases for the Caribbean Region* – Dr Simon Eden-Green, ECG Consulting, United Kingdom

[Challenges of Coconut Pests \(UK\).pdf](#)

*Status Report on the Biological Control of Red Palm Mite* – Mr Farzan Hosein, Ministry of Food Production, Trinidad and Tobago

[Pest - Red Palm Mite \(Trinidad\).pdf](#)

*Managing Lethal Yellowing – Experience from Jamaica (Black's Method)* – Dr Wayne Myrie, Coconut Industry Board, Jamaica

[Pest - Lethal Yellowing \(Jamaica\).pdf](#)

*Red Ring Management: Trinidad Strategy* – Mr Assim Dilbar, Ministry of Food Production, Trinidad and Tobago

[Pest - Red Ring Disease \(Trinidad\).pdf](#)

### **Technical Session 2: Parts 2 and 3**

*Current Status of the Coconut Industry in the Republic of Fiji: Lessons for the Caribbean Countries* - Mr. Vatimi Rayalu, Ministry of Agriculture, Fiji

[Current Status of the Coconut Industry in the Republic of Fiji.pdf](#)

*Phased Rehabilitation vs New Cultivations or Both - What is presently being done & what has been achieved in rehabilitating estates or establishing new plantations?* Mr. Ricardo Montero, Textel Agricultural Investment Limited, Belize

[Phased Rehabilitation vs New Cultivations \(Belize\).pdf](#)

*Facilitating Cross-Border Movement of Improved Genetic Resources* – Mr. Everton Hunte, Ministry of Agriculture, Food, Fisheries and Water Resource Management and Representative of the Caribbean Plant Health Directors' Forum

[Cross-Border Movement of Improved Genetic Resources.pdf](#)

***Presentations of Key Workshop Recommendations at the 11<sup>th</sup> Meeting of the Alliance***

Coconut Workshop Technical Report for the Ministers of Agriculture – Ms Judith Francis, CTA

[Coconut Workshop Technical Report for the Ministers of Agriculture.pdf](#)

Coconut Workshop Technical Report Power Point Presentation for the Ministers of Agriculture – Ms Judith Francis, CTA

[Coconut Workshop Report - Presentation to the Ministers of Agriculture.pdf](#)



## Annex IV: Consolidated Coconut Industry Road Map for the Caribbean – Short (< 1year), Medium (1 – 3 years) and Long-term (>3 years) Action Items

<b>THE 5 YEAR VISION AND ROAD MAP CONTEXT</b>	To develop a highly competitive, integrated, sustainable regional coconut industry which grows 30% within 5 years and delivers benefits to all stakeholders throughout the value chain.
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C.I. ROAD MAP Issue/Gap Area	Action Items, Time Frames			Responsibilities	
	Short -term	Medium-term	Long-term	By whom?	Accountability
<b>CERTIFIED QUALITY PLANTING MATERIAL AND ACCREDITED FACILITIES</b>					
Increased access to quality planting material and widening gene pool	Stock assessment - Gather data (desk research) on indigenous/local varieties available within the region and complement with field visits.			MoA, UWI – Geneticists, agronomists, plant breeders.	Industry Task Force (PPP), CARICOM Secretariat
	Characterise and select best local/indigenous varieties for use as mother stock planting material at the national and regional levels (including any previously introduced 'exotic' varieties), using molecular market techniques (UWI and CIRAD support).			MoA, UWI and other tertiary Institutions, CIRAD	Industry Task Force (PPP), CARICOM Secretariat
	Acquire new/improved genetic material from regional and international sources for evaluation and use as mother stock at government/state or commercial nurseries and for experimental purposes.			MoA, Coconut Development Boards, UWI	Industry Task Force (PPP), CARICOM Secretariat
	Establish a coconut gene bank in one or two Caribbean countries.			MoA, Coconut Development Boards, UWI	Industry Task Force (PPP), CARICOM Secretariat
	Establish 'nuclear' collections (coconut genebanks) in additional participating countries.			MoA, Coconut Development Boards, UWI	Industry Task Force (PPP), CARICOM Secretariat
Quality Assurance System	Assess existing tissue culture laboratories in the region with the view to upgrading two laboratories to a certified status. (N.B.existing evaluation reports should serve as the starting point).			CARDI, UWI, MoA	Industry Task Force (PPP), CARICOM Secretariat
	Set minimum standards and upgrade existing nurseries to comply with minimum certification requirement.			MoA. ISO certifying bodies (BoS)	Industry Task Force (PPP), CARICOM Secretariat
	Solicit assistance from the Centro de Investigación de Yucatan (CICY) in Mexico for accessing certified quality planting material.			CARDI	Industry Task Force (PPP), CARICOM Secretariat
	Become associate members of the APCC to gain access to genetic materials from outside the region (Jamaica, T&T, Suriname, and Belize).			MoA	MoA
	Achieve consensus on regional standards and certification schemes for certifying nurseries and tissue culture facilities and location of regional facilities.			MoA, BoS (ISO certifying bodies)	Industry Task Force (PPP), CARICOM Secretariat
	Upgrade and expand at least two tissue culture facilities in the region.			BoS/Regional Tissue Culture labs/Coconut Industry Boards	Industry Task Force (PPP), CARICOM Secretariat
	Train technicians, scientists and plant health/quarantine officials from the region in tissue culture techniques and cross-border quarantine protocols in Fiji, Mexico, and New Zealand.			MoA, UWI	CPHD/CARICOM Secretariat

C.I. ROAD MAP	Action Items, Time Frames			Responsibilities	
	Issue/Gap Area	Short -term	Medium-term	Long-term	By whom?
<b>MANAGE PESTS – Strategies and Management</b>					
Surveillance	Use satellite imaging technology for pest and disease monitoring.			MoA with support from regional (UWI) and international organizations (CTA) and the private sector	<b>CARDI/CPHD Forum</b>
Pest Risk Analysis & Integrated Pest Management	Undertake a pest risk analysis.			MoA /Plant health specialists	<b>CPHD Forum</b>
	Develop a Caribbean pest list in collaboration with universities, research bodies and training entities.			MoA, UWI, CARINET, BIONET, CABI, CARDI, CIRAD,	<b>CPHD, CARICOM Secretariat</b>
	Pursue a phased approach to rehabilitation of aged and diseased plantations at the national level using modern holistic integrated agronomic approaches and practices.			Private farmers, farmers' organization	<b>Industry Task Force (PPP)</b>

C.I. ROAD MAP	Action Items, Time Frames			Responsibilities	
	Issue/Gap Area	Short -term	Medium-term	Long-term	By whom?
<b>ENHANCE SCIENTIFIC CAPACITY</b>					
Strengthen ongoing R&D on major pests and diseases	Mobilize national, regional and international funding to support three ongoing research initiatives on – LY, RPM, RR + trunk boring insects (Belize, DR, Jamaica and T&T).			MoA, Industry Task Force (PPP)	<b>CARDI/CARICOM Secretariat</b>
	Upgrade diagnostic equipment and facilities and access specialised technical services to improve diagnostics and variety characterisation capability.			R&D Institutions and diagnostic laboratories	<b>CARDI</b>
	Short-term staff attachments to Centres of Excellence in coconut R&D and pest and disease management.			MoA	<b>CARDI</b>
R&D for new niche products and improving production efficiency improvements	Mobilize national, regional and international funding for ongoing and new R&D projects for developing niche high-value products and conducting clinical trials to support health claims			National /regional R&D institutions and universities & Industry Task Force	<b>CARDI / CARICOM Secretariat</b>
	Identify appropriate post-harvest and processing technologies to suit SMEs and specific niche products.			Industry Task Force, universities and R&D organizations	<b>Processors</b>
	Mobilize funding to upgrade existing pilot plant facilities / develop new facilities to improve product quality and production efficiencies.			R&D Institutions e.g. CARIRI, SRC, UWI, Produce Chemist Laboratories	<b>CARIRI, SRC, UWI</b>
	Product development of new low volume high value lines such as nutraceuticals, cosmeceuticals, hydrolysed proteins and biocides.			CARIRI, GMC, JIPCO, GSA, SRC Jamaica, UWI, and other R&D institutions	<b>Processors, UWI Mona</b>

C.I. ROAD MAP	Action Items, Time Frames			Responsibilities		
	Issue/Gap Area	Short -term	Medium-term	Long-term	By whom?	Accountability
<b>MARKET INTELLIGENCE</b>						
For local demand	Conduct local consumer surveys and market research and awareness campaign to understand local market and project consumer demand for coconut based products.				Industry leaders at national level and marketing agencies e.g. NAMDEVCO (TT), DEXIA (Dominica) , GMC (Guyana) and CEL-AD (DR)	<b>National and regional Industry Task Force</b>
For regional demand	Conduct detailed market research to quantify and project future regional market demand for raw material and processed products.				Industry leaders at national level and marketing agencies e.g. NAMDEVCO (TT), DEXIA (Dominica) , GMC (Guyana) and CEL-AD (DR)	<b>National and regional Industry Task Force</b>
For international demand	Identify the current market intelligence databases and networks relevant to the coconut sector available internationally (e.g. the World Bank ITC database). Access, collate and analyse internationally available published data, prepare industry reports and share with industry stakeholders. Monitor trends.				Marketing groups/agencies – public and private - such as DEXIA, NAMDEVCO and the Coconut Industry Board	<b>National and regional Industry Task Force</b>
For new value added niche markets	Conduct consumer /market surveys including focus group to support new innovative product ideas and prototype product and brand development.				CARIRI, GMC, IAST, JIDC, GSA, SRC Jamaica, UWI, and other R&D institutions (Funding through the CDB, CEDA).	<b>National and regional Industry Task Force</b>

C.I. ROAD MAP	Action Items, Time Frames			Responsibilities		
	Issue/Gap Area	Short -term	Medium-term	Long-term	By whom?	Accountability
<b>FINANCE AND BUSINESS DEVELOPMENT</b>						
Mobilisation of public and private sector funding	Combine capital information markets with the setting up of farmer associations and industry clusters and the provision of an enabling policy, legislative and concessionary environment.				National business development agencies / industry body	<b>National Governments.</b>
	Research the mechanisms available for providing micro-finance at the national level.				National coconut industry organisation e.g. CIB, Jamaica	<b>National Governments</b>
	Organise access to concessionary finance for modernising and upgrading existing outdated processing plants.				National development banks e.g. DBJ, AID Bank. Business development agencies e.g. DFC	<b>National industry body in association with development banks / agencies</b>

C.I. ROAD MAP	Action Items, Time Frames			Responsibilities		
	Issue/Gap Area	Short -term	Medium-term	Long-term	By whom?	Accountability
<b>FINANCE AND BUSINESS DEVELOPMENT (Continued)</b>						
Supporting industry clustering and capacity building	Encourage the organisation of stakeholders in the coconut industry at the national level and promote regular industry meetings.				Industry Task Force (PPP)	National industry body
	Support knowledge sharing and collaboration, possibly through a funded Network Coordination and Information Unit.				Industry Task Force (PPP)	National industry body
	Solicit funding and technical assistance for capacity building of producers and processors.				Industry Task Force (PPP)	National industry body
	Set up a database to support industry information sharing on plant material, production, pest and disease, processing, markets, standards within the region with a focal point (e.g. Caribbean Extension Network) in a designated country.				Regional bodies such as UWI in association with the private sector	UWI, national extension agencies and national industry bodies
	Update knowledge and skills of extension officers, farmers and processors and provide continuous education through workshops, conferences and the publication and dissemination of research findings.				CARDI, UWI, CTA, FAO, IICA, IFAD and other national, regional and international agencies	National extension agencies e.g. Ministry of Agriculture – plus private sector advisors
	Strengthen industry organisations (clusters and cooperatives) at national and regional levels through the provision of business support services including incubation support.				Private sector in association with national business development agencies / business incubation groups e.g. ALJ GSB, UTECH, CBET, BIDD, CARIRI, Branson Centre.	National industry bodies plus specific business development / incubation agencies
	Establish business incubators for small and medium scale entrepreneurs to encourage the commercial development of coconut value added products.				Private sector in association with national business development agencies / incubation groups	National industry bodies plus business development agencies / incubators)
Explore opportunities for international funding, including in 11 <sup>th</sup> EDF	Prepare regional project proposals along the key areas of intervention identified.				Industry Task Force (PPP)	CARDI/CARICOM Secretariat plus national and regional stakeholders
	Develop national industry Road Maps and business development plans.				Industry Task Force (PPP)	National industry bodies plus CARDI/CARICOM Secretariat
	Submit project proposals to various funding agencies including CDB, EC.				Industry Task Force (PPP)	CARDI/CARICOM Secretariat

## Annex V: Technical Workshop Report Presentation to the Alliance

### Coconut Industry Development for the Caribbean:

#### Towards a Shared Vision & Road Map

October 7<sup>th</sup> & 8<sup>th</sup>, 2013

Caribbean Week of Agriculture, 2013

Georgetown, Guyana

#### Background

The coconut industry is of vital importance to future economic development Caribbean countries. Growth in regional and international markets suggest that urgent attention be paid to revitalizing the Caribbean coconut industry in a strategic and purposeful manner. This requires CARIFORUM governments and industry stakeholders to work closely together at national and regional levels to address the challenges confronting the sector.

The European Commission, on behalf of the Secretariat of the Africa, Caribbean and Pacific (ACP) Group of States and the Caribbean Forum (CARIFORUM) missions, funded a needs assessment study to assess the social, economic and environmental relevance of revitalizing the Caribbean coconut industry. Two priority interventions for future industry development were identified: (i) Enhancing the range of value added products, particularly higher valued products and growing business and entrepreneurial activities; and (ii) Improving production, productivity and efficiency.

Within the framework of strategic intervention area 1, the following actions were indicated: (i) product and process technology improvement in cottage scale coconut water and virgin coconut oil; (ii) developing other cottage/artisan value added products in coconuts; and (iii) modernization and upgrade of value added processing plants to improve efficiency and competitiveness and consumer awareness campaigns.

Within the framework of intervention area 2, the following activities were indicated: (i) widening the gene pool, phased rehabilitation of plantations and special development projects; (ii) enhancing the scientific capacity; and (iii) conducting collaborative research on lethal yellowing, red palm mite and red ring diseases.

These interventions if successfully implemented are expected to lead to: (i) improved and enhanced sustainability in production and productivity; and (ii) expansion of the range, quality and marketability of coconut based value added products.

#### Workshop Objectives:

CTA and CARDI in consultation with the Caribbean Ambassadors based in Brussels organized a two-day workshop during the Caribbean Week of Agriculture (CWA):

- To review in-depth the results of the Intra-ACP 10th EDF needs assessment study on the coconut industry in the Caribbean region;
- To agree on the priority interventions and a Road Map for developing the Caribbean coconut industry within a three - five year period at national and regional level;

- To seek endorsement from Caribbean ministers attending the CWA on the indicative road map for developing the Caribbean coconut industry over the next three to five years.

### **Participants:**

Over 80 delegates representing the public and private sectors from: the Caribbean (Barbados, Belize, Dominica, Dominican Republic, Fiji, Guyana, Suriname, St Lucia, St Vincent and the Grenadines and Trinidad and Tobago); the Pacific (Fiji, Tonga, Samoa, Solomon Islands and Vanuatu) and Europe (United Kingdom and The Netherlands) participated in the workshop. They were drawn from small, medium and large scale producer and processing enterprises and technical, training and research organizations (plant health, food technology, agronomy, genetics, and academia). There were eleven 15-20 minute technical and industry presentations on strategic issues, plenary discussions and, working group discussions leading up to the elaboration of the three to five year road map.

### **Results:**

The participants -

- (i) Endorsed the findings of the Intra-ACP 10th EDF needs assessment study;
- (ii) Achieved consensus on the strategic interventions and developed an indicative three to five year Road Map for coordinated regional and national action for developing the Caribbean coconut industry and;
- (iii) Agreed that the priority issues and recommendations be presented for endorsement by the Alliance.

### **Key Issues:**

The priority issues to be addressed at national and regional levels are summarized as follows:

1. Limited availability of high quality planting material, narrow genetic pool and high economic losses due to pests (yields and loss of trees).
2. Limited market intelligence on local, regional and international markets for both mainstream and niche products.
3. Limited scientific capacity for addressing issues across the value chain (e.g. in characterizing indigenous genetic resources, production, pest and disease research, management and surveillance, processing, new product development and related areas).
4. Limitations in finance and business development especially for small-scale and artisanal industries.

### **Recommendations**

The following are recommended for endorsement by the Alliance and for further consideration and implementation at national and regional level within six to eighteen months:

1. Improve access to certified quality planting material from endemic and exotic sources and accredited facilities and manage pests. Caribbean Plant Health Directors Forum to develop and implement strategies to safeguard and manage the major and emerging pests that threaten the industry.
2. Enhance scientific capacity e.g. characterizing indigenous resources; ongoing pest and disease research on the three major pests – red palm mite, lethal yellow and red ring and new product development for niche markets.

3. Intensify efforts to gather market intelligence on local, regional and international markets for both mainstream and niche products.
4. Finance and business development – prioritization of the key issues for improving industry competitiveness. Mobilization of private and public sector funding, clustering and capacity building. Explore opportunities for international funding including the 11<sup>th</sup> EDF.

