FINAL REPORT

MARKET RESEARCH

CARIBBEAN REGIONAL HRD PROGRAM FOR ECONOMIC COMPETIVENESS (CPEC)/CARIBBEAN EXPORT DEVELOPMENT AGENCY (CEDA)

HOT PEPPER PROJECT PHASE I MARKET RESEARCH ON THE VIALBILITY AND EXPORT POTENTIAL OF THE REGIONAL HOT PEPPER INDUSTRY

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SECTION ONE

OVERVIEW OF THE INTERNATIONAL SITUATION AND

ANALYSIS OF THE CARICOM INDUSTRY

1.0 BACKGROUND

1.1 INTRODUCTION

The Caribbean has always been a player in the international hot pepper industry, which has it roots in the markets where West Indians settle internationally. The region has been exporting fresh pepper and hot pepper sauces to the traditional markets of the Untied Kingdom, United States of America specifically New York and Miami, and Canada. The countries within the region that contributes to the trade in fresh hot peppers are Antigua & Barbuda, Barbados, Belize, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago. The countries within the region that contributes to the trade in hot pepper sauce are Antigua & Barbuda, Barbados, Belize, Dominica, Jamaica, St. Lucia, and Trinidad and Tobago.

Next to the services sector, the agriculture, agro processing sector exports have been significant to the sustainability of small economies such as those in the Caribbean. Traditionally the Caribbean region exported mostly bananas and sugar under preferential trade arrangements to Europe, however this has been abolished with the new trade rules of the World Trade Organisation. As a result the Caribbean countries are left to find ways to make their agricultural sector competitive in this new global trade environment.

1.2 JUSTIFICATION

Hot pepper or chilli pepper is a major spice produced by all countries in CARICOM. These countries have targeted hot pepper as a priority crop in their agricultural diversification programme and in some countries also as a potential product for farmers who have been displaced from the banana industry. The choice is based on the fact that internationally the industry has been growing and the production and trade from the Caribbean has been increasing. As a result the private sector and public sector including development organisations have targeted the industry for further development.

In 2000, CARDI conducted a study of the consumer and retail market segments of the hot pepper industry in the USA (New York, Miami, Boston), UK (London), Canada (Toronto), as well as in three regional countries, namely, Trinidad and Tobago, St. Lucia and Jamaica. In 2001 CARDI undertook a visit to assess the fresh hot pepper trade in New York and Miami and in early 2002 CARDI conducted a study of the status of the domestic industry in eight CARICOM countries, identified the major constraints to domestic production and marketing and facilitated the establishment of National Hot Pepper Development Committees. These Committees are expected to evolve into National Hot Pepper Associations.

In 2002 CARICOM also acquired funding to support an assessment of the competitiveness of the industry in the region, to facilitate the preparation of a strategic plan and the conduct of a regional strategic planning workshop.

1.3 TERMS OF REFERENCE

In the latter part of 2002 CPEC and CEDA, CARDI and the CARICOM Secretariat agreed to co-ordinate their resources and efforts in providing development support for the hot pepper industry. As a first step in this process the group requested the preparation of a comprehensive report on the industry. Assessment of the available information indicated that there were significant information gaps with respect to the strengths and weaknesses of CARICOM major competitors, the opportunity for the region in various segments of the international hot pepper industry supply capability of CARICOM, particularly of the processing sub-sector

In order to fill these gaps, CPEC through CEDA agreed to provide funding to allow for a study of CARICOM's traditional export markets in the United States, Canada, and the United Kingdom and to facilitate some assessment of the competition in Costa Rica and Mexico. CPEC/CEDA also agreed to support the conduct of a regional strategic planning workshop and committed to provide funding to support development projects in the industry based on the outcome of the strategic plan.

CARICOM also acquired funding to support an assessment of the competitiveness of the industry in the region, to facilitate the preparation of a strategic plan and the conduct of a regional strategic planning workshop. CARDI also agreed to make available the information on the studies it carried out.

The report covers the component undertaken by CPEC/CEDA with respect to the market and competitor analysis and involved the following Terms of Reference.

Conduct of market research and market study for hot pepper products:
Products:
Fresh Hot Pepper,
Pepper mash
Dried ground hot pepper
Pepper extracts and sauces

Markets:
CARICOM
United States
Canada
United Kingdom

Activities:

Determine scope of market study and produce suitable action plan for approval by project coordinator

Design survey instruments

Conduct research and analysis

Analyse Data

Package and present information in user- friendly format for industry stakeholders

Outputs:

A description produced of the marketing system for Fresh and Processed Hot Pepper in the main producing CARICOM Countries.

Commercially viable strains of Hot Pepper confirmed, based on previous research and countries with a comparative advantage for pepper production identified

Analysis conducted of the market demand, competition and potential for Hot Peppers and Hot Pepper Products by Market Segments and by selected geographic areas.

Findings packaged and presented in a user- friendly format to farmers, pack- house operators, processors, business development specialists and researchers.

Participate in the Regional Symposium and finalization of the Strategic Plan

Source and purchase all necessary data (PIERS and scan data), copies of which are to remain with Caribbean Export.

A consulting team consisting of Vassel Stewart, and Clarecia Christie, were engaged by CPEC/CEDA to undertake the overseas market research and competitor analysis and the preparation of a report based on the findings. Vassel Stewart was also contracted to facilitate the strategic planning workshop.

2.0 METHODOLOGY

The scope of work required the collection of secondary and primary information.

2.1 SECONDARY RESEARCH

Secondary market research was conducted by way of reviewing industry publications, studies made available by Ministries of Agriculture (MoA) of eight (8) CARICOM Member States, CARDI, Fresh Fruit Journal (UK), Internet searches and analysis of statistical information collected. Supermarkets scan data for Miami and Fort Lauderdale was also purchased in order to get a feel of the movement of these goods in those markets.

2.2 PRIMARY RESEARCH

Primary market research was conducted in the markets of Mexico, Costa Rica, Toronto, London, New York and Miami. A local Costa Rican consultant was hired by the consulting team through CEDA coordinated the visit to Costa Rica. He contacted and organised for the consulting team to visit the processing plants, hot pepper fields and supermarkets to conduct interviews with a number of companies involved in the growing, processing and export of hot pepper products. He also functioned as an interpreter when necessary.

The visits to the market place in London, New York, Toronto, and Miami, the consultants conducted face-to-face or telephone interviews based on structured and unstructured questions with a number of companies in the respective countries that are involved in the importation, distribution and retail of hot pepper products. They also visited a number of supermarkets, and ethnic shops for observation of new and diversified, fresh and processed hot pepper products and held impromptu discussions with managers and sales personnel.

In the case of Mexico the consultants attended an International Pepper Conference in Tampico, Mexico, where they met and held discussions with individuals mostly from Mexican and American companies involved in the research, production and processing of hot pepper products.

3.0 OVERVIEW OF THE INTERNATIONAL SITUATION

3.1 RELATIVE IMPORTANCE IN THE AGRI-FOOD SECTOR

The sectors identified within this industry are the **industrial, retail** and **catering** sectors. The industries identified within the hot pepper industry falls in one or more than one of these sectors.

The Hot pepper industry is interlocked into the supply section of the food industry especially that of the processed food and meat industry and the spice industry, which is the provider of ingredients for the production of processed foods. This industry has evolved over the years into a sophisticated one with many players who have their foothold and dominance in the market. The industry is also a part or an affiliate of the pharmaceutical industry (topical pain relievers), the spice industry, the processed food industry and the defence industry (used in the production of pepper spray and stun sprays). In other words the hot pepper industry provides an industrial raw material to many other industries.

The products of the hot pepper industry here we are referring to the fresh hot pepper and the hot pepper sauces and condiments, are referred to as ethnic foods and as a result have become a part of the ethnic foods aisles or food of the world aisles in the European supermarkets. Within this section of the hot pepper industry is what United States players in the industry refer to as the fiery foods industry.

Within the hot pepper industry there is a very lucrative industry called the non-food items market. Chilli lovers in the United States of America and the rest of the world induced this market. These items are used to increase consumer /customer base, these items include t-shirts, posters, other apparel e.g. boxers, socks, cookware, books, bottle huggers, dietary supplements etc. all emblazed with chilli features.

Table 3.1 Industrial Uses of Pepper

End User sector	Product Types	Pepper products used
Spice and Condiment industry	Pepper in Brine Powdered seasoning	Fresh pepper Grounded pepper Hot pepper mash
Food Industry/Ethnic Food Industry	Processed meats Hot sauces Dips Candy	Grounded pepper Hot pepper mash
Pharmaceutical Industry	Topical creams	Capsaicin oil, oleoresins
Wellness Industry	Capsules	Grounded pepper
Defence industry	Stun guns Pepper sprays	Capsaicin oil, oleoresins
Jokes and Collectors' industry/Fiery Foods Industry	Extra (fiery) hot sauces not fit for human consumption	Capsaicin oil, oleoresins
Restaurant and Food Catering Industry	Gourmet sauces and marinades Table sauces	Fresh pepper Hot pepper mash Grounded hot pepper
Home Décor Industry	Decorative pieces	Fresh pepper

Author's tabulation

3.2 THE MOST IMPORTANT HOT PEPPER SPECIES

Hot pepper which is also known as chili, chile, chilli, aji, paprika, and Capsicum describes plants in the genus Capsicum which encompasses some twenty species and some 300 different varieties of plants producing fleshy fruits. These fruits range in hotness from having no discernable hotness to being too hot for consumption. Botanically it is part of the family Solanaceae which include tomatoes and tobacco. Only five species have become significantly domesticated and commercialised, namely;

Capsicum annuum,

Capsicum frutescens

Capsicum baccatum

Capsicum pubescen

Capsicum chinense

See appendix I & 2 for the anatomy of hot pepper and examples of these five species respectively.

In common language these five (5) species give us products which include sweet pepper, paprika and chilli/hot peppers. Capsicum has come to dominate the world spice trade and is grown everywhere in the tropics as well as in many temperate regions of the globe. Not only have hot peppers come to command the world's spice trade, but sweet pepper which is a non-pungent form of Capsicum annum, has become one of there most an important "green" vegetable in the world. This spice has become such an indispensable ingredient of the daily food of many people of the world particularly products from the species Capsicum annuum L. and Capsicum frutescens L which are also used in the manufacture of selected commercial products known for their pungency, color and medicinal properties.

A brief description of these five species is presented below:

Capsicum Annuum

Evidence suggests that Capsicum annuum originally occurred in northern Latin America and is the best known domesticated species in the world. Since the time of Columbus, it has spread to every part of the globe. The non-pungent form, bell pepper, is widely used as a green vegetable. Another non-pungent form, "pimento," is also present throughout much of the globe. Capsicum peppers also called Spanish paprikas (pimento) are lacking in pungency. These are preserved and used in several food preparations such as cheese preparations and stuffed olives.

The hot spicy forms of this species have come to dominate the spicy foods within Latin America and the rest of the world. Capsicum annuum probably became the dominant pepper globally in part because it was the first pepper discovered by Columbus and other New World explorers. This species was the first Capsicum species taken to Europe and quickly spread to other regions

Capsicum Baccatum Var. Pendulum

Capsicum baccatum var. pendulum represents another discrete domesticated genetic line. Eshbaugh, (1968, 1970) notes that this is a distinct South American species. C. baccatum var. baccatum and is most common in Bolivia with outlier populations in Peru and Paraguay, northern Argentina, and southern Brazil. This lowland to mid-elevation species is widespread throughout South America particularly adjacent to the Andes, known as aji, it is popular not only as a hot spice but for the subtle bouquet and distinct flavors of its many cultivars. This pepper is little known outside South America, although it has reached Mexico in Latin America and India in Asia, and Hawaii. It is not clear as to why it has not become much more wide spread, although the dominance of the Capsicum annuum lineage throughout the world at an early date may be responsible. C. baccatum appear to be more prevalent in lower South America. Capsicum baccatum var. pendulum is widespread throughout lowland tropical regions in South America. It ranges from coastal Peru to Coastal, Brazil. The wild form, recognized as C. baccatum var. baccatum, has a much more localized distribution but still ranges from Peru to Brazil.

Capsicum Pubescens

Capsicum pubescens is unique among the domesticated products as a mid-elevation Andean species. Capsicum pubescens is still primarily cultivated in South America although small amounts are grown in Guatemala and southern Mexico, especially

Chiapas. This species remains virtually unknown to the rest of the world. A small export market seems to have reached southern California.

Capsicum Chinense

Capsicum chinense was also discovered at an early date and spread globally but to a lesser extent than C. annuum. The more limited global expansion of this species is most probably related to its later discovery in South America and the competitive edge enjoyed by C. annuum which was firmly established in the Old World before C. chinense was introduced there This is the species that is most prevalent in the Caribbean

3.3 THE PRODUCTS AND USES

The following provides a definition of the products based on the Harmonised System of product coding.

Table 3.2: HS Description Of Hot Pepper Products

Pepper product	HS Code	Description
Hot Pepper	0709.6091	The fresh fruit of the genus capsicum
Hot pepper mash	0904.2073	Fresh fruit crushed and preserved with salt or vinegar, some are stored for up to three years where it ages for a much sharper flavour
Hot pepper sauce	2103.901	Hot pepper mash mixed with water, natural flavours and stabilizers, sometimes include tropical fruits.
Dried/ ground hot pepper	0904.20	Fresh pepper dried in ovens or open air and then grounded to a powder.
Hot pepper extract	3303.9999	Oleoresin and Capsaicin oil from hot peppers

Author’s tabulation

It should be noted that these Harmonised system codes do not take into to consideration only hot pepper products, for example hot sauces are lumped into to all sauces e.g. soy sauces.

Hot pepper is used in many different ways depending mainly on the degree of flavour and colour. Flavour consists of the volatile components, which are responsible for aroma and the non-volatile compounds, which are responsible for pungency or hotness. Hotness is often the major factor that determines use. The degree of hotness is measured in units call Scoville Heat Units and depends upon the concentration of a compound call capsaicinoids which consist mainly of capsaicin, in the fruit. Capsicum peppers are classified commercially by the concentration of capsaicin, since confusion about the biological identities of some varieties has made other methods unreliable. Many innovative uses of pungency are being studied.

Paprika comes from plants with 10 to 30 parts per million capsaicinoids, chilli peppers from plants with 30 to 600 parts per million, and red peppers from plants with 600 to 13,000 parts per million. The dried fruits are ground to a powder, which is added as flavouring to foods. These dried ripe fruits of pungent capsicums are called chillies. In its powdered form it constitutes red or cayenne pepper**.**

Colour or pigment is also very important in the usage of peppers. Chemical compounds called Carotenoids are responsible for the colour and is particularly important in paprika and chilli powder. Paprika powder or oleoresin which are oils extracted from the paprika, are currently used in a wide assortment of foods, drugs, and cosmetics, as well as for improving the feather colour of flamingos in zoos or koi in aquariums. The amount of capsaicinoids and carotenoids in fruit tissue depends on factors such as cultivars, maturity stage and growing conditions.

According to Dave Dewitt of Fiery food Magazine Capsaicin can and is quantitatively measured by high performance liquid chromatography, to exactness for that particular pod, that particular plant, that particular location, and that particular season only. Thus actual values will often deviate from published heat levels because of local environmental conditions. As indicated many factors affecting the pungency of any variety, and there are many varieties and pod types within the various species. The approximate heat levels of different varieties based on Dave Dewitt's (www.fieryfoods.com) measurements are presented in table 3.2 below.

Table 3.3 Varieties and Degree of Hotness

Scoville Units	Chile Varieties And Commercial Products
100,000-500,000	Habanero, Scotch Bonnet, South American chinenses, African birdseye
50,000-100,000	Santaka, Chiltepin, Rocoto, Chinese kwangsi
30,000-50,000	Piquin, Cayenne Long, Tabasco, Thai prik khee nu, Pakistan dundicut
15,000-30,000	de Arbol; crushed red pepper; habanero hot sauce
5,000-15,000	Early Jalapeño, Aj Amarillo, Serrano; Tabasco ® Sauce
2,500-5,000	TAM Mild Jalapeño, Mirasol; Cayenne Large Red Thick; Louisiana hot sauce
1,500-2,500	Sandia, Cascabel, Yellow Wax Hot
1,000-1,500	Ancho, Pasilla, Española Improved; Old Bay Seasoning
500-1000	NuMex Big Jim, NuMex 6-4, chili powder
100-500	NuMex R-Naky, Mexi-Bell, Cherry; canned green chiles, Hungarian hot paprika
10-100	Pickled pepperoncini
0	Mild Bells, Pimiento, Sweet Banana, U.S. paprika

A range of secondary products and resultant variation in use is presented below.

Table 3.4 Products and Uses

Pepper	Uses	Products
Fresh Pepper	Sold fresh, used in the production of hot pepper pulp, mash and juice which are raw materials in the production of sauces	All the species of the genus capsicum sold in green grocers and used in the production of sauces and other products. Whole peppers sold in vinegar and salt both for consumption and for decorative purposes.
Hot pepper mash	Industrial material used in the production of sauces and salsas	Sold to producers of sauces in bulk. Salsas, hot pepper sauces
Hot pepper sauce	Used in restaurants, homes and novelty shops	Gourmet sauces & marinades, sauces for jokes, sauces for consumer consumption
Dried ground hot pepper	Used in the production of powdered seasonings and spices	Curry powders, soup mixes, fish seasonings, chilli powder etc
Hot pepper extract	Used, as an industrial good-it is the raw material for spices, for stun guns and pepper spray, used in sauces and in the production of topical creams.	Sauces for jokes, arthritic creams

Author's tabulation

3.3 INTERNATIONAL PRODUCTION AND TRADE

Table3.5: Showing change in production over the period of five years

Country	Change In Production Over The Past Five (5) Years Quantity in Metric Tonne				
	1998	1999	2000	2001	2002
China	7, 283,127	7,841,175	9,436,452	9883,584	10,533,584
Mexico	1,849,559	1,797,197	1,734,630	1,870,890	1,733,900
Turkey	1,400,000	1,462,000	1,480,000	1,560,000	1,500,000
Spain	890,070	924,000	939,000	965,200	989,600
Nigeria	715,000	715,000	715,000	715,000	715,000
USA	660,250	705,880	885,630	885,630	885,630
Egypt	410,784	388,095	428,066	386,687	386,687
Indonesia	374,095	496,908	510,000	550,000	550,000
Italy	359,830	341,623	364,963	391,298	380,000
Republic of Korea	288,102	436,647	391,298	380,000	380,000

Source: FAOSTAT Agriculture Database

Table3.6: Top Ten Producers in 2002

Country	Contribution in percentage
China	48.47%
Mexico	7.97%
Turkey	6.90%
Spain	4.55%
Nigeria	3.29%
USA	4.07%
Egypt	1.78%
Indonesia	2.53%
Italy	1.74%
Republic of Korea	1.74%

Source: Tabulated from FAOSTAT Agriculture Database

International trade data as reported by FAO does not allow for the dis-aggregation of chilli pepper data from sweet peppers. The data however shows that the major trades of capsicum including chilli and sweet peppers are Spain with 27% followed by Mexico with 23%, Holland with 18%, USA 6%, Turkey 3%, Hungary and Canada 2.5%, France and Israel 2%,China, Belgium, Poland, Jordan South Korea and Thailand with about 1%. Among these countries Mexico is the major exporter of chillies other major players include, Turkey, Spain, Hungary, Holland and Thailand..

The European Union and the United States are the major importers of chillies. In 1999 the EU imported 21000 tonnes of chilli type peppers up from 12000 in 1995. Turkey was the major exporter with 10,000 tonnes followed by Morocco with 4800 tonnes. Germany and Austria import about 5000 tonnes from Turkey and France 4000 tonnes from Morocco.

In terms of the more pungent types produced in the Caribbean, Europe imported about 700 tonnes from Ghana, about 1500 tonnes from Kenya and Uganda and from the Caribbean, over 1000 tonnes.

The United States imports about most of its fresh peppers from Mexico, Central America and the Caribbean.

Both Europe and the United States import significant quantities of processed pepper products in the form of pepper sauces, hot and spicy snack foods, spicy sauces and pepper based seasoning.

3.4 THE INDUSTRY PLAYERS

The international hot pepper market comprise of the following players:

Government Policy Makers

These take the form of Ministers of Agriculture, Agriculture extension officers and Agriculture interest groups along with industry associations. These groups influence governmental policies for the industry for example a country's hot pepper growers association.
Products: Policies that regulate the industry, Financial and technical support

Research and Development Laboratories

These may be governments, universities, growers, processors, private companies equipped with all the scientists, agronomists etc. and machineries that allows for agriculture research. Research and development usually takes the form of finding new species of hot pepper that are resistant to the elements that makes for a weak vegetable, species are also formed to be used in the industrial sector for the retail sector and just to conform to consumers tastes.

These laboratories usually supply seeds and seedlings to hot pepper Growers/Farmers or to Farm Stores.
Products: Seeds, Seedling, new strains of hot pepper

Growers/Farmers

These are the growers of hot pepper whose capacity range from small family plots to large hectares targeted towards processors and producers of hot pepper products. Some form associations and have strong lobbying rights according to the region or country they are from, for example, in Mexico who is the second largest world suppliers of hot peppers.

Product: Fresh Hot Peppers of the genus Capsicum

Processors

These are producers of industrial products for all the industries for which hot pepper industrial by-products are used. In other words they supply the producers of final consumer products. These processors range from large laboratories, factories supplying multinational producers and restaurant chains, to small processors supplying restaurants, hotels and small blenders in their local markets and regions

Products: hot pepper mash and pulp, hot pepper slices, hot pepper powder, hot pepper flakes, hot pepper oil, hot pepper oleoresins

Producers/Blenders

These companies utilise the products of the processors to create consumer goods for example stun guns, pepper sauces. In the context of blenders these are usually in the food industry where sauces, marinades, pastes, seasoning mixes are produced under own label in some cases or under private labelling in others.

Products: Pepper spray, stun guns, hot pepper sauces, marinades and pastes, soup mixes, seasoning mixes, fiery sauces, confectionaries, topical creams, capsules etc.

Suppliers of Machinery

These are suppliers of machinery at all stages of processing hot pepper from irrigation to producing mash, to producing the final consumer products

Products: Hoses, mechanical reapers, grinders, vats etc.

Commodity Brokers

Sellers of fresh hot pepper, hot pepper mash/pulp, crushed hot pepper in their different markets; in some cases they are not part of the distribution chain. Products are sold to wholesalers or giant retailers directly, airline caterers.

Wholesalers

These are sellers of the final consumer goods to retailers and consumers alike

Retailers

These are sellers of hot peppers and it products by giant retail chains to small neighbourhood stores and marketplaces to the consumers.

Consumers

These are the consumers of hot pepper and its products. They are usually lovers of hot and spicy foods and range from ethnic food buyers to mainstream market buyers.

The CARICOM market for hot pepper products has had it fair share of problems with regional and international the hot pepper industry. There have been cases where producers have lost markets because of a lack of supply of hot peppers to produce their hot pepper products for exports.

4.0 CARICOM PRODUCTION SITUATION

4.1 FARMING SYSTEM

Commercial hot pepper production in the region commenced in the early 1980's as a part of the crop diversification efforts for small farmers. Most farmers plant the crop in pure stands as part of a mixed farming system whilst some intercrop with other crops, particularly root crops such as yams and cucurbits. The majority of farmers plant acreages of 1/4 to 1 acre but farms of 1-3 acres are becoming regular, particularly in Trinidad and Tobago where a few farmers have acreages of 10-20 acres.

4.2 LAND PREPARATION

Land preparation is done both manually and mechanically. In countries such as Jamaica and the Windward Islands where most small farmers farm on steep slopes, the land preparation is generally manually done, using machete and hoes for weeding and forks and hoes for ploughing, bed formation and moulding. In the flatter countries such as Trinidad, Barbados, Belize land preparation is generally mechanized with tractors being used for weeding, ploughing and formation of raised beds. It is estimated that only about 50% of production is done with mechanical land preparation.

4.3 SEEDS AND SEEDLING PRODUCTION

Commercial hot pepper production is done from seedlings and not from direct planting of seeds in the field. The seeds are normally planted in seedbeds or in plastic trays usually under shaded conditions.

The main hot pepper varieties grown in CARICOM belong to the species Capsicum chinense which originates in the Caribbean and is highly adapted to the climatic conditions of the Region. The main commercial types of hot pepper grown in the region falls within a variety generally call habanero, of which there are several, cultivars, land races and sergeants, in all the countries. Through a process of repeated selection based on pungency, aroma, flavour yield, diseases and pest tolerance, two main varieties, the Scotch Bonnet and the West Indian Red have become the main commercial varieties in the Region. The Scotch Bonnet which is light green and ripens to bright yellow is confined mainly to Jamaica, whilst the West Indian Red which is a darker green and ripens to a brilliant red is widely grown in the Eastern Caribbean and Belize. Over the last 2-3 years attempts have been made to introduce other varieties including Serrano and orange habanero in Belize and St. Lucia. St. Vincent & the Grenadines has launched an ambitious programme and have introduced a number of new varieties of the chinense sp. and annum sp. including orange habanero, Yellow Santa Fe Grande, Red Fresno and cherry hot. There is however a need to conduct formal evaluation of the performance of these varieties.

Most farmers produce their own seeds from selected ripe fruits. Due to the fact that these varieties are open pollinated and crosses very easily with other varieties of hot pepper, the quality and purity of the “farmers’ seeds” deteriorate over time and so does that of the resulting fresh hot pepper. This has become a significant problem for the Scotch Bonnet variety, which is also very susceptible to pest and diseases. This problem in the case of the West Indian Red, has been overcome through CARDI’s commercial production and marketing of pure West Indian Red seeds. With respect to Scotch Bonnet, the government of Jamaica with financial assistance from FAO has embarked on a project to allow for the production and marketing of pure Scotch Bonnet seeds.

The seeds are sown in the trays or seedbeds and are normally ready for transplanting 3-4 weeks after sowing. There are a number of commercial seedling operations particularly in Trinidad. In some countries, such as Grenada and Belize, CARDI produces and market West Indian Red seedlings.

4.4 TRANSPLANTING

Peppers are normally grown on mounds or raised beds. Where mechanical land preparation is done, the crop is planted on continuous mounds, whereas, where the land is prepared manually, the planting is done on individual mounds or on the flat surface. Regardless of the method of land preparation, transplanting is done manually through the digging of holes with sticks or machete.

Spacing varies among farmers, depending on the farm location and topography, soil type, mixed or mono cropping and whether or not the crop is irrigated. Spacing varies from density as high as 2x2 feet (10,800 plants/acre) to as low as 4x5 feet (2,100 plants/acre), with 3x 3 ft or 3x2 ft being the most popular. Where high densities are used, it is often necessary to remove plants to reduce the plant density 5-7 months after planting, when the plants become too thick to allow for easy harvesting. Where low densities are used it is normal for the farmers to leave the crop for periods of up to one year, whereas in the higher densities, the crop is normally terminated 9–10 months after planting.

4.5 IRRIGATION

It is estimated that less than 20% of hot pepper production in the region benefits from irrigation. Among those farmers with irrigation systems, overhead, drip and flooding systems are employed. A recent addition to water management has been the use of gelatin pellets which are incorporated in the soil. These absorb water from rainfall or irrigation systems and releases water during dry periods.

4.6 FERTILIZATION

The crop normally benefits from the incorporation of manure in those countries where the soil type has high clay content such as Trinidad, where chicken manure is widely used. In countries with light soils such as the Windward Island and Jamaica, the use of manure is quite infrequent. In Jamaica mulching is a common practice in the drier areas.

Chemical fertilizers, mainly in the granular forms, are widely used in all countries, though to lesser degree in the Windward Islands. Those farmers who are utilizing the higher level of technology involving close planting and irrigation often utilize foliar fertilizers.

4.7 Crop Protection

Fungicides and insecticides are applied in all countries, particularly in those with high rainfall levels such as the Windward Island and Trinidad and Tobago. These chemicals are applied with the use of manual or motorized knapsacks and mist blowers.

4.8 Weed Management

In countries such as Trinidad and Belize, large farmers utilize tractor drawn brush cutters for weeding Small farmers utilize hand held motorized brush cutters, traditional hoes and machetes. In the larger countries, particularity Trinidad, chemical weedicides are also widely used.

4.9 Yields

Yields depend on a number of variables inclusive of variety, agronomic practices and crop duration. The Scotch Bonnet is known to be low yielder, with yields generally varying between 8-15000 lbs. The West Indian Red on the other hand is a high producer with yields generally between 20-30000 lbs per acre. In Trinidad farmers who utilise high-level technology inclusive of irrigation, close planting, granular and foliar fertilizers have achieved yields of over 50,000 lbs per acre over nine months. It appears that other local cultivars produce yields that range between 8000 and 20000 lbs.

4.10 Cost of Production

There are a number of variables affecting cost of production of the crop inclusive of variety, water management, level of mechanization, fertilizer program, soil type, scale of production, location and micro-environment conditions in each country. The issue of water management is of particular importance given its significant effect on yields.

Given these many variables, a random selection of a sample of farmers across these variables would provide the best assessment of average cost of production.

However, the project did not allow for this methodology to be employed, rather reliance was placed on the data from CARDI and the Ministry of Agriculture based on data collected on variable cost of production from pilot forms. Based on this information cost of production was determined to range from US $0.15-0.25 per pound for West Indian Red with yields of 25,000 Lbs and 20,000 Lbs per acre for Trinidad and Grenada, respectively. In the case of Scotch Bonnet grown in Jamaica cost of production was determined to range from US $0.25-0.35 per pound for yields of 5000 and 7000 Lbs per acre respectively. The difference in variable cost of production reflects the low yields of Scotch Bonnet compared to West Indian Red. Information obtained in discussions with farmers confirms the relative accuracy of this information based on the production cost obtained by CARDI and the Ministry based on model commercial trials. Overhead cost varies from farm to farm depending on the infrastructure systems in place but has been estimated by industry experts as being about 15%-25% of variable costs

5.0 CARICOM POST HARVEST SITUATION

5.1 FARMERS

Harvesting of hot peppers normally commence 3 months after transplanting. The fruits are removed by breaking the stem from the inter-node of the plants. As hot pepper is an indeterminate crop, fruits mature at different times and so harvesting involve selecting fully mature, green or ripe fruits, depending on the market at which the product is targeted. Most farmers place the fruits in polypropylene bags or baskets made from bamboo or similar material. The bags are often obtained free of cost, as they are discarded packing material previously used for packaging of animal feed or other dry grain product. Where organized export programs are in-effect, fruits are often placed in field crates or buckets. The peppers are normally stored in a cool location in the field while harvesting is in progress. Women most often carry out harvesting, and the practice throughout the region is to pay on a per weight basis or a per bag basis. For example in Trinidad and Tobago the rate is TT$ 10 per 40 lb. bag or TT$ 0.25/lb.

During harvesting the harvested fruits are normally stored temporarily in a cool place such as shed or under a tree until harvest is completed. From the farm the hot peppers are transported either to the farmers home, to the main road where it is collected by buyers, to the processing plant, to the local market or to the packinghouse, depending on whether the product is destined for the local or export market. In countries such as Jamaica, transportation to and from the farm is often by means of donkeys, due to the hilly terrain and the low percentage of farmers with vehicular transport. In some instances the product is manually transported to a location where it is then transferred to a vehicle. In the OECS countries, Trinidad & Tobago and Barbados a fairly large percentage of farmers own or have access to pick-up vans and thus transport the product by this means. Because the storage facility or the transportation used is not acquired specifically for hot peppers and the associated cost would often be incurred regardless of the production of hot peppers, farmers do not normally assign a cost to on farm storage and transportation.

Farmers generally sell their product on the day of or after harvest. They generally undertake very temporary storage at ambient temperatures usually in a cool location at their homes. Farmers producing large quantities of over 1 tonne per harvest, often have to make provision for specific space for storage. Such space, however, are not used for hot peppers alone. For those farmers with vehicular transport pick-up vans or trucks transport the product to the respective markets. Those without transport will either hire appropriate vehicle or arrange for the buyer to pickup the product at the farm gate or at their homes. Farmers generally do not allocate a cost to the storage space and generally allocate cost for transportation only where they have to hire transport service. It is obvious however that there are costs attached to the use of their own vehicle, which is often higher than that for hire service.

Hot peppers in region are marketed on the basis of specifications for particular markets. Farmers in the marketing of hot peppers do not currently carry out selection of formal grades. For example hot peppers for the USA market must be fully mature green, with stems intact, free of foreign matter, pests, and diseases and of a diameter not less than 1.25 inches among other features. Peppers destined for this market must be selected to meet these specifications.

Selection of fruits base on the market requirement is either done on the farm or at home. Under size, immature, ripe or overripe, diseased or stem-less fruit are normally removed depending on the market to which the farmer sells is the main post-harvest activity carried out by farmers. Only under conditions of heavy rainfall which leads to soil being splashed on the peppers or the use sticker based pesticides with which may cause residues to be left on the fruits, that wiping of such peppers may be necessary, as a primary processing activity.

Farmers normally market hot peppers in the same containers in which they are brought in from the fields that is in polypropylene bags, baskets or crates, unless they are required to package the product on behalf of the buyer, in which case, the product would be packaged according to the buyers' specifications. For example some large farmers in Trinidad package the product on behalf of the exporters.

Firstly, product loss arises from poor product quality, which may develop before or after harvesting. Secondly, product maybe lost, due to lack of markets. Losses resulting from poor product quality are normally due to peppers that are very over ripe and have started to break down or peppers that are disease infected or severely under sized. All the alternative markets normally reject such peppers. In the case of disease, anthracnose is usually the major problem, whilst under size peppers often arise from old fields in which the plants have loss their vigour or fields that are virus infected. Losses due to these reasons are normally less than 3%, but could be significantly higher if the fields are in poor conditions. A greater source of loss arises from farmers being unable to find markets for their products or to obtain prices that result in a positive return. This situation often occurs during the summer months when production is very high and export demand is very low, often resulting in an over supply of all markets. In many instances farmers abandon their entire fields when they are unable to find buyers or find the prices being offered uneconomical. In such instances loss maybe up to 100%.

5.2 MARKETERS

The following buyers serve the hot pepper market in the region:

- Exporters
- Processors
- Brokers
- Wholesalers
- Retailers

Exporters, processors and retailers are involved in the market in all countries. However, in some countries such as Grenada, St. Vincent & the Grenadines, St. Kitts-Nevis, St. Lucia and Dominica there are no intermediaries performing local wholesaling function due to the small size of these markets. Jamaica is the only country in which brokers have been identified. These brokers act mainly as intermediaries for exporters and processors especially during times of scarcity.

Most exporters and processors have a dual procurement arrangement in which they collect peppers at the farm gate from farmers with small volumes, whilst they require larger suppliers, usually those with over 500 lbs., to deliver to their packing houses or processing plants. Wholesalers generally buy from farmers at the farm gate or in the case of Trinidad also from farmers in the wholesale markets. Retailers procure from the farm gate and from the wholesale markets or as in the case of supermarkets, may also have farmers deliver the product directly to their stores.

Hot peppers are not currently marketed in the Caribbean on the basis of grades. There are cases where some local municipal and roadside retailers subjectively grade and sell their individual lots of product on the basis of size. Selection is therefore generally confined to removing products that do not meet the particular market specifications. Exporters conduct the most stringent selection, they must remove peppers that are immature, over mature, blemished, under sized or show signs of deterioration. Processors generally purchase ripe peppers that have been de-stemmed. Their selection is normally confined to removing peppers that have started to spoil or have significant levels of sooty mould. Wholesalers and retailers do similar selection to the processors but also undertake the removal of stem-less and immature peppers.

At the level of the market intermediaries, the exporters suffer the highest product loss, which is usually about 5%. Other market intermediaries seldom have losses of over 3%. Many retailers indicate that they purchase quantities that they can turn over quickly or drop their prices to ensure quick sale. Where they are unable to sell the product on the fresh market, they will sell to processors or use the pepper to make hot sauces for sale or for domestic use.

Market intermediaries in the region do not generally store hot pepper under control atmosphere conditions, except in the case of the supermarkets and green grocers that have such facilities for their general fresh produce business. Hot peppers are generally stored under ambient conditions for 1-3 days during which sale is expected to occur. Exporters ship peppers by air and are normally able to get them to market within 2 days after harvest. They generally avoid refrigerated cooling because they are unable to maintain the cool chain. Peppers are air freighted in the non-refrigerated cargo holes of aircrafts. Refrigerated cooling before shipment, pre-disposes the pepper to spoilage due to condensation and the high temperatures to which the peppers are subjected in the air cargo holes during transit and at the destination airport, before the importers collect them.

However most of the hot peppers are shipped on passenger aircraft and during peak periods export cargo may be left behind if passenger loads are heavy or weather conditions are bad. In such cases, exporters are forced to hold the product usually in refrigerated storage for another 1–3 days, until the next flight is available. The risk of spoilage is still present, but this is more acceptable than that of total loss that will occur, if the peppers are not exported and alternative domestic markets are not available.

Washing is not normally undertaken due to the high risk of spoilage if peppers are not quickly and properly dried. Washing has only been observed in the past where exporters had mechanical washers equipped with sponge and forced air dryers. None of the current marketers in the region utilizes mechanical washers for hot peppers; therefore exporters do not carry out washing. In the rare instances where peppers are dirty exporters and domestic retailers use soft wet cloth to clean the individual fruits. Washing is however done by processors immediately prior to the crushing of the fruits. None of the marketers in the region currently undertakes waxing of hot peppers.

Different marketing intermediaries utilize different packaging. Exporters generally pack in 8 lbs. perforated cardboard boxes of varying strength and design. Many countries have local box manufacturers and prices varies from US$ 0.75 –US$ 1.25

Processors generally bulk store pepper mash in large plastic bins, which are used over a number of years and cost only a few cents per lb. over the life of the bins.

Wholesalers generally resell the product in the same containers in which it is bought from the farmer and seldom incur any additional cost for packaging.

Retailers generally pack the peppers in small clear plastic bags with or without perforations or in Styrofoam's trays wrapped in shrinkable plastic, which also cost only a few cents. Regional retailers have not yet begun the use of breathable plastic clamshells, as is now the practice in the United States.

Most processors require suppliers to supply ripe de-stemmed peppers, unlike all the other buyers who do not purchase de-stemmed peppers. The de-stemming is generally done by farmers or by the processors both of whom pays on a per lb. basis, for example in Trinidad the cost is TT$ 0.25/lb whilst in Grenada it is EC$ 0.25/lb.

Crushing is done by motor driven grinders or large blenders the capital cost of which are depreciated usually over 5 years and thus the per lb. cost is quite small but varies with the amount of pepper processed and the actual cost of the machine. The direct labour cost of crushing is also quite small amounting to a few cents per lb. across the region.

6.0 CARICOM MARKET SITUATION

6.1 MARKET ENTRY REQUIREMENTS

There are no significant constraints to the trade in fresh hot pepper products into CARICOM countries, other than those applicable as a result of Plant Quarantine requirements and these are applied according to the WTO plant health requirement. Several CARICOM countries have upgraded their Plant Quarantine Regulations as a result of the Pink Mealy infestation and in keeping with the WTO requirements and these have made trade easier even where a pest of quarantine importance exists in the exporting country. There are no regional quality standards in operation although grade standards have been developed for the OECS countries and Jamaica has minimum export specifications. They are also export specification for individual export markets that were developed by CATCO, however export trade currently takes place based on individual importers setting their own standards or product specifications to which their suppliers subscribes.

Processed products must meet importing countries requirement in terms of labelling which include product name, ingredients and address of manufacturer or distributor. As is the case with fresh peppers quality requirements are left to agreements between buyers and sellers. Trade between CARICOM members is not subjected to tariff charges but imports from extra-regional sources are also subjected to 40% duty. However when there is a proven shortage, processors in the region can import pepper mash free of duty as a result of the exemption allowed under the CARICOM Treaty.

6.2 MARKET SIZE AND TREND

6.2.1 Economic and Demographic Indicators

Table 6.1 Economic and Demographics Indicators

Country	Population 000's	US$GDP Per Capita (2000)	Unemployment	Poverty Level
Leeward Islands	105	11500	10-14%	Moderate
Windward Islands	504	6200	12-16%	Moderate
Barbados	265	15494	16%	Low
Belize	214	5606	11%	Moderate
Haiti	6867	1467	35%	High
Guyana	697	3963	12%	High
Jamaica	2652	3639	18%	Moderate
Suriname	436	3799	16%	High
Trinidad	1364	8964	14%	Low-moderate
Total	13100			

6.2.2 Production Demand

Table 6.2 Hot Pepper Production in CARICOM Countries for the period 1993-1999 Tonnes)

Country	1993	1994	1995	1996	1997	1998	1999	2001	Avg.	%
Antigua									21	0.4
Barbados						250	315	296	287	1.1
Belize	130	80	50	140	160	175	200		134	1.0
Dominica	19	20	277	388	450	135	171		209	1.5
Grenada						48	50	20	40	0.6
Guyana									150	1.1
Haiti									200	1.4
Jamaica	5,975	8,168	8,431	9,069	6,923	6,533	6,363	5000	7057	52.0
Montserrat									Neg.	0.0
St. Kitts					4	7			6	0.0
St. Lucia	98	225	305	224	179	240	235		215	1.6
St. Vincent		34	34	41	45			170	65	0.3
Suriname									300	2.2
Trinidad	6,340	4,620	2,630	4,290	6,700	2,680	7,540		4971	36
Total	12,462	13,067	11,677	14,012	14,001	9,595	14,309		14101	

Source CARICOM Secretariat

6.2.3 Export Demand

Table 6.3 CARICOM Exports by Product for the period 1994 –2001 in Tonnes

Year	1994	1995	1996	1997	1998	2001	Average	%
Caps. & pimenta, fresh or chilled	735	965	1,010	649	421		756	35%
Pepper not crushed or grounded	257	329	295	423	27	682	335	15%
Pepper crushed or ground	16	53	64	138	47	64	382	18%
Paprika	0.03	0.08	0.12	0.96	0.02	0.02	0.20	0%
Other fruits of genus capsicum	2	1	74	58	5	5	145	7%
Pepper sauce	436	1,270	1,164	1,435	753	1,698	1,126	52%
TOTAL	1,446	2,618	2,607	2,704	1,253	2,449	2,179	

Source CARICOM Secretariat

Table 6.4 CARICOM Exports by Quantity --- Tonnes

Country	1994	1995	1996	1997	1998	2001	Avg.	%
	quantity	quantity	quantity	quantity	quantity	quantity		
Barbados	769	388	303	250		54	353	13%
Belize	73	113	207	207		320	184	7%
Dominica	302	561	500	627		469	492	18%
Grenada	0.60	0.04	0.05	21		11	7	0%
Guyana	84					134	109	4%
Jamaica		993	1,080	900	943	647	913	34%
St. Kitts	0.54	0.04	0.01	0.07		0.00	0.65	0%
St. Lucia	198	258	188	235		422	260	10%
Montserrat						0.16	0.16	0%
Trinidad		856	1,222	1,340	1,110	383	982	36%
St. Vincent	19	30	25	45		5	25	1%
Total	1,446	3,200	3,525	3,625	2,053	2,445	2,716	

Source CARICOM Secretariat

Fig 6.1 CARICOM Exports

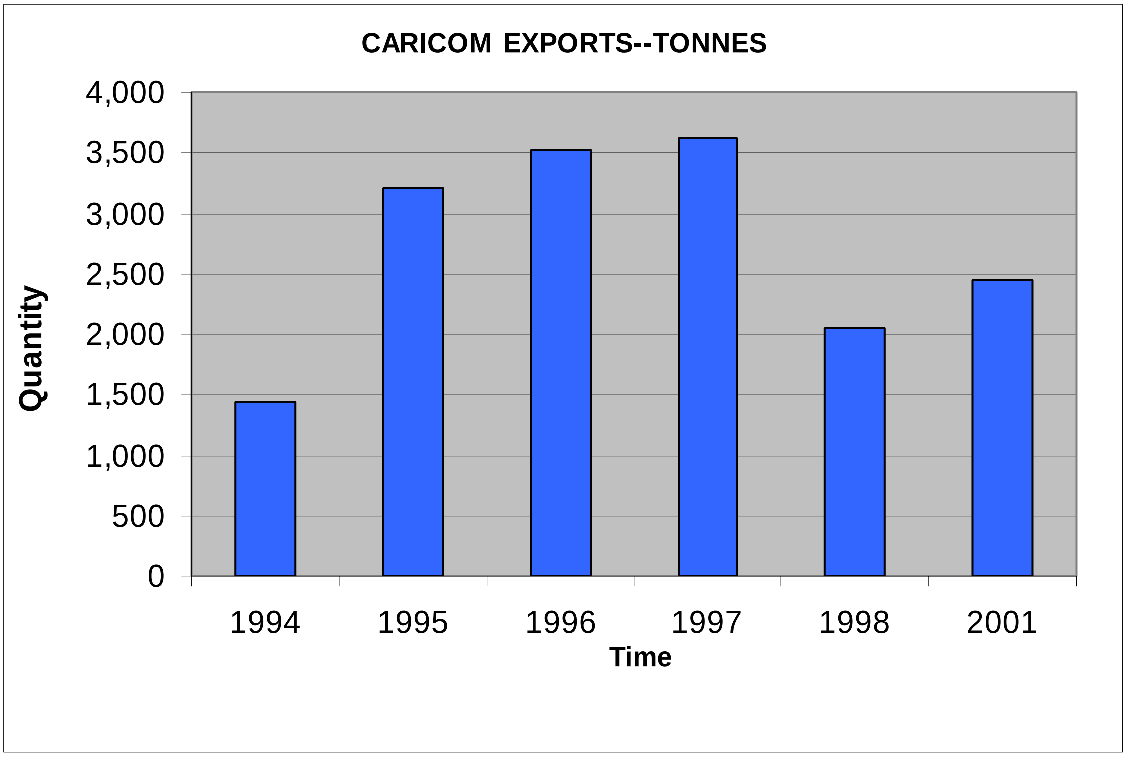
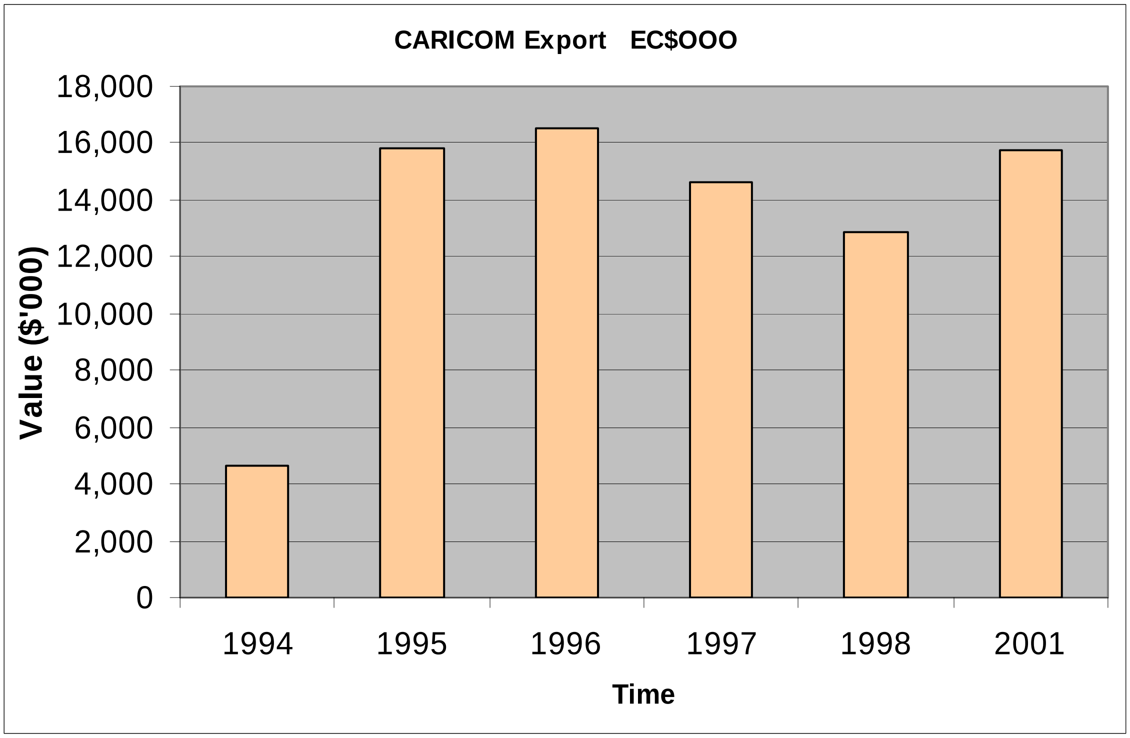


Table 6.5 CARICOM Exports by Values in $EC000 dollars

Commodity Description	1994	1995	1996	1997	1998	2001	Avg.	%
Barbados	1,130	1,153	994	833		259	874	5%
Belize	430	498	835	835		1,656	851	5%
Dominica	1,153	2,170	2,109	3,007		2,499	2,188	14%
Grenada	26	2	2	79		40	30	
Guyana	245					909	577	4%
Jamaica		7,212	7,279	2,694	8,423	5,738	6,269	39%
St. Kitts	12	3	0.06	0.15		0.02	3	
St. Lucia	1,599	1,129	855	1,368		1,942	1,379	9%
Montserrat						0.64	1	
Trinidad		3,585	4,364	5,800	4,441	2,676	4,173	26%
St. Vincent & The Grenadines	38	44	71	43		11	41	
Total EC $ 000	4,633	15,797	16,509	14,659	12,863	15,731	16,038	
Us$ 000	1,716	5,851	6,115	5,429	4,764	5,826	5,940	

Source CARICOM Secretariat

Fig. 6.2 CARICOM Export



6.2.4 Import Demand

Table 6.6 Total Imports by CARICOM Countries for the period 1994-2001 tonnes

Year/ Countries	1994	1995	1996	1997	1998	2001	Avg.	%
Barbados	98	110	108	123	0	152	99	11
Belize	25	34	49	61	0	55	37	4
Dominica	101	45	2	4	0	84	39	5
Grenada	16	70	31	20	0	40	30	3
Guyana	33	0	0	0	0	39	12	1
Jamaica		651	500	626	545	576	483	56
St Kitts	10	9	11	9	0	14	9	1
St. Lucia	13	18	13	13	0	8	11	1
Trinidad		190	92	130	159	202	129	15
St. Vincent & Grenadines	11	13	0	10		13	8	1
TOTAL	308	1140	809	996	704	1183	857	100

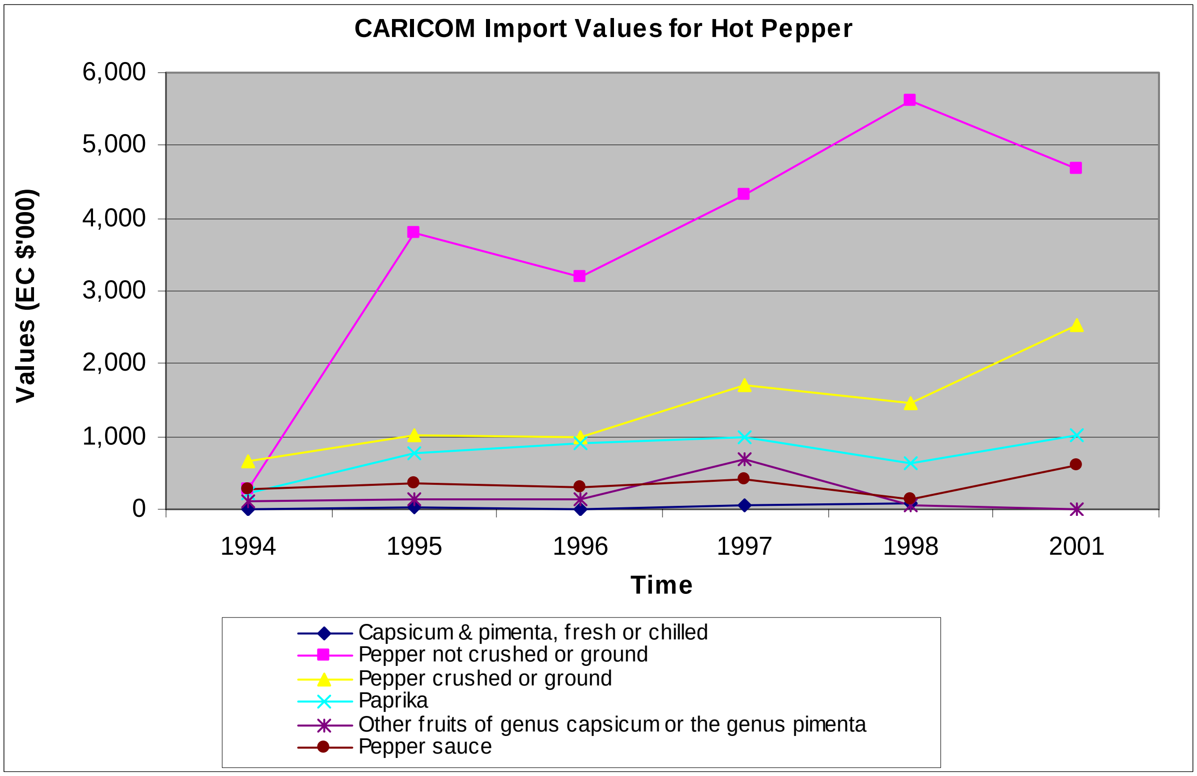
Table 6.7 Total Imports By Products Tonnes

Products/Year	1994	1995	1996	1997	1998	2001	Avg.	%
Capsicum & pimenta, fresh or chilled	1	4	2	5	12	0	5	1
Pepper not crushed or ground	40	690	445	431	412	480	416	49
Pepper crushed or ground	170	249	134	228	144	398	221	26
Paprika	23	100	113	111	99	142	98	12
Other fruits of genus capsicum or the genus pimenta	19	14	20	118	8	1	30	4
Pepper sauce	53	75	78	84	18	151	77	9
TOTAL	306	1132	792	977	693	1172	845	

Table 6.8 Total Imports by Products EC$ 000

PRODUCT	1994	1995	1996	1997	1998	2001	Avg.	%
Capsicum & pimenta, fresh or chilled	3	20	9	43	84		31	0%
Pepper not crushed or ground	277	3,789	3,188	4,328	5,620	4,674	3,600	57%
Pepper crushed or ground	649	1,006	979	1,712	1,465	2,539	1,283	20%
Paprika	221	778	916	994	627	1,029	724	11%
Other fruits of genus capsicum or pimenta	116	126	142	679	47	0	33	1%
Pepper sauce	281	352	305	424	135	611	304	5%
TOTAL EC$ 000	1,548	6,070	5,538	8,179	7,977	8,852	6,361	
US$ 000	573	2,248	2,051	3,029	2,955	3,279	2,356	

Fig. 6.3 CARICOM Import Values for Hot Pepper



6.3 HOUSEHOLD SEGMENT

6.3.1 Fresh Hot Pepper

A study carried out by CARDI Identified the following as critical consumer variables affecting the hot pepper consumption in the Caribbean.

The results of this study is given below:

1. About 76% of Caribbean household purchase hot pepper regularly mostly on a weekly basis.

2. The name of the varieties with which they are most familiar are West Indies Red and Scotch Bonnet though many consumers do not know the difference between the varieties and many, particularly in the Eastern Caribbean refer to the varieties simply as local varieties.

3. Consumer considers freshness followed by flavour and then degree hotness to be the most important quality attributes.

4. Most consumer prefer medium to small size rather than large peppers.

5. There is little relationship between demographic variables such as age, sex, income and consumers preferences.

6. Consumers generally prefer to buy hot peppers in the public retail market followed by the supermarket.

7. As expected, respondents across the region assume that the fresh hot pepper they buy originates locally and they have a preference for hot pepper from their own country due to a variety of reasons

8. Across the region, the most popular uses for fresh hot pepper are as follows in descending order:

- To season and cook meat and vegetables,
- As an ingredient in homemade sauces, dips, pickles and condiments,
- As an ingredient in seasoning and cooking soups, other uses,
- On side of finished plate
- As an ingredient when cooking rice.

9. It has also been observed that the demand for the non hot pepper called pimento is growing quite rapidly among consumers in the Eastern Caribbean particularly in Trinidad & Tobago, Grenada and St. Lucia. Thus product is used both as a seasoning and as a vegetable and is considered to impart flavour similar to the scotch bonnet but without the hotness.

6.3.2. Hot Sauces

Frequency of Purchase

Eighty-two percent of the regional samples surveyed buy hot pepper sauces while the balance (18%) makes their own. Forty-seven percent of those who buy do so monthly; 15% do so once or twice a year and 5% fortnightly. An insignificant percentage of peppers are purchase weekly. Significant increases in the purchase of hot pepper sauce occur at Christmas and during birthdays and anniversaries.

Purchase Location Preferences

Hot pepper sauce purchases happen almost exclusively from the supermarket. This trend remained unchanged across the three countries.

Brand Selection Influences

The three influencing factors in the purchase of any particular hot pepper sauce brand in the region, in descending order are as follows:

- Seeing a product brand on the shelf
- Suggestions from friends and family
- Taste testing and sampling in-store and otherwise

In Jamaica, this trend did not continue, in that word of mouth and tradition through friends and family played the most prevalent role in influencing the purchase of a particular brand. TV advertisements also play a major role in influencing purchase in Jamaica and this points to the probable absence of this mechanism in other countries or to a lack of effectiveness in this medium influencing consumers.

Uses

The principal use of hot pepper sauce within the region is to add as a condiment to the finished plate. Hot pepper sauce is also used for seasoning and cooking meats and vegetables, and in making homemade sauces, dips, pickles and condiments.

Nature of Product Preferences

The results of the survey indicate that 40% prefer hot and spicy, 30% very hot and spicy and 25% prefer mild with only 5% of the sample prefer their hot pepper sauce to be extremely hot. Across the three regional countries surveyed, red and yellow (or a mixture of both) are the clear colours of preference for hot pepper sauce. In the OECS countries and Jamaica red is the preferred colour, whilst in Barbados yellow colour dominates the market and in Trinidad both red and yellow are both important.

Relative Importance of Product Attributes

The most important attributes for the purchase of hot pepper sauce across the region are ranked in below and the survey indicates that there is very little variation in this variable between the countries.

Table 6.9 Regional Attribute Importance Ranking for Hot Pepper Sauce

Rank	Attribute
1	Flavour
2	Thickness
3	Smell
4	Packaging
5	Colour
6	Price

6.3.3 Dried Pepper and Condiments.

Pepper based seasonings are used to a significant degree in the region with Jerk seasoning dominating in Jamaica whilst in the other CARICOM countries dried powdered seasoning consisting of Paprika or chilli powder and a range of other powdered seasoning such as dill, oregano, aniseed, geera are used more widely. The majority of consumers in all countries prefer their hot pepper products to be mildly hot or hot as opposed to very or extremely hot. In Trinidad there is very significant usage, particularly among the East Indian population, of hot pepper based condiments such as kuchella and amchar which are chopped fruits seasoned with spices and hot pepper. The data on CARICOM imports indicate that CARICOM consumes up to 500 tonnes of dried hot pepper consisting of paprika and whole dried chilli pepper. This converts into about 5000 tonnes of fresh pepper.

6.3.4 Hot and Spicy (Fiery Foods)

The demand for hot and spicy fast food has been growing rapidly particularly in chicken products. The major fast food chains now carry a hot variety of both fried and rotisserie chicken and some pizza houses also have hot and spicy products. An informal survey carried out in Trinidad by the writer showed that over 65% of consumer purchasing chicken and chips add pepper sauce to the product, in many cases even to the hot and spicy product. There is perhaps even a more rapid growth in hot and spicy snacks such as potato chips, corn chips, plantain chips and other dried snacks.

6.3.5 Pepper Extracts

No evidence of the use of hot pepper extracts as an individual product was obtained during the study.

However it is reported that hot pepper extracts are being utilized indirectly through the use of a number medicinal ointments which contain capsaicin as a critical ingredient. These include Zostrix and Capzasin HP which are sold in pharmacies as a analgesic cream for Arthritis.

6.4 RETAIL SEGMENT

There are large numbers and varied types of grocery stores and supermarkets in CARICOM. These include upscale supermarkets chains, conventional large supermarkets, small supermarkets, local family shops and convenience stores, retail public markets as well as street vendors.

In several countries, particularly in Trinidad, Jamaica, Haiti, Barbados and St. Lucia, there are supermarket chains with outlets in the major towns throughout the country. Large chains include Hi Lo, which has 19 stores in Trinidad and 7 in Jamaica and J.Q. Charles in St. Lucia which, is reported to have 11 outlets in St. Lucia. Retailers typically buy from a number of importer/distributors which include some of the companies that own supermarkets. Most wholesale food distribution is carried out by agent-distributors who purchase products directly from local and overseas manufacturers or other large agent distributors. These distributors in turn sell to smaller wholesalers, supermarkets, grocery stores and counter shops, as well as the hotel, restaurant and institutional trade. Most of the distributors' focus is on dry goods and they may carry fresh and frozen products, but other more specialised importers often handle these. Each distributor has at least one warehouse, as well as trucks or vans to distribute products throughout the island.

The retail food distribution system has traditionally been distributor driven with many distributors responsible for stocking the supermarkets shelves. Many stores have high inventory levels outdated inventory control, and thus rely on the distributors to keep them stocked.

Some distributors operate as sole agents and distributors for specific brands of products and their agency contracts generally forbid them from carrying competing merchandise.

Informal commercial importers (ICI's) normally referred to as "higglers" play an important role in food distribution system in countries such as Jamaica, Guyana, Haiti and the OECS. They are individuals who buy products in small amounts, mostly from wholesalers in the US and other CARICOM countries, particularly Trinidad and then bring products back to their own countries by plane or have them shipped back by boat. They then either distribute the products to stores who have placed orders with them or simply sell them shop-to-shop. In some countries such as Jamaica it is estimated that up to 10% of consumer food imports are brought in by ICI's.

The public retail market is a significant outlet for fresh produce in the major towns. In the rural areas, retailing is dominated by small shops that carry non-perishable products, with fresh produce seldom featuring among the product line up. In most countries there are also small roadside or street retailers who operate on stalls carrying a mix of perishable and non-perishable products.

6.4. 1 Fresh Pepper

In the supermarket segment fresh hot pepper is found mostly in the large supermarkets , particularly supermarket chains where there are large well organized fresh produce sections. Most small supermarkets have no fresh produce section are very small sections with or with out cool storage and thus carry no fresh peppers or only small amounts which can be sold in one or two days.

In the supermarkets peppers are generally packaged in small clear plastic bags with or without perforations or in Styrofoam's trays wrapped in shrinkable plastic, which also cost only a few cents. Regional retailers have not yet begun the use of breathable plastic clamshells, as is now the practice in the United States.

All the retailer outlets carry a range of varieties based on what is available locally. In the Eastern Caribbean the non- hot seasoning pepper often referred to as pimento is becoming the major product available in the retail outlets. The large upscale supermarkets also carry imported jalapenos, which are normally offered as a compliment to sweet pepper line.

Prices for fresh hot peppers vary throughout the region, but an indication of price variation is provided below. In the small super markets, roadside and municipal markets vendors normally sell the peppers loose allowing consumers to select the quality and quantity of their choice

Table 6.10 Price Of Fresh Hot Peppers In Different Segments Us$/Lb

Country	Farm gate Range	Wholesale Range	Retail Range
Jamaica	0.55-.88	0.85-1.25	1-1.75
Trinidad	0.35—0.50	0.65--1.12	0.85
OECS	0.35—0.45	0.75—1.25	1.00
Barbados	0.75-1.25	1.50-2.00	1.50

6.4.2 Pepper Sauce

Pepper sauce and wet pepper based seasoning are moderately available in rural shops. Super markets are the main outlets for hot pepper sauce. The supermarkets carry several brands, up to six different brands of pepper sauce including domestic and brands from other CARICOM countries is found in many supermarkets. In each country there are several different domestic brands one of which normally dominates the market. For example, in Trinidad & Tobago Matouks is the leading brand, in Jamaica, Grace is the main brand, in St. Lucia, Barons, in Dominica, Bellos and in Barbados Aunt Mays. It is very difficult for new brands to gain access to these retail outlets given the limited shelf space and the range of other condiments carried by these supermarkets. Access is dependent on suppliers being able to convince the individual responsible for purchasing that the product is of top quality, particularly in terms of packaging and that they can provide very strong merchandising inclusive of in store promotion to ensure fast turn over and quick re-stocking.

Payment terms for processed products with both large and small supermarkets range from 30-60 days and in some cases goes up to 90 days for large accounts. Small and medium size processors are often unable to accommodate these supply arrangements and find it necessary to access these supermarkets through the larger distributors. Where small operators are able to obtain direct access to the supermarkets, payment for small supplies valued below US$ 200, are normally made within 15-30 days. Fresh peppers are normally also paid for within 30 days and often on the basis of cash on delivery, if the supplies are small and if there is not a regular arrangement with the supplier.

6.4.3 Dried Pepper and Condiments

A wide range of dried powdered seasoning which utilised imported chilli powder and paprika powder as a significant ingredient is available through out all types of retail outlets in the region. The market in Trinidad & Tobago is the most diversified, with over 5 different local brands. The research suggests that Jamaica is the only country in which locally produced dried ground pepper was being sold commercially. This is done as an ingredient in dried jerk seasonings and appears to be produced by only one company, in amounts that are significantly lower than the imports of dried chilli powder and paprika.

6.4.4 Pepper Extracts

Evidence of the sale of hot pepper extracts as a food product was obtained only in Trinidad and Tobago where a local food ingredient retailer sells capsicum extract as a colourless liquid in an alcoholic solvent. The product sells for TT$ 431/gallon or US$ 68/gallon. The market is estimated to be about 10 gallons per year and is purchased mainly by small processors and by a local beer producer.

6.5 Institutional Segment

This segment includes the hotels, restaurants and government institutions such a school feeding programmes, prisons and hospitals. The research shows that the hotels and restaurants are fairly significant and regular users of hot pepper sauce and dried pepper based seasonings and to a significantly lesser extent of hot pepper seasonings.

6.5.1 Fresh Hot Pepper

Fresh hot pepper is utilized to a very limited extent in this segment except in Jamaica and Trinidad and Tobago. In Jamaica fresh hot pepper particularly the Scotch Bonnet is utilised in the cooking of all types of Jamaican food including rice. This practice occurs even in the international hotels and restaurants that prepare Jamaican and other types of international dishes. The product is used in many cases for its flavour rather than for its hotness as when used whole it imparts flavour without imparting hotness. In Trinidad and Tobago hot pepper used whole or chopped is a major spice in almost every type of Indian cuisine. This type of food dominates the fast food industry and thus hot pepper finds wide usage. In the Eastern Caribbean relatively less fresh hot pepper is utilised in the institutional market as the non-hot pimento peppers play an important role in imparting pepper flavour without the hotness. In these countries hotness is mostly achieved through the use of pepper sauce which is added by the customer to the prepared meal in the amounts they deem appropriate.

6. 5. 2 Pepper Sauce

Pepper sauce is used throughout hospitality sector, but to a much greater extent in the restaurants. In this segment the fast food industry in particular are the most significant users of hot pepper products. Pepper based seasoning consisting of chilli powder and paprika are used quite heavily in the seasonings of fried chicken in franchises such as Kentucky and Royal Castle and preliminary research in Trinidad indicated that about 65% of fast food consumers add pepper as a condiment to all types of fast food. It is estimated that over 90% of all restaurants and fast food outlets in the region offer pepper sauce as a condiment usually with it prominently displayed and conveniently available for customer to use at their own discretion. The sauces used range in types from mild to hot and from watery to quite viscous and with a range of colours but with red being the dominant colour except in Barbados, where yellow mustard based sauces are the most popular.

The hotels are also significant users of pepper sauce but to an extent that is considerably less than that used by the restaurants. It is estimated that nearly all hotels have pepper sauce available for use by their guests but only about 60% have the product prominently displayed and in a manner that invites the guests to use it.

6.5.3 Dried Seasoning and condiments

Jerk seasoning is becoming increasingly popular throughout the restaurant, catering and fast food industries in the region, with Jamaica followed by Trinidad & Tobago as major users. In these countries both the restaurant and hotels as regular menu items use the product. One of the major fast food chains in Trinidad with outlets in four (4) other Caribbean islands now uses jerk as a major seasoning in its rotisserie chicken. In the case of Jamaica the usage by roadside jerk vendors is very high whilst this practice is growing very rapidly throughout the Eastern Caribbean.

6. 6 PROCESSING SEGMENT

The study did not allow for a specific assessment of the processing segment in the region. However information obtained from discussion with knowledgeable players in the sector suggest there are over eighty (80) firms involved in processing of hot peppers in the region. These range from kitchen operations, to cottage industries, to larger national food processing company producing a range of food products. These firms generally operate discontinuous unit operation including:

- Receivable and temporary storage
- Washing and optional (de-stemming)
- Grinding and storage
- Mixing
- Bottling
- Labelling
- Packaging and storage

Product range includes pepper mash, pepper sauces, pickles, relishes, pepper jelly, hot ketchup, hot barbeque sauces, jerk seasoning, jerk sauces, dried ground pepper. It is felt that only about twenty (20) of these plants are in a position to meet minimum export standards, and less than ten (10) are currently putting or have put in place, HACCP quality control systems. Many suffer from serious diseconomies of scale, compounded by poor designs leading to significant operational inefficiencies. Most lack adequate resources for expanding operations and do not have effective management systems in place. Product development in many firms is carried out in an informal manner, often without any market testing before launching.

About eight (8) of these companies however, in Jamaica, Belize, St.Lucia, Trinidad and Dominica have broken away from the low level operation and have launched significant development programmes, aimed at modernising operations, improving management strategies and increasing market share. One firm has integrated backward and forward into farming and into restaurant operation, another has set up processing operation in Miami, another has entered into strategic alliance with other food processing plant in contract farming, while two have entered into processing contracts with United Kingdom processors. The challenge is for these leaders to seek to organise the industry to ensure improve primary production, implementation of Good Agricultural Practices (GAP) traceability systems, HACCP, joint procurement of inputs and promotion of the generic Caribbean brand.

6.6.1 Fresh Hot Pepper

The demand by the processing industry is largely for ripe hot peppers for the production of ground fresh pepper, referred to as mash. This is used for the production of hot pepper sauce and hot pepper based seasoning. There is also a very limited demand for hot peppers for the production of dried hot pepper, for use in dried jerk seasoning. There are two types of processors, those who produce mash as the final product for sale to pepper sauce and seasoning processors and those who are producers of sauces and seasoning.

There are commercial producers in all CARICOM countries. Jamaica, Trinidad & Tobago, Dominica and Belize are the major producers in CARICOM. Actual data of the demand for hot pepper for processing was not available for most countries.

Data collected in Jamaica indicates that there are at least fifteen (15) local processors of hot pepper products. The size of the operations varying as seen form the data which show the annual purchases of individual companies ranged from 7 tonnes to 360 tonnes. Based on the survey data, it is estimated that an average of 2000 tonnes or 28% of the annual average of 7000 tonnes of hot pepper produced in Jamaica goes into processing. This compares with an average annual export of approximately 1000 tonnes which averages 15% of production. This assessment is considered questionable, as it is very doubtful that the remaining 4000 tonnes 57% of production is utilised by the local fresh market.

Information from Grenada suggest that there is only one significant processor and national demand for 300 lbs per week, while in Barbados the demand is about 5000 lbs per week. Data on the demand in the processing industry in other countries were not available, but current information suggest that the majority of production goes into processing even in countries such as Trinidad & Tobago and St. Lucia which have strong fresh hot pepper export industries and to a lesser extent Grenada. In Belize, Dominica and Barbados the view is that the processing industry have a higher demand than the fresh hot pepper market, both for domestic and export.

6.6.2 Processed Pepper

The data indicate that the region imports annually an average of 5 tonnes of fresh pepper, 220 tonnes of crush pepper, 400 tonnes of pepper not crushed and about 100 tonnes of paprika. These are utilised by processors in the production of tertiary processed products such as seasonings, snacks and fast food products. The major CARICOM market for these secondary processed products is in Jamaica which an average imports 56% of CARICOM's demand followed by Trinidad &Tobago with 15%, Barbados with 11%, Dominica 5%, Belize 4% and Grenada 3%.

7.0 MAJOR INDUSTRY NEEDS IDENTIFIED BY CARICOM MEMBER COUNTRIES

In a survey conducted by CARDI the following countries identified the major need of their respective industries as outlined below.

7.1 ANTIGUA & BARBUDA

Policy

- Irrigation policy

Genetic Improvement

- Performance evaluation of varieties of hot and seasoning peppers under 2-production environment;
- Seed production of selected varieties.

Generation And Transfer Of Production Technologies

- On-farm validation of current technological packages including "Mycoo tech-pak";
- Improvement of soil fertility management and training in analysis and interpretation of soil test results;
- Determination of optimum population density in different production environment and tech-paks;
- Design and economic evaluation of appropriate irrigation systems for small farmers;
- Training in irrigation management and water efficiency;
- Strategies for improving labour productivity of workers especially for harvesting;
- Procurement and economic evaluation of the use of small mechanical equipment;

- Training of farmers and workers in food and environmental safety with respect to pesticide management;
- Development and training in IPM techniques for weed, pest and disease management;

Institutional Strengthening

- Source funding for the Industry Development Committee (IDC) and Industry Association;
- Identification and registration of Core Industry Stakeholders, particularly farmers.

Marketing and Agribusiness

- Bench marking production cost under different production systems and technologies;
- Assessment of opportunities for seasoning peppers
- Packaging and promotion of fresh seasoning/hot peppers;
- Technical assistance to hot pepper processors.

7.2 BARBADOS

Barbados indicated that the following is the objectives of its development programme:

- To estimate local yields and determine where it stands in comparison to Caribbean producers;
- To determine the cost of production and compare cost with regional and extra-regional producers;
- To revisit land preparation services for hot peppers;
- To investigation the possibility of a national storage house for excess processed peppers;

- To investigation better weed management strategy particularly during the rainy season;
- Strategy to reduce cost/price of pest and disease chemical control;
- Accessing water/irrigation equipment;
- Labour – cost, availability and productivity;
- Sourcing credit/finance for farmers;
- Estimating local and export demand and supply of fresh hot pepper throughout the year (farmers, retailers/wholesalers, hospitality sector, processors, exporters);
- To establish a credit fund to reduce payment periods between various players in the supply chain;
- To identify new market opportunities for different hot pepper varieties.

7.3 BELIZE

Belize indicated that their most significant constraint was:

- Export credit
- Credit for irrigation in those areas where water is insufficient for good production

7.4 DOMINICA

Genetic Improvement

- Evaluate seasoning pepper varieties and seed production of selected types;
- Continue assessment of the Bonda Majacque.

Generation and Transfer of Production Technologies

- Determine yield potential and cost of production of West Indies Red and other varieties using different package of technologies;

- Identify and evaluate the use of labour saving equipment for land preparation (making of holes) and weed control (minimum tillage equipment for small holdings) and train farmers in the same;
- Train and educate farm workers in harvesting techniques;
- Design, test and train farmers in irrigation and drainage systems appropriate to small farm conditions;
- Investigate soil type in main hot pepper production areas and define soil ameliorant and fertilization recommendations and inform farmers of recommendations;
- Train farmers/workers in soil management techniques;
- Train and sensitise farmers/workers in pesticide use and management;
- Evaluate methods of reducing losses due to bird damage and inform farmers of findings;
- Update IPM measures, focusing on environmentally friendly packages;

Marketing and Agribusiness

- There is a need to undertake the following activities:
- Competitive studies to determine the nature of competition from regional and extra-regional suppliers;
- Assess the feasibility of placing a broker in the US and the UK to promote and trouble shoot on behalf of regional exporters;
- Implementation of a market information system to serve all stakeholders;
- Promoting of the use of hot peppers so as to increase demand and product range locally and regionally;
- Examine the feasibility of expanding product range to include dried peppers, pepper powder, pepper mash and pepper pesticide (for organic agriculture).
- Implementation of traceability systems.

Credit/Finance

- Develop production systems and marketing arrangements which will reduce banks' reliance on collateralised loans;

7.5 GRENADA

Genetic Improvement

- Stabilization and evaluation of Caribbean green variety
- Comparison and evaluation of the West Indian red and yellow and Big sun to the Caribbean green variety.

Generation And Transfer Of Production Technologies

- Training in pest, disease and weed management;
- Introduction and evaluation of best practice - Trinidad technology
- Improving soil fertility management – training in interpretation of soil testing results.
- Design and economic evaluation of appropriate irrigation system;
- Training in water management;

Post Harvest And Processing Technologies

- Assessment of the processing sub-sector to identify strengths and weakness;

Institutional Strengthening

- Establishment and strengthening of the Hot Pepper Industry Association and the sourcing of funding for the IDC to execute the priority projects.

Marketing and Agribusiness

- Bench-marking of regional labour productivity;
- Strategy to improve labour availability and productivity.

7.6 JAMAICA

Policy

- Assessment of current irrigation policy.

Genetic Improvement

- Three (3) on-station evaluation of the "Mycoo Technology" with Scotch bonnet, Jamaica red, West Indian red, Caribbean green and virus tolerant crosses from Bodles;
- Production of genetically pure Jamaican seeds;
- Introduction and evaluation of seasoning pepper and Caribbean green lines.

Generation And Transfer Of Production Technologies

- On-farm validation of updated technological packages in East, West, Central districts and on-station.
- Continuation of IMP work
- Design and economic evaluation of appropriate irrigation systems for small farmers;
- Acquisition and evaluation of tillage equipment for small hillside farmers;
- Assessment and recommendation of best practices for weed management
- Development of organic pepper production protocols;

Post Harvest

- Assessment of the effects of fumigation on the quality of fresh Caribbean green hot peppers;

Institutional Strengthening

- Identification and registration of Core Industry Stakeholders.
- Establishment and registration of the Hot Pepper Association nationally and regionally;

- Development of bankable projects for submission to Central Development Bank (CDB);
- Identify and evaluate small tillage equipment suitability for hillsides cultivation.

Marketing and Agribusiness

- Implementation of the CAMID network marketing intelligence system;
- Undertake competitive studies with respect to extra-regional competitors;
- Standardization, branding and promotion of the Jamaican Scotch Bonnet;
- Develop project proposals to finance irrigation systems based on validated technology.

7.7 ST LUCIA

Genetic Improvement

- Evaluate and develop yellow types of hot pepper and seasoning peppers including Serrano and Majacque
- Evaluate the production of planting material of selected varieties;

Generation And Transfer Of Production Technologies

- On farm validation of improved technologies focusing especially on population density, weed and pest management;
- Design and test low cost effective irrigation systems based on harvesting of existing sources of water supply;
- Training in water use efficiency;
- Investigate soil types in the main hot pepper growing areas to derive soil ameliorants and fertilizer recommendations for hot peppers;
- Training in the interpretation of soil analysis results and wider soil management issues;
- Re-introduction and evaluation of small tillage equipment for farmers with small holdings;
- Develop and establish a scheme whereby farmers can acquire the same.

Post Harvest

- Development of post-harvest protocol for the shipment of hot peppers by sea to Miami and UK;
- Develop or acquire harvesting techniques to improve labour productivity;
- Training users in the management and application of pesticides.

Marketing and Agribusiness

- Competitive analysis studies;
- Determination of processors needs and marketing potential - Promotion of seasoning peppers in the local and export market;
- Investigation of the marketing opportunity with Sainsbury's and the development of an appropriate marketing strategy;
- Evaluation of the economic viability of all year pepper production;

7.8 TRINIDAD & TOBAGO

- Genetic research to create more hybrids of the West Indian Red;
- Patenting processed hot pepper products using geographic indicators;
- Establishment of production benchmarks;
- Validation and dissemination of information on improved production systems developed locally by hot pepper farmers;
- To execute marketing research to ascertain the international competitors competitive position;
- Evaluation and forecasting of the level of domestic demand and supply both in the local and export markets;
- Determination of size, nature and sources of packaging material for processed hot pepper products;
- Identification of international marketing opportunities for the pimento pepper;
- Improved access to credit/finance to reduce long periods of payment between buyers and to allow for the acquisition of capital assets.

SECTION TWO

EXTRA-REGIONAL MARKETS AND COMPETITOR ANALYSIS

8.0 UNITED STATES MARKET

The Hot Pepper market in the United States is very diverse and unique as a result of the range of race and ethnicity that characterise the population. Hot pepper has long been a part of the food tradition of Americans particularly of African and Indians and as migrants from South and Central America, Asia, Africa and the Caribbean settled in Unites States they brought their eating habits and preference for their types of hot peppers. This necessitated the imports of hot peppers from other countries as well as the introduction of foreign varieties into the USA production system.

The demand for hot pepper has shown tremendous growth in the United States especially over the last 10 years driven by:

- Changes in the American diet from bland to more spicy and tasty food
- The expansion of the fast food and restaurant industries
- The influence of Latin and Hispanic cultures
- An increase in the use of hot pepper compounds in manufacturing

The US Hot Pepper Import Market is dominated by Mexico which supplies 98% of the fresh market demand. Mexico supplies mostly capsicum annums and frutescens and very little of the capsicum Chinense. Some states in the US produce some mild to hot peppers for both the fresh and the process market. The table below indicates this.

Table 8.1: United States Domestic Source and Use of Hot Peppers

STATE	PEPPERS	MARKET
New Mexico	New Mex 6, Anaheim Sandia, Jalapeno and	Process market is Texas, Arizona, California and

	Cayenne	Louisiana
Texas	Jalapenos	Process Market
Alabama, Tennessee, Kentucky	Pimiento	Process
California	Jalapeno, Serrano, Anaheim, Pablano Green	Fresh and Process
Florida	Jalapeno, habenero green & orange hungarian wax, finger hot, cherry hot pepper.	Fresh – New York, Boston, Chicago, Dallas

The New Mexico State University and the Texas Agricultural Experiment Station conduct a large number of Chile research and development programs. An example of such is from the Texas and A & M University presentation, at the 16th Chile Pepper Conference November 10 –12 in Tampico Mexico, on the development of sweet Jalapeno Peppers.

Whilst the USA produces hot peppers the demand is so high for the fresh, process and catering market, that both fresh and processed (sauces) are imported.
The fresh produce is imported from all over the world e.g. the Dominican Republic, Jamaica, Belize, Trinidad and Tobago, Haiti, Mexico, China, Netherlands, St. Lucia, and Honduras. The processed product namely sauces are imported from Costa Rica (under private labelling) Jamaica, Thailand, and Trinidad and Tobago.

8.1 MARKET ENTRY REQUIREMENTS

The imports of fresh and dried hot pepper into the United States must meet United States import requirements. A phyto-sanitary certificate issued by plant protection officials of the exporting country. The document certifies that the article has been inspected, is free from injurious plant diseases and insect pests, and is otherwise eligible for exportation in accordance with the importing country's regulations.

A phyto-sanitary certificate may also contain additional information regarding the area of origin, conditions of growth, or treatment of the commodity. A most important concern is the need to ensure that the no pesticide other than those allowed are used in the production and post harvest treatment of the exported products and the Maximum Level of Tolerance is not exceeded. Under the new Bio-terrorism Act as of December 2003 exporters must be notify the USA Authorities and their importers before each shipment and must put systems in place to allow for trace back of each product to the original producer. This law will also require that as of June 2004 all fresh produce is labelled with country of origin for retail sales display.

Processed pepper products must meet United States Food and Drug Regulations for low or high acid foods depending on the formulation of the product and must also meet labelling regulations. In addition the exporting firm must submit these products for assessment by the US Food and Drug Department.

There are no tariff charges on hot pepper products from the Caribbean.

8.2 MARKET SIZE AND TREND

A number of different measurements can be made of the United States hot pepper market size inclusive of:

1. The total demand for fresh hot pepper or its equivalent dry weight
2. The size of the fiery food market
3. The import market for fresh and processed hot pepper
4. The size of the ethnic niche that buys the Caribbean Habanero type peppers
5. CARICOM share of the United States Market

Estimates of the size of these various types of markets are presented below

Table 8.2: U. S. Chile Peppers, all uses-fresh weight (wet) basis: Supply, Utilization, and Price, 1999 - 2003

Supply					Utilization			Season-average price, wet basis			
										Estimated share of	
Year	Production 1/	Imports 2/	Total	Exports 2/	Total	Per capita use		Current Dollars 1/	Constant 1996 dollars	Utilisation imported	Supply Exported
						Fresh-wgt/	Dry-wgt 3				
	Million pounds, fresh weight					Pounds		$/cwt (wet)		Percent	
1999	523.4	860.1	1,383.5	83.6	1,299.9	4.7	0.58	10.57	10.10	66.2	6.0
2000	612.5	902.7	1,515.2	109.4	1,405.8	5.0	0.62	29.80	27.88	64.2	7.2
2001	549.4	1,011.2	1,560.6	137.6	1,423.0	5.0	0.62	31.50	28.79	71.1	8.8
2002p	585.5	1,025.0	1,610.5	127.2	1,483.3	5.1	0.64	28.90	26.04	69.1	7.9
2003f	585.0	1,035.0	1,620.0	140.0	1,480.00	5.1	0.63	--	--	69.9	8.6

--= Not available p= preliminary f=ERS forecast

1) **1/Source: ERS estimates based on published and unpublished State data and AMS fresh shipments. California production includes pimientos through 1999.**

2) **2/Source: Bureau of the Census, U.S. Dept. of Commerce except imports for 1980-88 were estimated by ERS. Imports include fresh chiles and dehydrated products on a fresh-weight basis (factors=8 for whole, 15 for powder). Imports exclude dehydrated paprika and pimientos. Exports consist of dehydrated converted to a fresh-weight basis, plus 10 percent of the fresh pepper/pimento export category since chilli exports are combined with bell peppers by Census.**

3) **/Converted from fresh-weight (wet) equivalent basis to dry basis using a factor of 5.0 through 1988 and a factor of 8.0 thereafter.**

4) **Through 1999, average price quoted is dollars per cwt for New Mexico chiles, calculated on a wet basis. NASS price used from 2000 on. Constant dollar price was deflated using the GDP implicit price deflator, 1996=100.**

5) **HS import codes included: 0709602000, 0904204000, 0904206020, 0904206090, 0904207000, 0904207300, 0904207600.**

The data above indicates that the production of hot pepper in the United States have grown tremendously from 523.4 million lbs fresh weight in 1999 to 585 million lbs fresh weight in 2003. Imports have also grown from 860.1 Million lbs fresh weight in 1999 to an estimated 1035 million lbs fresh weight in 2003.

Total demand in 1996 was 1,383.5 million lbs fresh weight and this rose to 1,620 million lbss fresh weight in 2003, which is 17.09% increase over the 5-year period or an average of 3.42% increase per annum. Per capita consumption has also moved from 4.7lbs to 5.1 lbs in fresh weight and 0.58 lbs to 0.63lbs in dry weight over the period of five years.

8.2.1 The Ethnic Food Market

A report by Packaged Facts in 1995 on the fiery foods industry, estimated that the fiery foods industry in the United States is worth about $2.5 billion, as opposed to $1.7 billion ten years ago, and suggested that the industry was currently growing at about 10 percent a year.

Additionally, they estimated that only 10-15 percent of American consumers were currently eating hot foods, so there was a lot of room for growth, which could be evidenced by the sales of ethnic foods for instance (see below), a segment that is growing not only because of increased immigration to the U.S., but also because Americans are looking for new and interesting flavour combinations and adventures.

According to Information Resources, Inc. in Chicago, IL, The Total U.S. supermarket Sales of Condiments in 1996 were as follows (in percentages compared to 1995):
Barbecue Sauce: $324.7 million, down 2.6 percent
Hot Sauce: $79.7 million, up 5 percent
Ketchup: $431.3 million, up 2.2 percent
Mayonnaise: $981.7 million, up 1.3 percent

Mexican Sauces: $764.7 million, up 3.6 percent

Mustard: $258.8 million, up 2 percent

Pickles/Relish/Olives: $1.3 billion, up 3.4 percent

8.2.2 The Size of the Import Market for Fresh and Processed Hot Pepper Products

Data obtained from Piers indicate that in 2001 the United States imported US$29,456,886 and 14,091.41 tonnes of fresh and processed hot pepper products by sea.

Table 8.3 Imports Of The Major Hot Pepper Products Into The United States 2001

Commodities	US$
Dried Red Chili Pepper	4,379,755
Crushed Red Peppers	3,241,563
Crushed Dried Red Pepper	1,658,761
Hot Pepper Products	1,487,620
Hot Pepper Powder	1,452,507
Cayenne Pepper Mash	1,060,006
Crushed Red Tabasco Peppers	869,626
Cayenne Peppers	811,948
Hot Pepper Paste	766,060
Habenero Pepper Mash	670,016
Others	13,059,024
TOTAL	29,456,886

Source PIERS database

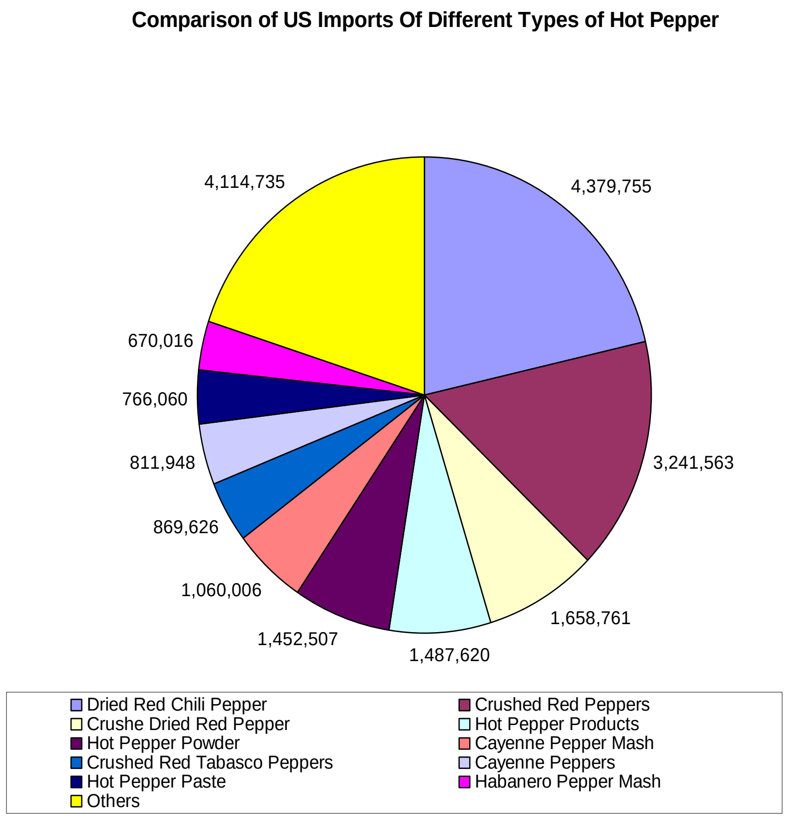
Table 8.4 below indicates the import demand for hot pepper mash and grounded hot pepper

Table 8.4 US Imports Of Hot Pepper mash, grounded and sauce In US Thousand Dollars

HS CODE	1999	2000	2001	2002 Jan - Jun
09042040 Anaheim and Ancho Pepper, dried, crushed or ground	5,773.6	3,972.8	4,804.0	2,923.3
09042060 Fruits of the genus Capsicum other than paprika or anaheim and ancho pepper not ground	39,412.5	41,713.0	42,849.1	23,625.5
09047073 Mixture of mashed or macerated hot red peppers	9,809.9	9,695.0	10,594.2	9,661.5

Source:USDA website

Fig. 8.1 Comparison of US Imports of Different Types of Hot Pepper



8.2.3 The Size of the Ethnic Population that are the Major Consumers of Caribbean Types (Habanero) Peppers

In the US, the total West Indian immigrant population was estimated at 987,000 in 1990 and includes only those reporting 'West Indian' as single ancestry and excluding those of Hispanic origin). The West Indian population was concentrated in the states of New York (44%), Florida (22%), and New Jersey (6%). Expected to account for 11% of the US population by the year 2020, Latinos (Americans of Mexican, Cuban, Puerto Rican and Central and South American descent) are the second largest and fastest growing US minority. Over half of all Hispanic Americans live in one of six metropolitan areas – Los Angeles, New York, Miami, San Antonio, San Francisco and Chicago.

Hispanic Americans constitute significant proportions of both the New York and Miami populations. They account for 64% of the total Miami population and 25% of the total New York population.

Table 8.5 New York City Ethnic Origins composition

Not of Hispanic origin	Amount (Million)
White	2.80
Black	1.96
Asian or Pacific Islander	0.78
Multiracial	0.23
Hispanic Origin	2.16
All races	8.00

Source: 2000 US Census Data

Table 8.6 Miami Cultural and Ethnic Population

Ethnic Origin	% of Population
White	65%
Black	28%
Indian, Eskimo, Aleut	0%
Asian, Pacific, Islander	1%
Other	6%
	100%

Source: 1990 US Census Data

8.2.4 CARICOM Exports and Market Share

The Piers data does not include imports by air which is the mode by which most of the imports of hot pepper from the Caribbean and Central America enters the United States.

Assessment of the United States Custom data based on air and sea imports, over the period 1997-2000, carried out by a CARDI Consultant, indicated that over 5 million lbs/yr or 2222 tonnes/yr, which is equivalent to 12500 8lbs boxes per week of fresh hot pepper is imported from Central America and the Caribbean. It is estimated that about 2 million lbs (900 tonnes) equivalent to 5000 8lbs boxes per week enters through Miami and 3 million lbs (1364) 7500 8lbs boxes per week. It is estimated that about 1 million lbs/yr, (2500 8lbs boxes per week.) is supplied by the Caribbean. Data from the Caricom Secretariat also indicate that in 2001 CARICOM exported 2449 tonnes of hot pepper products with an f.o.b value of US$ 5.82 million.

8.3 HOUSEHOLD DEMAND

8.3.1 Fresh Hot Pepper

The following assessment of the nature of the household consumer demand is based on a limited internet survey of ethnic households including people of Caucasians, Asians, Hispanics Africans and Caribbean origin who had some association with the Caribbean. The survey was conduct by CARDI in 2000 in Miami and New York. There were 63 respondents in Miami and 55 in New York. The derived information is therefore based on a very limited sample of households with some level of association (visits, friends, relatives) and is therefore only very partially representative of the market. It does however, provides a good indication of the nature of the demand for those consumers who purchase or are more likely to purchase Caribbean hot pepper products.

Frequency of Purchase

Approximately 50% of the respondents in both Miami and New York purchase fresh hot pepper, and of this amount, the majority (36%) does so once a month followed closely by those who buy fresh hot pepper at least once a week (32%), quarterly (16%) and yearly (16%). The only special occasions in which respondents in New York and Miami indicate that their consumption of fresh hot pepper increases are at Christmas, Thanksgiving and religious holidays.

Purchase Location Preferences

The similarities continue between New York and Miami in terms of location of purchase. More than 65% of the fresh hot pepper buyers either always or often make their purchase at a supermarket. The green grocer is the next preferred location. Retail markets and specialty stores are less preferred and e-commerce sites do not figure at all.

Variety Familiarity and Preferences

Table 8.7 Familiarity with Hot Pepper varieties – New York and Miami

Variety	Percentage Of Sample Familiar With Variety	
	New York	Miami
Jalapeno	65.9	63.3
West Indian Red	46.3	30.6
Scotch Bonnet	22.0	26.5
Habanero	26.8	18.4

The hot pepper varieties that respondents are most familiar with in both the Miami and New York markets are Jalapeno, followed by West Indian red. In New York, more respondents are familiar with Habanero than with Scotch Bonnet, but in Miami, it is the other way around.

Preference for Country of Origin

In Miami, 50% of the respondents do not normally know the origin of the fresh pepper they buy, while 33% say that they normally do. Forty-two percent of the respondents have no preference for an area of origin while 39% prefer the Caribbean to be the area of origin.

In New York, there is an equal proportion between those who normally know and don't know the country of origin of fresh hot pepper. For the 65% of consumers who have a preference for fresh hot pepper from a particular country, the Caribbean is again the primary location of preference. Thirty-five percent of the samples hold no preference for a country of origin. This also points to the potential positive effect that regional suppliers can derive by promoting the Caribbean as the source of their products, both to reinforce existing preferences and to influence those who currently have no preference.

Nature of Product Preferences

Table 8.8 Fresh Hot Pepper Colour Preferences – New York and Miami

	Percentage Of Sample Preferring Colour	
Colour	**New York**	**Miami**
Green	41	39
Red	34	39
Orange	14	8
Yellow	17	14
Mixed	27	12
Other	0	4

N.B. Respondents could have more than one preference

In Miami, consumers prefer their peppers predominantly red or green, medium-sized and either mildly hot or hot. A very small percentage of the population in Miami desire fresh pepper to be very or extremely hot.

Red, green and mixed are the colours of preference for consumers in New York, who also prefer their peppers to be small and medium-sized. 40% of the respondents from New York prefer their peppers to be mildly hot, 27% just hot and 20% and 13% who prefer fresh hot pepper to be very and extremely hot, respectively.

Uses

The most significant use to which fresh hot pepper is put to in both the New York and Miami markets is in the seasoning of meats followed by use as an ingredient in homemade sauces. The seasoning of soups is the next most popular use for fresh hot pepper, followed lastly by cooking vegetables, eating fresh on the side of the finished plate and cooking rice in that order.

Relative Importance of Product Attributes

Table 8.9: Mean fresh hot pepper attribute importance scores for New York & Miami

PURCHASE ATTRIBUTES	NEW YORK	MIAMI
Price	2.68	2.58
Colour	2.71	2.45
Degree of hotness	3.12	3.27
Flavour	3.53	3.66
Appearance	3.24	3.13
Freshness	3.65	3.61
Smell	3.18	3.10
Packaging	2.55	2.32

1: not at all important 2: not very 3: somewhat 4: very important

Table 8.7 shows quite clearly that in New York and Miami, the freshness and flavour are the most important attributes when buying fresh hot pepper, followed closely by the degree of hotness, appearance and smell of the pepper. The price, colour and packaging are the least important attributes to consumers when buying fresh hot pepper.

8.3.2 Hot Sauces

Frequency of Purchase

In New York, 68% of the sample surveyed reported that they buy hot pepper sauce, and of this, 39% buy on a monthly basis, 39% on a quarterly basis, 20% buy weekly and 2% buy yearly. In Miami, 53% of the samples buy hot pepper sauce with 36% doing so monthly, 43% buying quarterly, 14% buying weekly and 7% buying yearly.

Purchase Location Preferences

The supermarket is almost the exclusive location for the purchase of hot pepper sauce for customers in both New York and Miami, with limited indications of the green grocer as being a location of preference.

Brand Selection Influences

Table 8.10 Media Responsible for Influencing Brand Selection – New York and Miami

Influencing Medium	Percentage Of Sample Identifying Medium	
	New York	Miami
TV Advertising	17.1	10.2
Newspaper Advertising	9.8	4.1
Radio Advertising	12.2	2.0
Taste Testing/Sampling	34.1	26.5
Friend/family	39.0	32.7
See Product on Shelf	31.7	20.4

Word of mouth through friends and family or tradition is the number one influence in the purchase of any brand of hot pepper sauce in New York and Miami. In-store sampling is the second influencing mechanism for purchasing a particular brand followed by just observing a brand on the shelf. The mainstream media (such as television, radio and print) plays little part in influencing customers to purchase a particular brand. It is not known whether this is as a result of this mechanism not being standard practice for whatever reason by manufacturers and marketers, or whether advertisements using this media have been ineffective in influencing consumers.

Preferences for Country of Origin

In New York, a greater proportion of the sample (37%) is aware of the origin of the hot pepper sauce they purchase than in Miami (27%). This follows somewhat since a higher proportion of consumers in Miami have no preference with regard to country or area of origin than in New York. Of those that have a preference, the Caribbean was the unanimous originating location of choice.

Uses

There are three predominant uses for hot pepper sauce by consumers in New York and Miami: as an ingredient in homemade sauces, to season meats and at the side of the finished plate.

Nature of Product Preferences

In order to use the hot pepper sauce as described above, the Figures 6.1 and 6.2 illustrate the physical preferences for hot pepper sauce for New York and Miami as found in the survey.

8.3.3 Dried Pepper Condiments Hot and Spicy (Fiery) Foods

According to Fiery Foods Magazine typically, the average consumer of fiery foods is male, between 35 and 55 years of age. These people are generally of the high-energy, risk-taking personality type, and tend to earn at least $60,000 per year.

However, as more gourmet-type items such as cooking sauces, grilling sauces, marinades, dips, salsas that double as side dishes, snacks, etc., the market is attracting more women and other people who would not otherwise buy hot and spicy foods. The reason for this is that many of these condiments are interesting because of their spice combinations, but have more universal appeal because they are not painfully hot. Additionally, in our increasingly time-constrained society, these products make cooking much simpler, as it is easy to prepare, for instance, a basic meat, and then make it fancy with an interesting sauce. Along these lines and this is important for the gourmet market as well, a current popular selling feature of specialty products is versatility--people want a product that they can use in several different ways: a salsa that can be used not only to dip chips into, but also as a mix with cream cheese for a delicious dip, or maybe it can stand on its own to suffice as a side dish some contain heartier ingredients like corn and beans, a hot sauce that can be used not only as a heat enhancer, but also as a dipping sauce, a marinade, or a grilling sauce.

The barbecue industry in general has shown good growth over the last ten years as Americans are barbecuing more and more. A 1997 consumer survey conducted by the Barbecue Industry Association highlights some of that growth:

Americans used a barbeque 2.9 billion times in 1997, up from 1.4 billion times in 1987.
Three out of four US households own a barbeque grill.

Nine out of ten barbecue grill owners always or sometimes use barbecue sauce when grilling and most buy sauce.

Consumers are also demanding a wider variety of barbeque sauce products - both in flavor and heat intensity. Sales of international style barbeque sauces are also growing. A 1997 unscientific online survey by Fiery Foods Magazine, a magazine targeted to hot foods aficionados, found the following:

Favorite Barbeque Product:

BBQ Sauces ------------33%

Marinades---------------28%

Grilling Sauces---------15%

Make Your Own---------3%

Where Barbeque Products are Purchased:

Supermarkets------------47%

Specialty Stores---------33%

Mail-Order (Catalog)—14%

Internet---------------------7%

Preferred Heat Level:

Mild----------------------10%

Medium----------------- 20%

Hot---------------------- 70%

Favourite Barbeque Style:

Texas Style------------29%

Jerk Seasoning--------24%

Caribbean Style-------19%

Southern Style-------- 14%

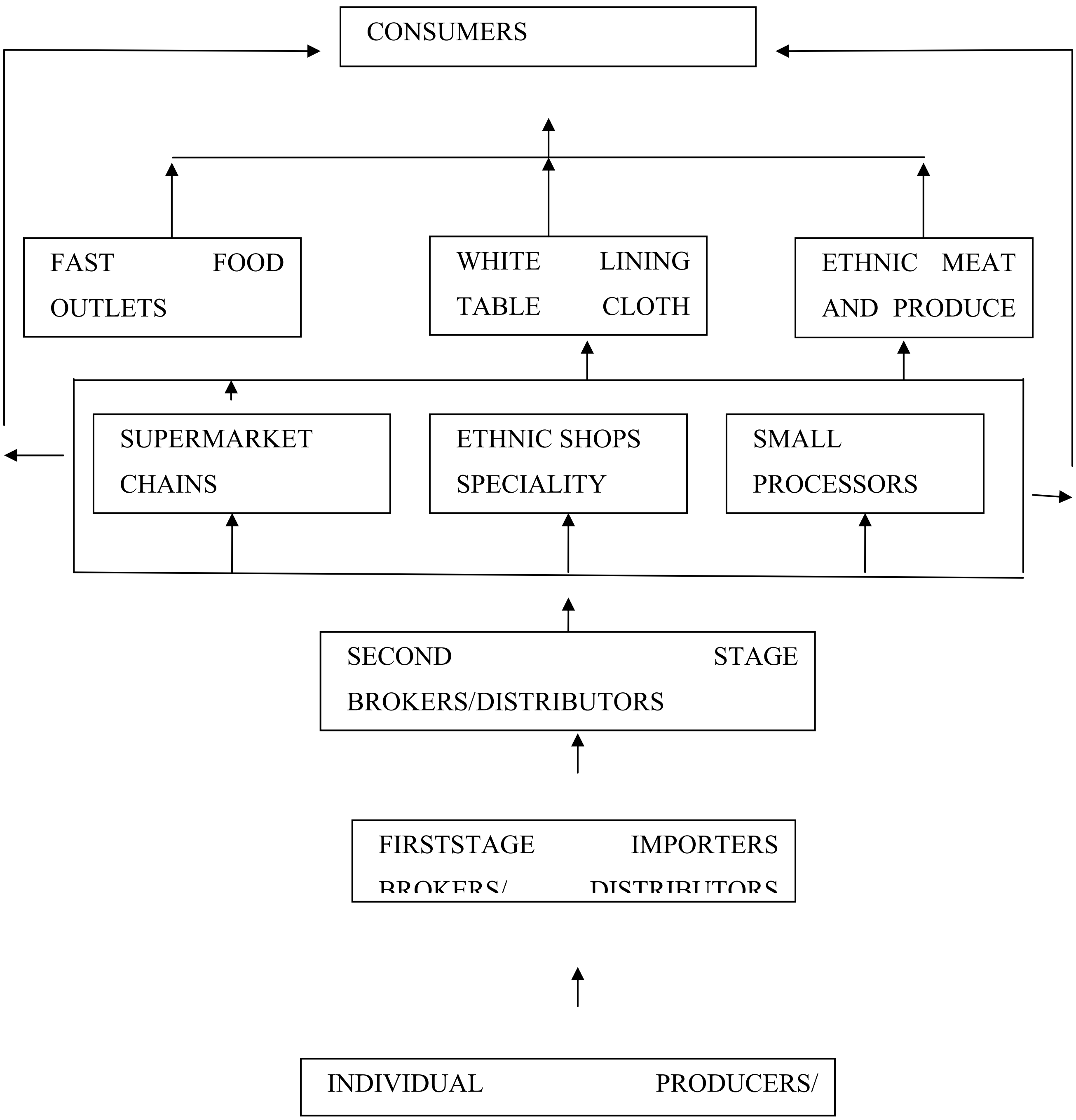
Asian Style------------ 10%

Kansas City Style----- -5%

8.4 WHOLESALE AND RETAIL SEGMENT

8.4.1 General structure of the Distribution chain

Fig. 8.2 Structure of the Distribution chain



Examples of companies in the distribution chain in New York are indicated

Wholesale/Retail Distribution – New York

Wholesale Club	**Supermarket Chains**
Costco	Pathmark
BJ's Wholesale	Associated
Sam's Club	Shop Rite
	C-Town
Gourmet Markets	**Specialty Stores**
Amish Market	Fish and Meat
Dean & Deluca	Fruits & Vegetables
Dagostino	Health Foods
Ethnic Shops	
Korean Corner Store	
Chinese Corner Store	
Caribbean Shops	

The competition on the east coast is very fierce between the various distributors. Items that are not sold by exclusive distributors are not able to compete well. This occurs because distribution requirements significantly influence the retailer's choice of product. This situation has resulted because distributors perform many supporting services to the retailers. Such services include shipping and handling, support in marketing and merchandising, location of shelf space and primary setup among others. Consequently, retailers give little consideration to a product that does not have a good distribution system. The conventional supermarket retailers prefer products, which can provide them margins of 30-40% at minimum. Gourmet and specialty foods require higher margins of about 60%.

The grocery sector in New York is very strong and independent. It focuses on the peculiar needs of each community within which they operate. The majority of food sales are made by supermarkets (over 70%), over 60% of which is made by large chain stores with the remaining 40% by independents.

Sales in New York supermarkets however, are well distributed among the various companies.
The profitability and growth potential in the ethnic and specialty market segments is attracting the larger chain stores to these markets.
International aisles, which stock a range of products different national origins, are being installed. Additionally, special promotions are being geared to marketing ethnic foods.

In the city of Miami, supermarkets account for the majority of the sales, over 75%. Chain stores are responsible for close to 90% of the supermarket sales with the remainder going to independents. The supermarket sales however are controlled largely by two chain stores, Publix and Winn-Dixie. Together they account for more than 70% of supermarket sales. In Miami the retail chain are owned by a few large companies with Winn Dixie and Publics dominating the retail market this is unlike the situation in New York where there are large numbers of independent retail cooperatives and supermarkets.

8.4.2 Fresh Hot Pepper

The hot pepper is widely distributed throughout the retail segment inclusive of supermarket, green groceries and ethnic shops in the United States. In Miami and New York fresh hot peppers were available in all the supermarkets and ethnic Caribbean shops visited. In most cases the varieties other than Habanero dominated the market. The most popular varieties were Jalapeno and Cayenne. The range of varieties observed in New York was greater than those seen in Miami. This is a reflection of the greater range of ethnic groups in New York. A characteristic of the market is that different varieties are targeted at the different ethnic group as there is some tendency for ethnic groups to purchase the varieties with which they have been accustomed.

A survey of about thirty (30) importers/ distributors, wholesalers, and retailers in these markets revealed that majority are not aware of the correct name of the product that they are selling. This is pronounced in the Miami market. Habanero types are called scotch bonnet and scotch bonnet type called habanero. They major types on the market from a Caribbean perspective are Jamaican Scotch Bonnet, West Indies Red, West Indies Green, Mexican Orange Habanero, Eastern Caribbean Habanero Type, Trinidad Large Green, Serrano, Cherry Hot, and Cacuhua/Cubanella

Supermarket scan data obtained from Data obtained from IRI (Tables 7.9-7.12) indicates the following level of fresh hot pepper sales in supermarkets in New York and Miami.

Table 8.11 Supermarket Sales US$ of Hot Pepper Products in New York

Product	1998	1999	2000	2001	2002
Pepper	$7,739,582	$7,779,234	$7,550,494	$7,483,002	$7,367,249
Pepper/Pimentos	$13,642,688	$13,498,076	$12,940,041	$12,788,803	$13,021,498

Table 8.12 Supermarket Sales Volumes (Kgs) of Hot Pepper Products in New York

Product	1998	1999	2000	2001	2002
Pepper	690,526	698,253	695,359	691,432	689,715
Pepper/Pimentos	5,537,527	5,464,702	5,438,132	5,335,435	5,388,295

Table 8.13 Supermarket Sales US$ of Hot Pepper Products in Miami/Fort Lauderdale

Product	1998	1999	2000	2001	2002
Pepper	$3,374,882	$3,487,600	$3,576,267	$3,431,926	$3,345,182
Pepper/Pimentos	$3,991,237	$3,891,428	$3,848,694	$3,619,180	$3,524,117

Table 8.14 Supermarket Sales Volumes (Kgs) of Hot Pepper Products in Miami/Fort Lauderdale

Product	1998	1999	2000	2001	2002
Pepper	353,285	367,131	371,129	355,349	351,028
Pepper/Pimentos	2,035,388	1,872,046	1,875,595	1,746,699	1,703,551

Prices vary considerable among the different varieties. An examination of the price movements and relationships between different varieties in the Miami and New York markets was conducted to provide an understanding of the competitive nature of the fresh hot pepper market in these cities. The wholesale market information collected and supplied by the USDA indicates that there are many more varieties, originating from considerably more sources, in the New York market than in the Miami market. This indicates that New York is a much more competitive market.

The average market prices for the different varieties in both markets vary from month to month, but on examination of the data between the years 1991 - 1999, it is observed that the general price movement trends are maintained for both markets.

Wholesale prices for different types of fresh hot peppers in different wholesale terminal markets are presented below.

Table 8.15 Wholesale Prices At Terminals Markets Of Selected Varieties

Country Of Origin	Pepper Product	Terminals/Destination	Maximum Average Prices/Measured
Florida	Jalapeno	Baltimore	US 10/ 10 lb cartons
		New York	US 11.47/ 1/2 bushel cartons
Mexico	Jalapeno	New York	US 9/ 10lb ctn
Texas	”	Philadelphia	US 12 / 1/2 bushel
Belize	Habenero Green	Boston	US 24/ 8 lb ctn
Florida	”	”	US 22.92/ ½ bushel
Florida	”	ATL	US 25.05/½ bushel
Haiti	”	Boston	US 24// 10 lbs ctn
Jamaica	”	”	US 23.25/8 ctn
Mexico	”	”	US 22/ 8 lb ctn
Mexico	Habenero Orange	LA	US 4.80/crate
Haiti	Habenero Red	Boston	US $24/ 8 lb cartons
Florida	Habenero Yellow	Baltimore	US 28/ ½ bushel ctns
Trinidad & Tobago	Scotch Bonnet Green	New York	US 27/ 8lb ctns
Jamaica	Scotch Bonnet Mixed Red & Green	Baltimore	US 32/ 8 lb ctns
Belize & Haiti	Scotch Bonnet	Miami	US 21/ 8lb ctns
Jamaica	” ”	”	US 21.33/ 8 lb ctns
Jamaica	” ”	New York	US22/ 8lb ctns
Jamaica	” ”	Boston	US 27.09 / 8lb ctns
Trinidad & Tobago	” ”	New York	US 24/ 8lb ctns
Trinidad & Tobago	” ”	Miami	US 20.14/ 8lb ctns

Source: USDA AMS. 2003

The above shows that price for habenero peppers is generally over twice that for Jalapeno and sometimes 3 times higher.

Spot comparisons in the Miami market were made between the prices of habenero pepper originating from the CARICOM, United States and Mexico. It was found that the prices for products originating from CARICOM were higher than that from Mexico and the United States with the Caribbean often maintaining a price advantage of 5-10%. Among the Caribbean suppliers Scotch Bonnet peppers from Jamaica generally attract a further 5-10% premium.

8.4.3 Sauces & Seasonings

The size of the demand for pepper sauce in New York and Miami was also obtained through supermarket scan data and are presented below.

Table 8.16 Supermarket Sales US$ of Hot Pepper Products in New York

Product	1998	1999	2000	2001	2002
Hot/Cajun Sauce	$5,204,888	$5,063,230	$4,578,743	$4,327,526	$3,997,759
Chilli Seasonings	$1,080,079	$970,029	$946,418	$848,413	$797,146
TOTAL	$27,667,237	$27,310,569	$26,015,696	$25,447,744	$25,183,652

Table 8.17 Supermarket Sales Volumes (Kgs) of Hot Pepper Products in New York

Product	1998	1999	2000	2001	2002
Hot/Cajun Sauce	1,741,312	1,790,757	1,704,978	1,714,262	1,626,397
Chilli Seasonings	428,146	402,627	398,547	368,651	332,519
TOTAL	8,397,511	8,356,339	8,237,017	8,109,781	8,036,926

Table 8.18 Supermarket Sales US$ of hot Pepper Products in Miami/Fort Lauderdale

Product	1998	1999	2000	2001	2002
Hot/Cajun Sauce	$2,987,954	$2,800,899	$2,602,404	$2,330,938	$2,193,162
Chilli Seasonings	$459,512	$445,175	$461,385	$410,638	$371,951
TOTAL	$10,813,585	$10,625,102	$10,488,751	$9,792,683	$9,434,411

Table 8.19 Supermarket Sales Volumes (Kgs) of Hot Pepper Products in Miami/Fort Lauderdale

Product	1998	1999	2000	2001	2002
Hot/Cajun Sauce	1,117,835	1,100,147	1,124,728	1,077,335	1,039,624
Chilli Seasonings	236,631	226,174	237,275	225,435	180,150
TOTAL					

Pepper sauces are included in the ethnic foods food section located in the international department of the larger upscale stores and are sold with complimentary products such as other cooking sauces and dressings. Stores with the international departments usually had the following divisions:

- Asian
- Hispanic
- Indian
- Caribbean

The Asian and Hispanic lines of the international departments have shown the best growth potential, however all lines have exhibited growth. Clear and conspicuous signs are necessary for directing customers to the international section.

Most of the stores in Miami have Caribbean sections with sauces, seasonings, condiments, and other Caribbean food products.

The range of products available depends significantly on the type of store and the consumer demographics of the area. Ethnic stores generally have the widest array of products and brands. Chain supermarkets in the ethnic areas also have a wider array of ethnic products than those in the mass market, and in some cases even more than the ethnic stores. Specialty/gourmet markets generally have a relatively wide assortment of products.

In the city market of New York and Miami the some of the most popular brands of sauces are Tabasco, Crystal, Grace, Pickapeppa and Walker's Wood.

Competitive pricing and brand recall are the main criteria for the selection of a product. Additionally, the brand owner has to assure the distributors and retailers of their commitment to supporting the growth of the product for the product to be given any serious consideration. Often distributors require some point of sale material for the product. This includes leaflets and tent cards.

Reliability is the major concern distributors with their own brands had with Caribbean suppliers. This they said caused them to produce their own brands. It was indicated that once brand owners are of Caribbean origin their brands, though 'imitations' are given legitimacy. The imitations pose the biggest threat to Caribbean manufacturers as they take away current and future market share. Further, the poor quality sauces will also turn off first time buyers from purchasing Caribbean products.

This is a major concern, as increasingly many consumers do not use origin as a significant deciding factor. This usually consists of the younger generations that grew up in the U.S and are less brand loyal. The older consumers that grew up with the particular brand tend to be more brand loyal.

Imports to the US are less than 10% of the market. The major foreign sources of supply of pepper sauces are the Caribbean Islands including Jamaica, Trinidad, Barbados, St. Lucia) Costa Rica, Mexico and Thailand.

US based firms that supply an extremely wide range of hot sauces targeted at every conceivable market segment however dominates the market. The market is highly fragmented with more 100 suppliers ranging from small kitchen operation to Multi-national companies, such as McCormick and Tones, supplying many individual or multiple brands.

The estimate for the US market size for jerk-style sauces is unreliable. The market however is relatively small but growing. If the jerk-style sauces are viewed as a part of the barbeque market, which is their main use, the market potential will be very high. This is due to the fact that: Americans collectively barbeque more than 3 billion times per year, while 75% of the US households own a barbeque grill and 90% of barbeque grill owners usually buy barbeque sauce to use when grilling. Additionally, consumers are demanding a wider variety of barbeque sauce products. Barbeque sauce sales in the US are estimated to be about US$340 million. The barbeque sauce market is also very fragmented and served by a very wide range of domestic and imported sauces.

The traditional barbeque sauces however still dominate the market although the number of flavours is increasing even within the lines of established manufacturers.

In the city markets (New York, Miami large supermarket chains are increasing their range of ethnic foods to capitalize on the increasing sales in the ethnic food market. The major chains continue to install complete ethnic sections in stores in ethnically diversified communities. This presents significant competition to smaller supermarkets and independents that traditionally were the major suppliers of the ethnic market.

Some retailers and distributors have serious reservation about the market potential for Caribbean products due to the lack of promotion by distributors and product manufacturers. Others believe that Caribbean products have the potential but lack coordinated promotional efforts of the distributors and manufacturers to attract the retailers.

Table 8.20 Brands of Hot Sauces found in Korean Grocery Stores in New York

BRAND	SIZE		COST
	Fl. oz	ml	$
Grace			
Scotch Bonnet Sauce	4.8	142	1.99
Hot Pepper Sauce	3	88.5	0.99
”	6	177	1.29
West Indian Pepper Sauce	5	155	1.59
”	12	375	2.59
”	26		4.49
Matouk’s Calypso Sauce	10	300	2.39
”		750	4.49
Matouk’s Flambeau Sauce	10	300	2.49
Aunt May’s Bajan Pepper	6		1.59
”	12		2.59
”	26		4.49
Pickapeppa	5	142	1.99
”	3		1.99
Goya Hot Sauce	6	178	0.99
Trinidad Hot Sauce	10	300	1.99
La Fe Hot Sauce	5.6	167	1.29

Author’s tabulation

Retail prices for traditional barbeque sauces ranged from $1 to $3 per pound depending on the brand and pack size. The most popular container size is the 18oz, which accounts for about 75% of the retail sales

8.5 PROCESSING SEGMENT

The United States has one of the most developed hot pepper processing industry in the world. The following are the range of products produced from chilli peppers.

- Dried whole and ground chilli
- Canned whole and chopped chilli
- Chilli mash
- Frozen whole and chopped
- Chilli sauces
- Wet and dried pepper based seasonings
- Tear gas
- Food colouring agents
- Preservatives to replace nitrites
- Cosmetic colourants
- Pharmaceuticals pain killers
- Decorations and wreaths
- Antifungal paints

The raw material utilised in the production of these products are largely obtained from domestic production but significant quantities are also imported from Mexico and Central America. For example Tabasco imports a large percentage of its pepper mash for making its famous Tabasco sauce form a number of Central American countries. Processing in carried out large multi-national companies as well as small kitchen based pepper sauce processors.

The market requires a range of varieties of pepper mash varying from mild to very hot. The milder jalapenos, cayennes, anaheims dominates the market but the demand for the hotter Habeneros is growing rapidly. Companies such as McIlhenny's which has the greatest market share by value, utilise mainly jalapenos, but are increasingly utilising Habanero mash for the Asian (Japan, China, Korea) and selected market segments in the USA. They have indicated that the company is expanding the use of Habaneros for the

“Chilli Officinados”, who want hot products that are more like the Caribbean style sauces. The market also requires different colours of mash. Red, particularly bright red is the preferred colour but green and yellow are also required in significant volumes. McIlhenny’s has also indicated that it is now focusing on building its green pepper sauce business. Another factor relating to product type is the preservatives that can be used in the mash. Some buyers insist on no artificial preservatives in which case the product must be supplied with salt and or vinegar or in the extreme case in a frozen form. Products must meet stringent quality standards relating to microbial, pesticidal and extraneous matter. The companies interviewed including Everson Spice Company, McCormick & Company, Inc. and Tones Brothers Inc., have indicated that quality as it relates to adulteration with water and varieties other than that stated, is of particular concern.

The companies interviewed indicated that regularity of supply and minimum volumes are key concerns. It was stated that in the case of Habanero, buyers source their supplies mainly from South and Central America and the Caribbean, where changes in the weather conditions and pest and disease problems result in frequent disruptions in supplies. As a consequence, they seek to diversify their sources.
Secondly, they have had difficulty in the consistency with respect to colour and degree of hotness. In seeking to address this, they insist on suppliers sending several samples.

8.6 INSTITUTIONAL AND FOOD SERVICE TRADE

The Food service trade and institutional food trade is a major driving force behind the rapid growth in the hot pepper industry. The fast food market leads the growth in this segment especially the fried chicken market, where hot and spicy chicken is now competing very strongly with the regular flavour. There has been a major consistent growth in the ethnic restaurant business in the United States led mainly by Mexican and Asian food, with Thai food being particularly outstanding in the latter category.

According to the Food Institute Report, the sales of ethnic foods were expected to reach $383 million by 2001, compared to $272.2 million in 1996, and $208.9 million in 1992. The report says that this is because mainstream Americans are increasingly looking for new and different flavours and products. However, ethnic spending power mostly Asian and Hispanic-Americans is estimated at about $500 billion per year, according to the Washington Business Journal. A very clear indication of the growth of the demand for ethic food in the restaurant and food service trade is the fact that the consultants found that in almost every r food court the visited in the major malls in Miami jerk meats were offered on the menu.

9.0 UK MARKET

When accessing the United Kingdom it has to be examined in the context of the European Union, as the UK is a member of this economic and customs union. This union has an integrated tariff system. Below please find the HS codes and their combined nomenclature headings for hot pepper and its products under study:

HS CODES	DESCRIPTION
07096091	Of the genus Capsicum, for the manufacture of capsaicin or Capsicum oleoresin dyes
07096095	For the industrial manufacture of essential oils or resinoids
0709609900	Other
0711901000	Vegetables provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption-- Fruits of the genus Capsicum or of the genus Pimenta, excluding sweet peppers
0904203000	Fruits of the genus Capsicum or of the genus Pimenta, dried neither crushed nor ground - other
0904209000	Fruits of the genus Capsicum or of the genus Pimenta, dried 0r crushed or ground
2001902000	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid- Fruit of the genus Capsicum other than sweet peppers or pimentos
2103909089	Sauces and preparations thereof; mixed condiments and mixed seasonings; mustard flour and meal and prepared mustard- other
3301903000	Essential oils (terpeneless or not), including concretes and absolutes; resinoids; extracted oleoresins; concentrates of essential oils in fats, in fixed oils, in waxes or the like, obtained by enfleurage or maceration; terpenic by-products of the deterpenation of essential oils; aqueous distillates and aqueous solutions of essential oils -Extracted oleoresins-Other

Source: European Commission TARIC Database

It should be noted that statistics at this level of HS Code was difficult to source, as it is quite expensive.

9.1 MARKET ENTRY REQUIREMENTS

Under Commission Regulation (EC) 1148/01 all import consignments of fresh fruit, vegetables and nuts subject to the EC Marketing Standards will require a recognised Certificate of Conformity or if intended for industrial processing a Certificate of Industrial Use before release into free circulation within the European Union.

The imports of fresh and dried hot pepper into the United Kingdom must meet European Union import requirements. A phyto-sanitary certificate issued by plant protection officials of the exporting country must accompany the product. The document certifies that the article has been inspected, is free from injurious plant diseases and insect pests, and is otherwise eligible for exportation in accordance with the importing country's regulations.

A phyto-sanitary certificate may also contain additional information regarding the area of origin, conditions of growth, or treatment of the commodity. A most important concern is the need to ensure that the no pesticide other than those allowed are used in the production and post harvest treatment of the exported products. This is of particular significance due to the fact that several of the pesticides currently used in protecting the hot pepper crop form pest and diseases do not have European Union approved Maximum Residue Levels (MRLs) and thus cannot be used in the crop protection programme.

Processed pepper products must meet European Union Food Import Regulations with respect to packaging and labelling. The greater challenge however is the need to have traceability and HACCP quality systems in place in order to meet the requirements of the major supermarket. Opportunities available to supply the large chains such as Tesco and Sainsbury's cannot be secure without the implementation of these quality systems.

There are no import tariff charges on hot pepper products from the Caribbean if the product is accompanied by the Certificate Of Origin, called an EURI Form. However new companies seeking to gain access to the supermarket channels will often be required to provide significant financial resources for liability insurance and financing of promotional programmes. .

9.2 NATURE AND SIZE OF THE MARKET

9.2.1 The Ethnic Food Market

For the purpose of this market report we will be looking at the ethnic food market from the perspective of the hot pepper and its products being inputs/ingredients in the institutional/catering sector of the market

The market is broken down into the following segments:

- Ready meals (convenience foods)
- Cooking sauces
- Ingredients
- Snacks

The UK market is the largest market for ethnic foods in Europe. This market is consistently growing. Chinese and Indian meals are the most common in this market. The market size for this ethnic food market is estimated to be in excess of 700 million. Caribbean foods are just about 4% (£28 million) of the total ethnic market however it is the fastest growing market as seen in the table below where over the period 1993 to 1995 growth was 102%. Ready meals are the largest category in ethnic food sales followed by ingredients, cooking sauces and snacks.

Table 9.1 UK Sales of Ethnic Foods by Sector

Sector	1993		1995		% Change (1993 – 1995)
	£ millions	%	£ millions	%	
Indian	171.0	46	205.0	45	+20
Chinese	110.0	30	137.9	30	+25
Mexican	45.2	12	52.0	11	+15
Thai	20.2	5	25.3	6	+25
Caribbean	10.1	3	20.4	4	+102
Indonesian	7.0	2	9.1	2	+30
Other	5.0	1	6.5	1	+30
Total	368.5	100	456.2	100	+24

Source: Mintel Market Intelligence, 1996

Within the United Kingdom there is a total of 25, 000 ethnic restaurants with an annual turnover of 6.5 million pounds. The four main categories of restaurants are Indian, Italian, Oriental and Mood food (these include exotics cuisines such as Caribbean, African, South American, Cajun, Tex/Mex, Lebanese and Mexican)

Specific market size information is difficult to source and extremely expensive when found.

Initially hot pepper and its products were marketed to persons of ethnic backgrounds for example Indians, Africans, West Indians and Hispanics living outside of their countries. This can be linked to the immigration of these races from so called developing countries to developed countries. With immigration these ethnic communities hold on to their cultural, spiritual etc beliefs and rituals, within the culinary aspects of culture would be forefront as that is one way to hold on to ones homeland. Hot pepper has been a part Indian, Chinese, Africans, Hispanics and Caribbean cooking and therefore the marketing of pepper to these communities.

9.2.2 Caribbean Population

The Caribbean ethnic population in the UK is in excess of 500000 with more than half born in the UK having parents with Caribbean origin. The breakdown by percentage is given in table 9.2 below:

Table 9.2 Size of Caribbean Population by Regions

REGIONS	BLACK CARIBBEAN POPULATION (%)
North East	0.16
North West	3.61
Yorkshire and Humber	3.77
East Midlands	4.72
West Midlands	14.54
East	4.63
London	60.71
South East	4.85
South West	2.19
England	99.18
Wales	0.46
Scotland	0.31
Northern Ireland	0.05
UK base =100%	565,876

Source: UK Census 2001

More than half of the Caribbean ethnic population is of Jamaican origin. The population of the first generation of Caribbean-born immigrants has been decreasing over the last two decades. This has implications for future market potential for Caribbean products that traditionally lose its appeal to second and third generation immigrants.

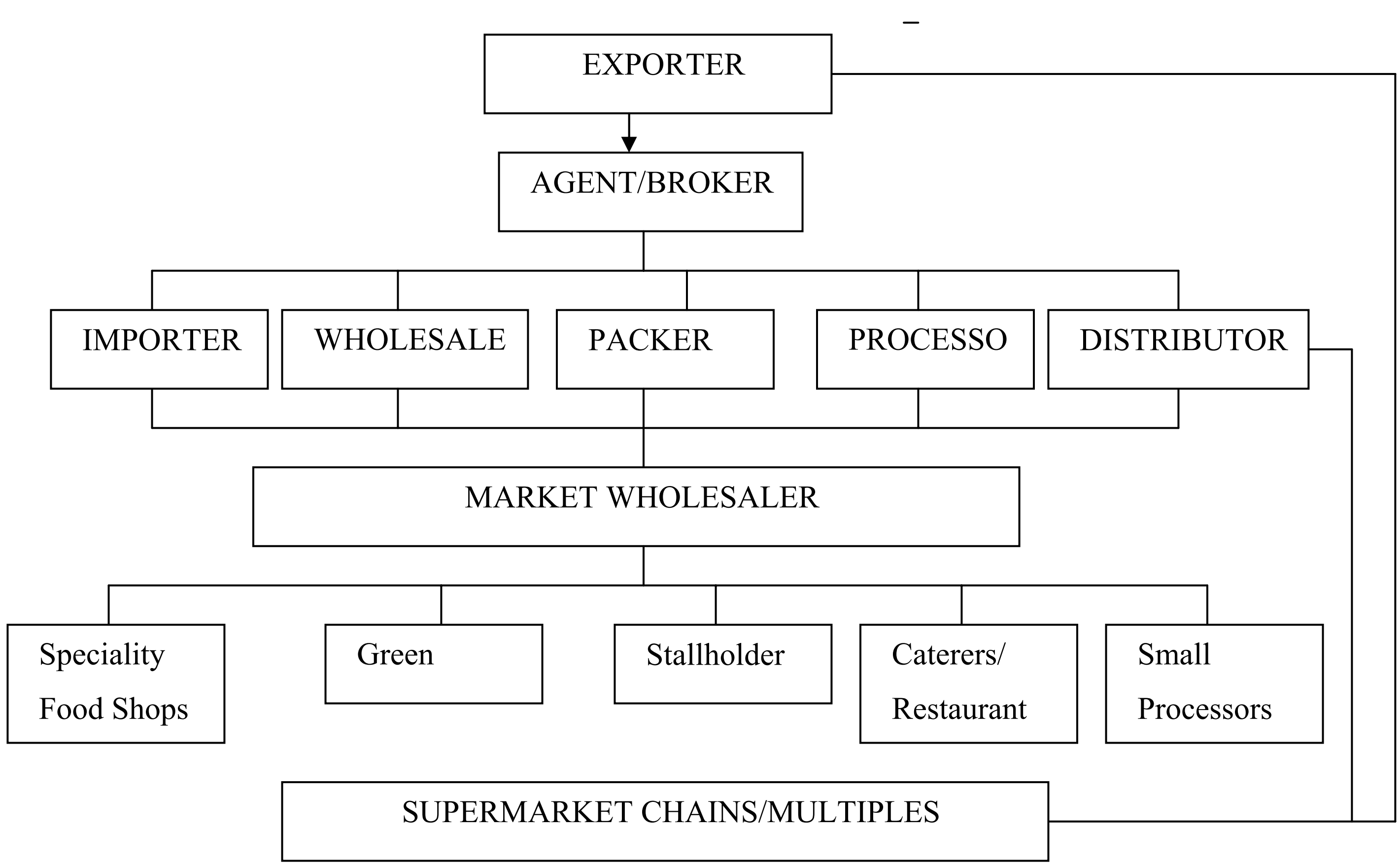
The majority of the Caribbean ethnic population (about 80%) is concentrated in four main city areas: Greater London, Birmingham, Manchester and West Yorkshire. Greater London has most of the immigrants (about 60%). Black Caribbeans form more than ten per cent of the population of the London boroughs of Lewisham, Lambeth, Brent and

Hackney. Further, there are specific districts within these city areas where the immigrant populations are concentrated.

9.2.3 Distribution

The distribution chain for hot peppers and its products vary according to the products, because of relationships built along the chain. Below please find the distribution chain for these products:

<u>Table : Distribution Channel For Fresh Fruits And Vegetables In The United Kingdom</u>



Most of the multiples let importers and distributors handle international importing. Increasingly however, supermarkets are directly sourcing their food products.

There are many agents and brokers in the UK offering varying amounts of trade and consumer marketing expertise, warehousing, and distribution facilities. Many importers have their own distribution network and warehousing facilities, while smaller importers contract out these services. The larger agencies focus on products that have potential for large volume in the multiple supermarkets and backed by substantial market support. Some specialize in solely in independent grocer or food service distribution

The wholesale market located in London such as New Covent Gardens and Spitalfields and Smithfield in Birmingham are also major outlets for fresh hot pepper. Importer distributors based in these markets are the main buyers of Caribbean fresh hot peppers.

Costing Along The Chain

The following is the incurred costs associated with each link in the distribution chain:

The Exporter	
Transportation costs	
Finance charges (bank)	
Freight and insurance costs	
Handling charges	
Agent/Broker	
Professional fees/commission	2 – 5 %
Importer/Wholesaler	
Mark-up/ commission	5 – 10%
Transportation costs	
Packaging and labelling	
Overheads, wastages and shrinkage allowance	
Grinder/Processors/Packers	
Mark-ups	20 - 25%
Retailers	
Mark-up by retailers – Green grocers	50 – 60%
- Supermarkets	up to 30%

The Role of Distribution chains

Distribution channel are there to assist the Exporter with market trends and customer needs. The advent of internet has changed the distribution channel somewhat by eliminating a number of middlemen, allowing for business-to-business trade and business-to-consumer trade. Most hot sauces are sold over the internet by small to medium size retailers, even large supermarket chains in the United Kingdom have online stores with delivery services.

Distribution in the retail segment are conducted by the following players:

- Small stallholder selling in open markets around London neighbourhoods e.g.Walthamstow, Halsden, new convent Garden
- Specialty (ethnic) food shops
- Supermarket chains and multiples where the trend is towards ethnic food aisles as is the case with Sainsbury, Waitrose, Tescos while ASDA calls theirs "Foods From Around The World"
- Green grocers mostly Indian, Pakistanis and Bangladeshis own these stores. Theses are small neighbourhood shops that sell ethnic produce and foods
- Speciality/Ethnic food importer these are suppliers to the green grocers and the supermarkets and ethnic food stores.

Within the United Kingdom retailers such as large supermarkets e.g. ASDA have food from the rest of the world aisle that promotes ethnic food products.

Supermarkets (multiples) play a key role in the promotion of hot peppers and its products. What was observed in the multiples are food aisle dedicated to ethnic products, while in the market fresh hot peppers are heaped with their prices written on a cardboard stuck in the centre of the heap.

9.2.4 Import Demand

United Kingdom import statistics does not separate the data for capsicum which includes hot and sweet peppers. With this in mind the following 2001 statistical information from "International Trade Centre (ITC) trade maps" can be taken into consideration

- 0904.20 United Kingdom's imports represent % of world imports for this product, its ranking in world imports is 8
- 200190 Vegetable fruit, nut &edible parts of plants nes, prep/preserved by vinegar/acetic acid United Kingdom's imports represent 5% of world imports for this product, its ranking in world imports is 4
- 2103.90 United Kingdom's imports represent % of world imports for this product, its ranking in world imports is 2

Below please find table 9.3 indicating the import of hot pepper and its products into the United Kingdom in US$'000's for the period 1997 –2001.

Table 9.3: Import of Hot Pepper and Its Products 1997-2001

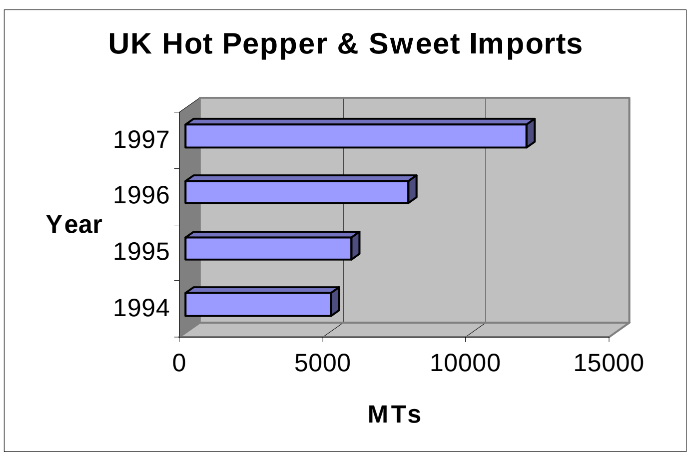
HS CODE	DESCRIPTION	1997	1998	1999	2000	2001
070960	Peppers of the genus Capsicum or of the genus Pimenta, fresh or chilled	153,393	159,668	152,166	160,202	168,584
090420	Fruits of the genus Capsicum or Pimenta, dried, crushed or ground	15,255	15,742	11,574	11,637	13,706
200190	Veg, fruit, nut & edible parts of plants nes, prep/presvd by vin/acetic acid	15,246	15,237	19,074	21,639	26,596

210390	Sauces and preparations nes and mixed condiments and mixed seasonings	169,225	180,146	191,937	213,726	187,175

Source: ITC Product maps

Figure 9.1 below shows import statistics in retrospect obtained from Euro-stats, of fresh pepper into the UK over the period 1994 – 1997, which includes both hot pepper and sweet pepper.

Fig. 9.1 UK Hot Pepper and Sweet Pepper Imports



The two largest suppliers of fresh pepper (hot and sweet pepper) into the UK, which accounted in 1997 for over 50% of total imports, are the Netherlands and Spain, and the dramatic increase in imports over the years 1994 – 1997 is largely due to the performance of these two countries. Both countries are producers of hot pepper, with Spain being mostly a year round producers of Cayenne, paprika and jalapeno peppers and Holland being a mostly summer green house producer of theses and other hot pepper varieties.

Other non-European suppliers of fresh hot pepper into the UK market include Kenya, which held 13% of the market in 1997, Ghana, 7% of the market in 1997, and St. Lucia, 5% of the market in 1997. Jordan has been reported to be an important off-season supplier of fresh vegetables in general to the UK and contributed 4% of the pepper imports in 1997.

In order to obtain a sense of the size of the hot pepper import market, discussions were held with major importers in the ethnic market. These discussions suggest that imports of hot pepper exceeds 3000 tonnes per annum of which the habanero types supplied by Uganda, Holland and the Caribbean amounts to about 2000 x 4 or 5 kg boxes per week or about 4-500 tonnes per annum. The major suppliers to the United Kingdom are Kenya, Uganda, Cyprus, Holland and Caribbean suppliers, currently led by St. Lucia, and Jamaica. Kenya supplies mainly thin and long chilli while Cyprus supplies the Jalapenos, the Caribbean supplies habanero generally referred to as lantern types in the United Kingdom market, while Holland and Spain supply mostly cayenne and jalapenos and limited amount of habernero types which are grown in green houses in Holland.

UK importers claim that by catering for the demand of pockets of ethnic groups, by importing hot pepper varieties with which each group is familiar, they have seen their sales skyrocket. Typically they will bring in Birdseye from Thailand for Asian consumers, Jalapenos for Hispanic consumers, and Scotch Bonnets from Central America and the Caribbean for West Indian groups.

Prices varies depending on the variety and on the seasonality and current supplies but whole sale price normally ranges from £0.50/lb for cayenne and Jalapenos sourced from Holland to £1.10 for varieties sourced from the Caribbean and Kenya. Caribbean exporters report CIF prices of £0.80-95/ lb. In general the hotter varieties which has capsaicin levels of over 1%, such as the Caribbean varieties fetches a wholesale price which is 1.5 to 2 times that of the varieties with capsaicin levels of less than 1%.

Data on the imports of processed pepper products was not available.

9.3 CONSUMER DEMAND

Consumer demand for hot pepper and its use in products, outside ethnic lines, is influenced by travel, celebrity chefs, cooking shows and the change in eating trends e.g. there is a great demand for convenience food in the United Kingdom.

The following information on the nature of consumer demand was obtained from the internet survey conducted by CARDI in 1999-2000

9.3.1 Fresh Hot Pepper

Variety Familiarity and Preferences

Table 9.4 displays the proportion of the London sample that indicated familiarity with the different hot pepper varieties.

Table 9.4: Familiarity with Hot Pepper Varieties – London

Variety	Percentage Of Sample Familiar With Variety
Jalapeno	51.9
West Indian Red	48.1
Scotch Bonnet	40.7
Habanero	11.1

Consumers in London are most familiar with the Jalapeno variety followed by West Indian Red, Scotch Bonnet and Habanero in that order. The Thai Birdseye was the other variety most frequently mentioned.

Frequency of Purchase

In London, over 70% of the respondents actually purchase fresh hot pepper and the majority (55%) does so once a month. Thirty percent of the consumers that buy do so once a week and the balance (15%) either buy quarterly or yearly. The data collected indicates that the only special occasion that the consumption of fresh hot pepper is significantly increased is at Christmas.

Purchase Location Preferences

Table 9.5 provides the mean preference scores for the different locations from which fresh hot pepper is purchased in London.

Table 9.5: Fresh Hot Pepper purchase location frequency - London

Rank	Location	Mean Score
1	Supermarket	3.10
2	Green grocer	2.56
3	Retail market	2.06
4	Specialty stores	1.94
5	E-Commerce	1.38

1: never, 2: seldom, 3: often, 4: always

As in the United States, consumers in London primarily purchase fresh hot pepper from the supermarket, followed by the green grocer and retail market in that order. Consumers are least likely to purchase fresh hot pepper from specialty stores and E-commerce sites.

Preference for Country of Origin

Sixty percent of the consumers have no idea in which country the fresh hot pepper they buy originates and 25% have no preference. However, for those London consumers who have a preference, over 37% prefer their hot pepper products, fresh and processed, to originate from the Caribbean.

Nature of Product Preferences

Table 9.6 gives the fresh hot pepper colour preferences for consumers in London.

Table 9.6: Fresh hot pepper colour preferences – London

Colour	Percentage Of Sample Preferring Colour
Green	55.6
Red	59.3
Orange	22.2
Yellow	33.0
Mixed	22.0
Other	3.7

Green and red are the colours of preference for fresh hot pepper consumers in London, with a smaller percentage preferring the yellow fruit. Medium and small-sized hot peppers are preferred over large by a ratio of 5:1. The majority of consumers (63%) prefer their hot peppers to be mild or just hot as opposed to 37% who prefer their hot pepper to be very or extremely hot.

Uses

In London, consumers use fresh hot pepper most often to make homemade sauces and to season meat. Seasoning soups and using as an addition to the finished plate are the next most popular uses followed by other uses. Cooking rice is not an activity for which fresh hot peppers are used.

Relative Importance of Product Attributes

In terms of the attributes that London consumers consider important when buying fresh hot pepper, Table 9.7 shows the mean importance ratings as provided by the respondents.

Table 9.7: Mean Fresh Hot Pepper Attribute Importance Scores for London

Rank	Purchase Attribute	Mean Score
1	Freshness	3.87
2	Appearance	3.48

3	Flavour	3.39
4	Degree of hotness	3.13
5	Colour	2.91
6	Smell	2.88
7	Price	2.75
8	Packaging	2.23

1: not at all important 2: not very 3: somewhat 4: very important

Table 9.7 clearly indicates that London consumers put a premium on freshness and appearance of the fruit as a prerequisite to purchase, followed by such intrinsic attributes as flavour and degree of hotness. Of note is that the price is not considered a critical attribute. The least important attribute is the packaging of the final product.

9.3.2 Hot Sauces

Frequency of Purchase

Of the 59% of the sample surveyed in London who actually buy hot pepper sauce, 41% buy monthly, 35% buy quarterly and 24% buy on a weekly basis. It does not appear as though there are any special occasions or seasons in London when the purchase of hot pepper sauce increases, but further investigative work will be required to ascertain this.

Purchase Location Preferences

The supermarket is the location from which the overwhelming majority of customers purchase hot pepper sauce. From the survey conducted, no other location was recorded as being a significant source of hot pepper sauce.

Brand Selection Influences

Table 9.8 displays the percentages of the sample that indicated the forms of media most critical in influencing hot pepper sauce brand selection in London.

Table 9.8: Media Responsible for Influencing Brand Selection – London

Influencing Medium	Percentage Of Sample Identifying Medium
TV Advertising	11.1
Newspaper Advertising	11.1
Radio Advertising	3.7
Taste Testing/Sampling	25.9
Friend/family	55.6
See Product on Shelf	25.9

The unanimous influencing mechanism for the purchase of a particular brand of hot pepper sauce in London is by word of mouth, through friends and family or maybe tradition. The other significant methods were through sampling and by seeing the product or a particular brand on the shelf. Once again, mainstream media was not significant as a brand selection influence for the consumers in London.

Preferences for Country of Origin

Fifty percent of the consumers surveyed are aware of the country of origin of the hot pepper sauce that they buy, with the Caribbean being the country of choice for hot pepper products generally.

Uses

In London, the most prevalent uses for hot pepper sauce is in the seasoning of meats, followed by homemade sauces and soups, then as an addition to the finished plate.

Nature of Product Preferences

Table 9.9 illustrates the hot pepper sauce colour preferences for consumers in London.

Table 9.9: Percentage of sample indicating preference for hot pepper sauce colour – London

Colour	Percentage Of Sample Indicating Preference
Green	11.0
Red	63.0
Orange	18.5
Yellow	11.0
Mixed	7.4

Consumers in London prefer their hot pepper sauce to be red with indications of a limited preference for pepper sauce that is yellow. They also prefer the hot pepper sauce to be mild (30%); hot (30%) and very hot (26%); as opposed to extremely hot (8%).

Relative Importance of Product Attributes

The ranking of the attributes in terms of importance by hot pepper sauce consumers living in London is given in Table 9.10.

Table 9.10 Ranking of the importance of Hot Pepper sauce

Rank	Attribute
1	Flavour
2	Freshness
3	Smell
4	Price
5	Degree of hotness
6	Appearance
7	Colour
8	Packaging

9.4 Retail Segment

This segment is the closest to the final consumer, where final goods for consumption are exchanged. The total size of the UK food market is in the range of £70-90 billion. Half of this market (50%) is controlled by four supermarkets. The top retail stores account for most (more than 80%) of the food sales in the UK. The largest chains are Tesco (25% of the market), Sainsbury's (18.9%) and Asda Stores (13%). Consequently, the large retail chains are the most significant market.

Most of the multiples let importers and distributors handle international importing. Increasingly however, supermarkets are directly sourcing their food products. There are many agents and brokers in the UK offering varying amounts of trade and consumer marketing expertise, warehousing, and distribution facilities. Many importers have their own distribution network and warehousing facilities, while smaller importers contract out these services. The larger agencies focus on products that have potential for large volume in the multiple supermarkets and backed by substantial market support. Some specialize in solely in independent grocer or food service distribution.

Marketing cost also vary widely. Some agencies require start up fees of between 10,000 to 100,000 Pounds Sterling. Others require commissions only, which are usually between 2.5-10%. Alternatively, some require a fixed fee and switch to commission when a predetermined target level is reached. A full service brokerage rate may range between 17 and 25%.

The wholesale market located in London such as Covent Gardens and Spitalfields and Smithfield in Birmingham are also major outlets for fresh hot pepper. Importer distributors based in these markets are the main buyers of Caribbean fresh hot peppers.

These importers distribute the fresh product to ethnic shops in the United Kingdom particularly in London and Birmingham where the Caribbean population is concentrated.

These ethnic shops also carry a range of Caribbean pepper sauce and are still the main distributor of these products, particularly for the first and to lesser extent second generation West Indians. These shops are however, are increasingly loosing market share to the supermarkets which have increased the range of ethnic foods and are attracting increasing numbers of ethnic shoppers including those from the Caribbean, particularly the third generation West Indians who have less of a tie to the Caribbean.

Marketing costs from the FOB import duty to retail may include some or all of the following: freight (sea/air) costs; insurance costs; import duty; commission or margin to the importer; customs entry and clearance; handling charge to importer; local transport; and mark-up by supermarket retailers (usually between 30-70%).

9.4.1 Fresh Hot Pepper

There are many firms involved in importation of specialty fruits and vegetables in the United Kingdom, but there appears to be only about 6 firms which regularly purchased fresh produce including hot pepper products from the Caribbean region. These involved both small individually or family owned operations as well as large well established firms with global procurement capability. Majority of the imports of hot peppers appears to be still being done by the smaller importer/wholesalers who are based in the major wholesale markets in London and Birmingham such as Covent Gardens, Spitalfields and Smithfield. They supply products to the small ethnic shops. In recent years however, the larger companies which supply the supermarkets have begun to import hot peppers in response to the large supermarkets chains' strategy of increasing the range of fresh and processed ethnic foods that they offer.

The fresh hot pepper varieties found in the major retail chains such as ASDA, Sainsbury's and Waitrose are mostly of Cayenne and Jalapeno varieties particularly large jalapeno types which are reportedly imported from Holland, Spain, Hungary. Over the last 2 years however, Sainsbury's have increased the range of hot pepper varieties and have started carrying Caribbean varieties. Their interest is however focused mostly on the non-hot pimento types grown in the Eastern Caribbean where they reportedly have been seeking to source supplies under contractual arrangements with suppliers in St. Lucia and Grenada.

The Caribbean Scotch Bonnet and West Indies Red varieties continue to be distributed mostly through the ethnic retail shops particularly in London and Birmingham. In these shops the product is normally presented in loosely in wholesale carton boxes which allow consumers to choose the individual products they desire. However, some shops offers the product in individual retail size plastic bags containing 6-10 peppers with prices ranging from £0.30 -£.50 per package. Other pepper observed in the market are listed below:

HOT PEPPER	PRICE
Bird Eye Chillies	£ 0.79/20g
Chillies (mixed)	£ 0.75/50g
Thin Chillies	£ 4.89/kg
Green Chillies	£ 4.39/kg

Author's observation

During the 80's and early 90's the Caribbean dominated the market with significant exports from Trinidad & Tobago, Barbados, St. Lucia and Jamaica. This dominance was due to the fact to a coordinated regional export strategy led by the Caribbean Agricultural Trading Company Ltd. (CATCO) and the several airlines, inclusive of BWIA, British Airways and KLM and many flights per week that service the United Kingdom directly or Via Holland from the Caribbean. This allowed for joint and coordinated production planning, shipping and marketing. With the demise of CATCO, the withdrawal of KLM and British Airways from Trinidad and the significant reduction in the number of flights by both BWIA and British Airways from several Caribbean countries, exports from the region has declined dramatically. During the 1980's and 1990's Trinidad was one of the major exporters of fresh hot pepper to the United

Kingdom, now it exports less than 10 tonnes per annum due to the absence of adequate air freight facilities

Over the last 5 years Uganda has emerged as the major supplier of Caribbean types hot pepper to the United Kingdom and Holland. Uganda in fact exports West Indies red variety which was sourced from the Caribbean and is able to supply at lower prices due to lower labour cost and airfreight rates. The limitation imposed by airfreight availability and high costs have prompted one exporter in St. Lucia to commence the export of fresh hot pepper by sea to Miami. Reports are that the product has been arriving in excellent condition and has resulted in significant improvement in the cost competitiveness of this exporter in the USA market. They are also of the view that with proper post-harvest systems fresh hot pepper can be exported to the United Kingdom Via the banana ships that sail to the United Kingdom on a weekly basis.

9.4.2 Hot Sauces

A study conducted by Fintrac Inc. in 1999 and supported by market visit of the consultants resulted in the following findings:
Sales of hot pepper sauce in the UK market were estimated at £13.2 million in 1996, up from £10.6 million in 1992. Data monitor makes a distinction between an 'ethnic' hot pepper market and a category called 'other'. Ethnic hot sauce is defined by data monitor to include both Tabasco and bean products, as well as chilli, Mexican and Caribbean type sauces.

The breakdown in sales show that growth in these two markets have been incremental over the years 1992-1996, with the estimated sales for 2000 being £7.4 million for the ethnic segment and £15.5 million for the 'other' category.

Private or 'own' label products have the largest market share, which in 1996 was estimated at 39%.

McIllhenny's Tabasco Sauce held a 13% market share and products manufactured by Lee Kum Kee hold a combined 13.5%.

In terms of brands of hot pepper sauce on the market, Safeway and Waitrose, both supermarkets, are producing hot pepper sauce under private labels. These sauces are both chilli sauce rather than West Indian style hot pepper sauce, and are clearly aimed at oriental rather than Caribbean cooking.

Encona, which is an Enco brand name, is the most popular brand catering to Caribbean cooking and stresses its Caribbean origins on the label. Enco produces a variety of sauces, using Scotch Bonnet, Habanero and Jalapeno peppers and even has a product called Encona Banana Hot Sauce.

Jamaican Jerk Sauce is manufactured as a Safeway private brand label;

The most widely available jerk seasoning is manufactured by Schwartz, one of the largest British manufacturers of herbs and spices.

Pride West Indian Hot Pepper Sauce is produced by Pride Oil Products Limited.

Enco Foods Limited distributes a number of jerk and hot sauces under its brand name, although some products are actually produced by Caribbean companies such as King Pepper in Jamaica and Bello’s in Dominica. Some Enco products, however, state that they are manufactured in the UK.

For products actually produced in the region and sold under a Caribbean brand label only Walker's Wood appears to have any widespread visibility, and then only through Sainsbury's and an exclusive distributor Chain purchasers for ethnic foods did indicate that they might be willing to consider food products produced in Jamaica and distributed through known and reputable distributors if there was; (1) a full enough product range (2) advertising to help create a brand image; (3) in-store promotional support

It is currently estimated that overall hot sauce sales will be soon be in excess of £25 million with ‘ethnic hot sauces being in excess of £10 million. The consultants estimates that hot sauces presented as being Caribbean whether or not produced in the Caribbean accounts for about 20 % or £ 2 million.

Hot sauces with brands owned by the major supermarket chains have the largest market share which is estimated at about 40%. The fact that these large supermarket chains which traditionally only place their own brands on products with mass demand underscores the fact that this is a segment in which significant growth is expected to occur.

The size and trend of the growth in the sales of hot sauces in the retail segment and forecast for 2003 is presented below based on data sourced by Fintrac Inc. through Datamonitor and interviews conducted by the consultants.

Table 9.11: UK Retail Sales of Hot Sauces, 1992-1996 and 2000 and 2003 forecast, £ millions

Segment	1992	1993	1994	1995	1996	2000 (forecast)	2003
"Ethnic"	3.0	3.3	3.5	3.6	3.7	7.4	10.00
Other	7.6	8.0	8.6	9.1	9.5	15.5	20.00
Total	10.6	11.3	12.1	12.7	13.2	22.9	25.00

Source:Datamonitor

Table 9.12: UK Brand Market Share of Hot Sauces, 1996, percent

Brand (Manufacturer)	Share (%)
Tabasco Jalapeno (Mcllhenny)	13.0
Chili Bean Sauce (Lee Kum Kee)	5.0
Chili Garlic Sauce (Lee Kum Kee)	4.5
Chili Oil (Lee Kum Kee)	4.0
Private/Own Label (All Combined)	39.0
Other Branded (All Combined)	34.5
Source: Datamonitor	

Over 15 different brands of pepper sauce were observed in the supermarkets.
Retail prices in the UK for hot sauces for the 142-150ml bottles were between 0.62 and 0.89 pounds per bottle

Some hot sauces are imported and some are produced in the UK under private label and own label, fiery foods have not caught on in the UK as much as it has in the USA. The following products that have hot peppers incorporated in them was observed in food multiples in the UK:

- Dips and salsas
- Harissa
- Hot pepper sauces
- Hot fruit chutneys
- Jerk sauces
- Marinades
- Soya sauce
- Chilli sauce

9.4.3 Condiments and Seasoning

A number of dried and wet seasoning containing chili powder and paprika are available throughout the retail trade. The dried product trade is dominated by large firms which source these products from Europe and Asia, with Hungary, Spain and India identified as major suppliers. Two multi-nationals McCormick Inc. of the United States and Burns Phillips & Co. of Australia both with total annuals sales of all food products of over US$ 1 billion, dominates the market for theses pepper based dried spices. These two companies account for over 25% of the market. Other firms such as Fuchs , Ducross CPC are major players. These companies supplied branded products in a range of plastic or glass bottles with various price ranges. Schwartz is also a major brand in the UK, supplies a dried jerk seasoning.

In the case of the retail market for wet-cooking sauces and seasonings, Datamonitor estimated that in 1996 this was about £260 million per annum and projected that by 2001 sales would have been about £388 million. In 1996 Italian sauces accounted for about 45% of total sales, followed by oriental (20%), Indian (15%), traditional (15%) and Mexican (5%).

The sales of Caribbean sauces were considered too small to allow for classification as a specific category in the 1996 Datamonitor survey. However, the company estimated that by 2001 the sales of Caribbean and other wet cooking sauces excluding the main categories listed above would reach about £16 million per annum. It is estimated, based on the projections of Datamonitor, the current shelf space allocated to Caribbean branded products and the exports form the region, that Caribbean branded sauces, seasonings and marinades currently accounts for 30% or about £4.8 million per annum. This includes both products produced in the Caribbean and those produced in the United Kingdom. In 1998 the f.o.b value of Jamaica's export of other sauces (excluding hot pepper sauce) was £ 0.289 million which when converted to retail value is estimated at about £0.75 million. The overall current retail sales of Jerk season is estimated to be about £1 million per annum including those produced in the United Kingdom. This market is however growing rapidly and is believed to hold the most promise especially if positioned as a barbeque seasoning.

The prices for jerk products ranged between £1.25 pounds and £1.79 pounds. The product sizes ranged from 45g to 340g and 180ml for the marinades.

No evidence of organized and sustained promotion of Caribbean sauces or foods was obtained.

9.5 INSTITUTIONAL/ FOOD SERVICE TRADE

The study did not allow for any significant coverage of this segment of the market. Thus estimates of the value and likely share of Caribbean suppliers are not available. However indications are that there is limited but growing usage of hot pepper products in the restaurant trade, particularly in the ethnic segment where there is major growth in the consumption of Indian food, particularly curried food products, which has become a favourite meal not only in restaurants but in most British households. There is also increasing growth in Thai and Caribbean cuisine both of which emphasize hot and spicy foods. It is understood that the European types of hot pepper varieties such as cayenne, Jalapenos, paprika and other long chillies produced in countries such as Spain, Morocco, Bulgaria, Hungary and Yugoslavia dominates the fresh pepper usage in the hotels and restaurants.

The use of pepper sauce as a regular condiment in restaurants has grown significantly with many brands produced in the United Kingdom being utilized through out the segment. A number of restaurants also use their own sauces using pepper from their own ethnic background.

9.6 PROCESSING SEGMENT

Data was not available on this segment of the market. However, reports are that most firms involved in the processing of hot pepper products in the UK are engaged in importing pepper mash and dried whole or ground hot pepper for the production of various types of hot sauces and for a number of dried spicy seasonings. Other companies import finished products in bulk and simply package and market the products under their own brand names. The companies range from small firms to large multi-nationals. For example a relatively small firm such as Encona which producers a range of Caribbean type hot pepper products source both pepper mash form Dominica and finished pepper sauce from Jamaica and market these products under its own label, Enco.

The rapid growth in prepared frozen and dried foods and in fast food chains has also created a major demand for a range of products for flavourings foods. Significant among these are capsaicin extracts and ground hot pepper of various degree of hotness. Many of these are customized individual products are combinations of products produced to the specifications of processors in the meat and snacks industry specifications. These spice manufacturers comprise some of the largest food processing firms such as Unilever Givaduan and Bayer. The ready–to eat foods and the catering sectors are in many cases larger consumers of pepper products than the household consumer market

The consumers represented in this group includes

- Restaurant food buyers
- The ethnic consumer
- The world traveller
- Single income unmarried couples household
- Double income no kids households

The products found in this segment are:

- Pre-packaged ready to eat foods
- Microwavable ethnic meals
- Restaurant meals

10.0 THE CANADIAN MARKET

10.1 MARKET ENTRY REQUIREMENTS

Canada has a number of general requirements for the importation of fresh fruit and vegetables. These rules and regulations are the responsibility of the Canadian Food inspection Agency (CFIA), which is the contact for all regulations on marketing fruit and vegetables, as well as other food products in Canada.

Import requirements for a processed food product tends to be simpler than for fresh fruits and vegetables products (Canadian Food inspection Agency – Canadian Import, Export and Inter-provincial Requirements for identity requirement, prescribe containers, and correct labelling. Processed foods must be sound, wholesome, fit for human consumption, manufactured from sound materials and packed under sanitary conditions. And if all decent requirements are met, an import declaration form in duplicate need only accompany the shipment, it is to be completed by the importer or his representative.

Generally speaking, there are no tariffs on fruit and vegetable products imported from Commonwealth Caribbean countries (Canada Customs and Revenue Agency – Customs Tariff Schedule 2003). This tariff covers both beneficiary countries.

To qualify for the zero tariffs, goods must be shipped directly from the Commonwealth Caribbean countries to Canada.

Plant protection requirements (Canadian Food Inspection Agency) are concerned with some types of imported fresh fruits and vegetables, particularly root crops from some countries, which require a phytosanitary certificate or a permit to import. This primarily concerns potatoes, but any product involving soil particles can be restricted. In some cases the products may simply be refused entry into Canada until a past risk assessment has been completed.

10.2 NATURE AND SIZE OF THE MARKET

10.2.1 Characteristic of the Ethnic Food Market

The sale of ethnic food is in excess of 250 million. Chinese food has the largest market with sales in excess of 90 million. The Mexican/Tex-Mex is the second largest market with 95 million in sales. This is followed by the Japanese market with 10 million in sales, Cajun with 8 million in sales, Middle Eastern; 6million, South Asian; 5 million, and the Caribbean; 2 million.

According to 1993 AC Nielsen statistics, ethnic food sales (excluding Italian) topped C$200 million in 1993, up over ten percent from a year earlier. Chinese food items were the largest seller (678 items with sales of C$87 million), followed by Mexican/Tex-Mex (528 items and sales of C$92 million), Japanese (37 items, C$8 million), Cajun (35 items, C$7 million), Middle Eastern (33 items, C$5 million), South Asian (72 items, C$4.8 million), and Caribbean (29 items, C$1.2 million).

These outdated statistics, the only ones available, probably greatly understate the value of the ethnic food market in Canada, as they do not cover all retail outlets but chiefly the larger supermarket chains. Smaller independents and especially ethnic groceries are undercounted. From all indications, the ethnic food market has shown considerable growth during the last decade

While the above statistics look at the ethnic food sales in the Canadian market, the following statistics show the import of hot pepper products in United States dollars into Canada over a five-year period.

The imports of oleoresins have been increasing at an increasing rate indicating the demand for industrial inputs while the demand for dried, crushed hot pepper has been increasing at a slow rate and even fell in 2001.

Table 10.1 Canada Import Statistics

HS CODE	1997	1998	1999	2000	2001
0709.60	33,514,994	35,592,016	37,969,695	46,424,465	50,890,827
0904.20	6,370,993	6,034,341	6,897,373	7,029,706	6,534,226
2103.90	47,658,779	51,727,520	65,512,138	66,095,992	68,761,274
3302.10	69,896,324	67,876,858	84,734,168	101,161,723	113, 150,806

Source: Statistics Canada

The imports of the fresh fruit and sauces have been steadily increasing over the time span.

10.2.3 West Indian Population Demographics

Based on 1996 census in Canada there are 306,425 people of Caribbean origins residing there, broken down as follows:

Table 10.2 Caribbean Demography in Canada

PROVINCE	NUMBER OF WEST INDIAN
Canada	305,290
Newfoundland	50
Prince Edward Island	40
Nova Scotia	705
New Brunswick	340
Total	305,425

The main provinces with West Indian immigrant population are Ontario and Quebec with more 65% and 28% of the West Indian Population respectively.

Toronto has the largest population of West Indian immigrants which numbers in excess of 200,000.

10.3 CONSUMER DEMAND

10.3.1 Fresh Hot Pepper

Variety Familiarity and Preferences

More than 60% of the respondents from Toronto purchase fresh hot pepper. Of the four varieties specifically referred to, Jalapenos are by far the most familiar variety followed by West Indian Red, Scotch Bonnet and Habanero. Table 10.3 following illustrates the magnitudes by which the varieties are familiar to the Toronto respondents. Portuguese Red Hot was another variety frequently mentioned.

Table 10.3: Familiarity with Hot Pepper Varieties – Toronto

Variety	Percentage Of Sample Familiar With Variety
Jalapeno	67.9
West Indian Red	37.7
Scotch Bonnet	32.1
Habanero	30.2

Frequency of Purchase

Most (37%) consumers purchase fresh hot pepper monthly with 28% buying quarterly, and 22% buying weekly. The data collected suggests that the consumption of fresh hot pepper increase notably during special occasions, such as Christmas, anniversaries and other special occasions.

Purchase Location Preferences

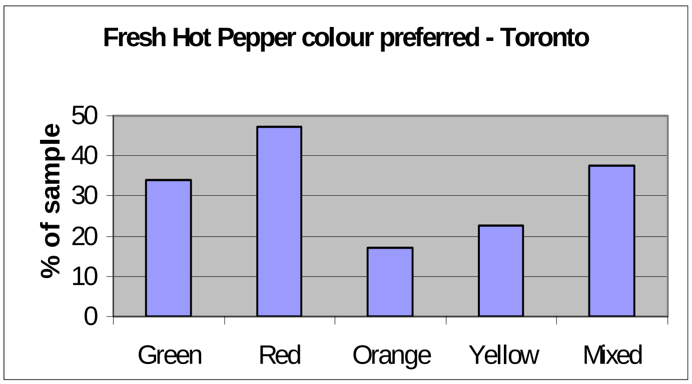
Like the other international markets investigated in this study, supermarkets are the most popular location from which to purchase fresh hot pepper. Unlike the other markets, however, the specialty store is the next most popular location for purchase of fresh hot pepper, followed by the green grocery and retail market. E-commerce purchasing is the least popular mechanism for obtaining fresh hot pepper.

Preference for Country of Origin

There is an even distribution between consumers who know where the fresh hot pepper they are buying originates from and those who do not. For the 50% who have a preference for an area of origin, an overwhelming 78% prefer hot pepper products to originate from the Caribbean.

Nature of Product Preferences

Figure 10.1 below shows the colour preferences for fresh hot pepper in Toronto



Red is the clear colour of preference followed by mixed colours. Green follows closely behind and in turn is followed by yellow and orange in that order.
More than 88% of the consumers in Toronto prefer to buy fresh hot pepper, either medium or small with small sized peppers being marginally more popular.
Table 10.4 below shows the degree of hotness preferences for fresh hot pepper consumers in Toronto.

Table 10.4: Degree of Hotness Preferences for Fresh Hot Pepper Consumers – Toronto

Degree Of Hotness	Percentage Of Sample
Extremely Hot	18
Very Hot	29
Hot	27
Mild	26
Total	100

Consumers in Toronto differ slightly from consumers in the other markets investigated in that there is an equal distribution of consumers who prefer their fresh hot pepper to be very hot, hot and mild. Extremely hot though, is still the least preferred degree of hotness.

10.3.2 Hot sauces

Frequency of Purchase

Of the 74% of the sample surveyed in Toronto that buy hot pepper sauce, 33% buy monthly, 33% buy quarterly, 21% buy yearly and 13% buy on a weekly basis. The survey instrument as designed failed to capture the particular special occasions in the Canadian environment in which pepper sauce use increases, but there is positive indication that there are special occasions, apart from Christmas, in which the volume consumed increases.

Preferences for Country of Origin

The Caribbean is the area of origin most preferred for the purchase of hot pepper products, even though 50% of the sample have no idea where the hot pepper sauce they buy originates.

Purchase Location Preferences

The supermarket is the location that consumers in Toronto are most likely to purchase hot pepper sauce from, and there are indications that specialty stores are also popular.

Brand Selection Influences

The principal influencing forces in determining which brand is bought is shown in Table 10.5 and remains as follows: word of mouth through friends and family, by curiosity aroused from seeing the brand on the shelf and via in-store sampling. Once again, the mainstream media plays little or no role as an influencing force in determining pepper sauce brand selection.

Table 10.5 Media Responsible for Influencing Brand Selection – Toronto

Influencing Method	Percentage Of Sample Identifying Mechanism
Television ads	1.9
Newspaper/Magazine ads	5.7
Radio ads	0.0
In-store Sampling	24.5
Friend/Family	45.3
Saw on Shelf	28.3

Uses

In Toronto, customers use hot pepper sauce predominantly to season meat before cooking, as an ingredient in homemade sauces, in the seasoning of soups and adding to the finished plate.

Nature of Product Preferences

The majority of consumers prefer their hot pepper sauce to be red, with a few identifying yellow and mixed as colours of preference.

Relative Importance of Product Attributes

As in the other cities, flavour and degree of hotness are the most important attributes affecting purchase decision. The other important purchase attributes include freshness and smell in descending order. In the Toronto market, price is not a key attribute in the purchase decision when compared to the other attributes. The least important attributes are packaging, colour, price and appearance.

10.4 RETAIL SEGMENT

The characteristics of retail distribution in Canada are similar to that of the US. It consists of manufacturers, brokers, distributors, wholesalers, retail chains, groups and independent operators.

The local sales agent is quite often the broker who markets the product to the distributors, chains, wholesalers and the food service trade. The food broker prefers to have exclusive rights to market the product and concentrates sales in a specific market.
Many foreign firms use wholesalers/distributors to distribute their product to retail and food service organizations. This allows them to take advantage of regional and or national networks developed by the companies.

In Canada as in the US major chain stores dominate the retail sales. A list of the major distributors and chains can be had from the Canadian Grocer magazine. A directory of brokers is available from the Canadian Food Brokers Association and a list of its members is available on line at Kostusch Publications Limited which also publishes a directory of food brokers and distributors.

Two companies (Loblaw and Sobey's) account for about 50% of the C$54 billion market. Both are strong in Toronto while Loblaw is strong in Quebec while Sobey's is based in Nova Scotia.
Ontario has the largest portion (32%) of the grocery sales in Canada valued at approximately C$20 billion. Chain stores account for more than 60% of all sales. The numbers of chain supermarkets continue to grow and are now close to 600. The number of group independents is decreasing. There are now just over 900 after being in excess of 1000.

The most important requirement for retailers carrying manufacturer products is the distribution requirements. Retailers depend on their distributors for planograms and primary setups. Most retailers require the supplier to perform the functions of shipping and delivery. Many of them require daily direct store delivery. Some of the smaller ones (retailers) function via UPS, brokers, and delivery to their warehouses.
The variety of products found in Toronto is much less than that available in the US metropolitan market.

10.4.1 Fresh Hot Pepper

The fresh hot pepper market in Canada cannot be quantified as Canadian import statistics does not capture hot pepper data separately. However discussions with importers have provided the following information of the fresh market segment.

The per capita consumption of hot peppers is very small compared to the United States.
The demand in the main stream Caucasian market primarily for the Capsicum annun types of hot peppers such as cayenne and Jalapeno which are produced in United States and Mexico.

There is no significant domestic production of hot peppers. Imports of hot pepper products are mainly of dried whole and ground hot pepper particularly Cayenne and paprika

The import of fresh hot pepper for the ethnic market is growing very significantly and the habanero market is dominated with supplies from the Caribbean mainly from Jamaica and Trinidad and Tobago.

It is estimated that the Caribbean supplies about 1000-1200 x 4-5 Kgs boxes per week to the ethnic market segment in Toronto and Montreal.

The hot peppers from the Caribbean are distributed mainly among the ethnic shops scattered throughout the City of Toronto and Montreal, though the small supermarkets in highly populated ethnic areas also carry Caribbean hot peppers.

These ethnic shops serve a range of ethnic groups including Caribbean, African, Asians, Indians and Hispanics.

Wholesale prices for fresh Caribbean hot pepper averaged Cnd$ 35 per 4 or 5 Kg box. Prices are fairly stable year round and tend to change mainly in response to the availability of supplies rather than to seasonal variability.

10.4.2 Hot Sauces

Chilli sauce is the only hot sauce for which import data was available and is estimated at more than C$2 million. The US is the major exporter accounting for approximately 80% of the Canadian imports. The most common hot sauces available were Pickapeppa, Gouda, Matouk's, Tan-tos, Walker's Wood, Cholula, Frank's, Mclhenny Tabasco and Louisiana. There is great varability in the origin, type, size and price of hot sauces observed in supermarkets and ethnic shops visited by the consultant. Examples of some of the different brand and sizes and the accompanying prices are presented in the table below.

Table 10.6 Examples of different brands and sizes of Hot Sauces

WEST INDIAN STORES	
Mr. Stewart's Pepper Sauce 150 ml	$2.99
Grace Pepper Sauce 170 ml	
Pickapeppa 148 ml	$2.69
Busha jerk sauce for 4-oz	
Windmill Pepper Sauce	$3.99
Matouk Pepper Sauce	$4.99
Grace Pepper Sauce 85 ml	$0.99
Pickapeppa	$4.99
SUPERMARKETS	
Sharwood's Madras Hot Sauce 395 ml (has a variety of different hot sauce at same price and size	$4.49
Grace Hot Pepper Sauce 170 ml 85 ml	$1.59 $0.89
Tobasco Green Pepper Sauce 57 ml	$2.89
Hot Bone Suckin Sauce 16 oz 454g	$8.99
Dan T's White Hot Cayenne Pepper Sauce 237 ml	$3.99
NuPak Pepper Sauce 6oz 170.4 ml	$1.39
Cajun Sunshine Hot Pepper Sauce 147 ml	$2.99
Macarico Hot Sauce 200 g	$2.29
Frank's Red Hot Sauce 148 ml 354 ml	$2.99 $3.79
Caribbean Hot Pepper per 100 g	$1.99
Tabasco 57ml	$3.29
Don T's hot Sauce 237 ml	$3.99
Mr. Goudas Trinidad Style Hot Sauce 285 ml	$3.19
Mr. Goudas Barbados Style Hot Sauce 285 ml	$2.65
Mr. Goudas Pepper Sauce 168 ml	$1.79
Louisana Hot Sauce 85 ml 177 ml	$1.29 $2.99

10.4.3 Seasonings and Condiments

Data on the imports of pepper based seasoning and condiments were not available. However the visits made by the consultants indicated the Caribbean ethnic shops carried a limited amount of dried seasoning containing ground cayenne pepper and or paprika.

In terms of Caribbean products the most common seasoning observed in the trade was wet jerk seasoning particularly Jamaican brands such as Walker's Wood, Grace and Busha Brown. No dry jerk seasoning was observed and jerk barbeque sauce was in very limited supplies.

Table 10.7 Examples of Prices of Different Jerk Seasonings

PRODUCT	PRICE
Grace Jerk Seasoning 312g	$3.99
Tradewinds Kitchen Jerk Seasoning 375 ml	$4.99
Walkerswood Jerk Seasoning 280 g	$4.99
Mr. Stewart's Jerk Seasoning 237 ml	$2.99
Wonder Church Jerk Seasoning 375ml	$4.99

11.0 COMPETITOR ANALYSIS

11.1 UNITED STATES

Hot pepper is one of the fastest growing specialty food product in the USA with demand moving from the confines of the Southwest to being a regular food item in mainstream household across America.

Over 2000 US farms produce a wide variety of hot peppers in greater volumes than regular products such as celery and honey-dew melons.

In the US the vast majority of production is of the Capsicum annum sp., 75% of which is of mild varieties such as Jalapeno and 25% of the hotter varieties such as Cayenne.

The main seasons for planting is March with harvesting of the green pepper in August – September, and of the red peppers in November – December.

Most production is grown under contract to processors with the mild varieties grown for the fresh market and the hotter varieties for processing. Generally Jalapeno accounts for 58% and Cayenne for about 30%. In New Mexico alone there are over 50 processors, the top ten of whom handles most of the processing.

Development support is obtained from private industry associations consisting of growers and processors. Processors collects cess US$0.50 per ton of green chile and $1.00 per ton of red pepper to finance industry development activities such as research carried out on behalf of the growers by University of New Mexico and Texas Agricultural Experiment Station.

Production cost based on chilli peppers produced in California in 1996 with average yield of 12,000 lbs per acre are reported to average US$0.61 per pound for the variable and US$0.65 for a total cost. Farm gate price over the period 1990-2000 averaged US$ 1.06/kg.

The United States has the most diversified hot pepper industry producing a range of hot pepper, dried whole and ground pepper, mash, pepper sauce, pepper extracts which are used in a wide range of value-added food, pharmaceuticals and other industries.

The industry is geographically diverse with production occurring in 42 States with a total production of approximately 35,000 acres. The major producing areas are New Mexico producing 60% on over 300 farms all of which is irrigated; Texas 6000 acres with average farm size of approximately 30 acres, California 5000 acres with average farm size approximately 29 acres) and Florida 1000 acres with average farm sale US$100,000. Florida and New Jersey produces habanero varieties which competes with Caribbean suppliers

About 35% of the US hot pepper industry demand is met from imports which currently averages 36000 tonnes per annum.

1. Mexico supplies over 90% of the fresh pepper imports (Jalapeno, Serrano, Anaheim) Mexico is also the main source of chilli pepper spices. Other major suppliers include Pakistan with 16% ; 11% from India; 9% from China; and 9% from Spain

About 4% of total US chilli pepper supply is exported.

13. The following table obtained from Fiery Food website, available at 'www.fieryfoods.com' provides an estimate of the value of the US Hot Pepper Industry:

The Financial Size of the Fiery Foods Industry US$ Millions

Grower Level

Chile Pepper Research 2.5

Fresh and dried, all varieties

New Mexico 38.6

Texas 3.2

California 13.0

Arizona 6.0

Louisiana 5.0

Seed and seedlings 1.5

Imported

Anaheim and ancho...1.8

Other...10.8

Ground...1.4

Paprika...8.5

Paprika Oleoresin..11.4

Exported

Red Pepper.. 5.0

Total, Grower Level...96.3

Manufacturer Level Products Containing Chile Peppers, Wholesale Prices

Canned Chiles

Canned/green/ chile...9.0

Canned jalapeños...120.0

Frozen Green Chile

New Mexico 3.0

Dried Red Chile

Red chile powders..27.0

Paprika...38.0

Spices

Chile seasonings ……..30.0

Curry powder …..1.4

Pickled Peppers

All varieties, U.S. …..100.0

Imported …..10.0

Hot Sauces and Salsas

Louisiana-type...69.0

Oriental 11.8

Chili 17.0

Mexican-type 410.8

Barbecue, hot 37.9

Imported hot sauces 6.9

Canned Food

Mexican 375.0

Frozen Foods

Mexican 249.9

Mustards

Chile, domestic 2.3

Non-Food Items

Publications...1.0

Other non-food items...3.0

Miscellaneous
Includes snack foods and candies,
chile oils, chutneys, and liquors 10.0

Total, Manufacturer Level...1,614.0
Total, Fiery Foods Industry...1,710.3

11.2 MEXICO

Hot pepper represents 5% of national agricultural production about 70,000 hectares are currently planted yielding some 1.5 million tonnes per annum.

Fresh hot pepper exports in 2000 were US$17.5 million and 14,818 tonnes. About 80% is exported during December to May, 90% going to the US and smaller quantities to Canada, Germany, Spain, Sweden, Japan and Hong Kong.

Very diversified production over 10 different commercial varieties 80% of which is grown under irrigation and 90% in pure stand. 40% of the total production is grown for drying. Habanero which is the main variety grown in the Caribbean is a very small part of the Mexican industry and is grown mainly in the Yucaton area. However, due to increase in export demand increased focus is being placed on this variety for export.

Farmers or organised in groups or co-operatives based on geographic area or types of hot peppers. 30% of national production is done by wealthy agricultural industrialist, 50%by medium sized producers and about 20% by traditional small farmers. Although pepper is available year round 60% is produced in the Spring - Summer and 40% in Autumn- Winter.

Habanero is a small part of the industry but is now being focused on and is seen as a major growth area.

Well organised post harvest system especially by the larger producers and processors.

Marketing is well organised with extensive contracting of production by processors and the existence of well organised local and regional marketers and commission agents. Some processors have backward linkages into production.

There large numbers of processors but the industry is dominated by six (6) large diversified agro-processing firms including multinational companies, who are able to spread their overheads across many products and have very strong production and marketing capability. The processing sector has been growing at 4-10% annually.

The industry produces a wide range of processed products including dried whole and ground pepper, hot sauces, canned peppers mixed or unmixed with other products, pepper mash, pepper paste and essential oils.

Data on cost of production was not available but farm gate price for the main varieties averages US$0.44 per kg. which may be a reflection of the price paid to farmers for managing the crop with inputs supplied by contractors.

The distribution of margin in the industry is reported to be farmers 37%, wholesalers 10% and retailers 53% of the total market value.

Institutional support is provided by the government in the form of technical advice on production processing. Agricultural banks provide loans for both long term and short term investment and for working capital. Subsidised inputs were provided up until 1999 under the National Agricultural Support Programme of the Secretary of Agriculture.

The industry has made major advantages in terms of its proximity to the USA, its Free Trade Agreement with USA and Canada and other Trade Agreements with Central and South America which allow for preferential market entry.

11.3 COSTA RICA

Hot pepper was introduced in Costa Rica as a diversification crop primarily as a replacement crop for small coffee producers. The crop represents a very small part of the agricultural economy with production between 1997 and 2001 ranging between 104 and 240 hectares per year total production of between 1000 and 2000 tonnes per annum. Data for 2001 suggests that the value of mash was US$282,287 and sauce US$11 million.

Hot pepper production in Costa Rica is well organised. The industry revolves around farmer groups undertaking production processing under contractual arrangements with agro-processing firms. The processors obtain low cost loans from the Government's Development Bank and unlend to farmers at 8% interest rate. In many cases the processors provide the farmers with all the inputs inclusive of seeds, fertilizers and irrigation equipment as well as with technical advice in all areas of production. Farmers essentially act as managers of the farm operation whilst the processors provide financing and business management. Some processors have begun to assist the farmers to establish facilities for processing of pepper mash on behalf of processors.

Governments also provide technical assistance in the form of production advice. Additionally farmers have access to national crop Insurance Programme, which carries a premium of 8-8.5% of the price of the crop and protects farmers against natural disasters. Furthermore, farmers are beneficiaries of a national Social Security, Medical, Disability, and Retirement Programme.

Approximately 10 to15% of domestic production is exported as fresh pepper. Of this about 75% is exported to Guatemala, 8% to Canada, 6% to Honduras and 3% to US and Nicaragua. The table below shows exports over the period 1998-2001:

Table 10.1 Costa Rica: Annual Fresh Hot Pepper Exports

Year	Variety	Weight in Tonnes	FOB Value	Cost per Kg
1998	Jalapeno	189	215	1.14
	Tabasco	0.6	0.08	0.12
	Total	190	215.	1.13
1999	Jalapeno	156	164	1.05
	Tabasco	0.2	0.06	0.28
	Total	156	164	1.05
2000	Jalapeno	124	117	0.94
	Tabasco	23	105	4.47
	Total	148	222	1.50
2001	Jalapeno	121	120	0.99
	Tabasco	11	12	1.12
	Total	132	132	1.00

Source: SIM/CNP using Customs data

85% of the pepper is utilized in the production of processed pepper particularly pepper sauce. Costa Rica has positioned itself as a major producer of private labeled pepper sauce for overseas marketing companies. There are six (6) major processing companies that drives the industry. They identify overseas importers primarily in the US who are interested in contracting the production of their branded pepper products and promote themselves as being able to offer competitive prices, certified quality and the ability to formulate, based on buyers specification. A major strategy is that of collecting pepper products, particularly pepper sauce globally as a basis for developing new and competing formulations for offer to existing and potential clients. For example, they have collected samples of pepper sauce produced in almost all Caribbean countries and have indicated their capability to supply Jamaican, Trinidadian and Barbadian types of pepper sauce. As a consequence a significant segment of the Caribbean Hot Sauce market is being supplied by Costa Rica often through US based importers of Caribbean origin. One leading processor has indicated their ability to offer over 300 pepper products in the following categories:

- Crushed Pepper Hot Sauce
- Caribbean Style Hot Sauces
- Tropical Food based Hot Sauces
- Mustard Based Hot Sauces
- Peppers in Brine
- Dried Specialty Products
- Taylor made gourmet hot sauces
- Hot pepper liquid sauce
- Meat and Barbeque hot sauces
- Hot Soy Sauce
- Chutneys
- Hot Pepper Based Chunky Salsa
- Hot Pepper Based Seasonings
- Hot Marianades

Processors also emphasize their competitiveness based on cheap packaging materials particularly bottles and their ability to provide the highest quality design and printing of labels as well as the ability to guarantee supplies through maintenance of high inventory levels. In 2000 exports of hot sauce exports was about US$ 11 Million.

Domestic consumption also constitute a small part of production as hot pepper is not an important part of the Costa Rica diet except in the Caribbean Coastal area of the country and this forced the country to concentrate mainly on exports.

Main varieties grown are Habanero, Jalapeno, Tabasco, Cayenne and Panama. Costa Rica emphasizes its ability to produce a wider range of pepper varieties given its very fertile lands and wide range of micro climates and the technical capacity to choose production areas based on the precise agronomic needs of various varieties. For example, greater focus is being placed on Habanero variety because of the growing demand for hot pepper sauce and pepper mash made from this variety and production is being located in the Caribbean region where the climate is considered most suitable. On the other hand Tabasco variety is grown in other areas deemed to be more conducive.

The plant and provide production and post harvest technology. Farm labour 8 – 8.5% of cost of the crop.

Some processing plants provide seeds and irrigation input.

Cost of production excluding labour;

Jalapeno	US$0.60/kg
Habanero, Cayenne	US$0.40/kg
Tabasco	US$0.50/kg

The cost of harvesting labour is given as follows;

Harvesting labour tabasco	US$0.23/kg
Jalapeno, Habanero, Cayenne	US$0.06/kg

Production volume of the 6 major growing areas for the following years shown below

1997	1337 tonnes
1998	1285 tonnes
1999	1204 tonnes
2000	1687 tonnes
2001	1670 tonnes

12. A significant component of Costa Rica's competitiveness is derived from its relatively low labour cost due to migrant Nicaraguan labour. Farmers generally receive a payment of US$0.40 to US$0.45 per kilo which reflects their cost of managing the pepper crop given that the inputs are often paid for by the processors.

12.0 OPINIONS OF MARKETING INTERMEDIARIES

The ever increasing demand for more healthy food products means food with less salt, sugar and fat all of which are products that enhance flavour. In order to replace the flavour loss as a result of this trend consumers are demanding more spicy products and hot pepper is one of the major spices being used.

The demand for ethnic food is increasing and Caribbean cuisine is among the major growth area, due to reputation of being healthy and flavourful.

Caribbean food products have crossed over into the main stream market and hot pepper products such as sauces and jerk seasoning are leading the demand in this segment.

The tourist industry provides a driving force for Caribbean cuisine as people who travel to the Caribbean goes back to their countries with a taste for these foods and they want to make them at home themselves.

Attention from mainstream companies also confirms the growth of the Caribbean food industry. One such company is McCormick, which began producing a jerk seasoning about two years ago, and another is McIlhenny, which, over the last year, has introduced a Caribbean Style Steak Sauce and a habanero hot sauce with a definite Caribbean twist.

Immigration is another reason for increased Caribbean familiarity. The April 1993 edition of the Packaged Facts report on the condiments market states that almost half of all immigrants to the United States between 1981 and 1990 came from Mexico, South or Central America or the Caribbean. There are now large Caribbean communities introducing their native cuisine to people in trendsetting areas such as New York.

Habanero sauce blended with tropical fruits such as mango, banana, tamarind and papaya are exciting new products that should be developed for the mainstream market.

Although there is a significant market segment for hot sauces and seasoning the bigger demand is for mild highly flavourful products.

Making a breakthrough into the mainstream market will require a lot of preparation, significant investment, possibly some recipe and packaging modifications, the ability to produce in large volumes, and most of all, patience.

A large number of mainstream restaurants are adding Caribbean dishes to their menu. This is supported by a report by Food Trends '96 which found that 14 percent of surveyed restaurateurs and other foodservice managers added Caribbean dishes to their menus in 1995, making it the third most popular ethnic addition behind Italian and Mexican/Tex-Mex. Additionally, the same study found that 11 percent of surveyed restaurateurs and foodservice managers planned to add Caribbean items to their menus in 1996. This ties Caribbean with Italian for the most popular planned ethnic menu addition.

Caribbean culture particularly its music complements its food and helps drive the demand for hot and spicy Caribbean products.

Manufacturers must get their distributors to agree to do in-store promotions such as tasting, demonstrations, cooking classes, prize give-aways, and coupons.

Caribbean producers must work together to promote their products and to obtain access to the large supermarkets.

It is best to enter the market through established distributors as many grocery store chains will only buy through a distributor. Dealing through a distributor of require reducing prices but it’s the less difficult route.

It will require an investment of about $US50,000 to undertake the costs associated with getting a new product introduced in the mass market and it takes 3-5 years for a product to become established and for the investment to really begin to pay off.

Packaging must be given high priority, be of the highest quality in terms of eye appeal, carry information on "best by dates" method of use, recipes and should always carry a Caribbean image.

When introducing new products and entering new markets products such as sauces should be packaged in 5-6 ozs containers, to encourage new users to try the product. As the market becomes familiar with the product larger sizes should be introduced.

To meet food safety requirements products should be supported by a product liability insurance of US$1-2 million.

For fresh hot peppers products high quality and reliability of supplies are of critical importance and Caribbean suppliers continue to have problems in this regard.
The new food safety regulations and product traceability requirements will make it more difficult for small suppliers to meet the market requirements especially of the mainstream market.

SECTION THREE

SWOT ANALYSIS AND STRATEGIC PLAN

Following the market and competitor analysis CPEC/CEDA and CARDI agreed to support the conduct of a regional strategic planning workshop as another step in the development of the industry. This workshop was held on the 26-28th November 2003 in Trinidad & Tobago and involved 52 participants from Antigua, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Lucia, St. Vincent & the Grenadines and Trinidad & Tobago, United States and Holland. These participants included producers, exporters, processors, importers, researchers and policy makers.

The findings of the market studies and national industry assessments conducted by CARDI, country papers presented by country representatives and market conditions presented by the buyers from United States and Holland provided the basis for the analysis of the regional hot pepper industry. A strategic planning consultant then facilitated discussions on the industry and the development of a strategic plan and the establishment of a Regional Industry Development Committee (RIDC) and the process for an industry development plan. The SWOT analysis that guided the strategy, the components of the strategic plan, the membership of the RIDC and the process for the preparation of the industry plan are presented below

13.0 SWOT ANALYSIS

13.1 STRENGTHS

Production

Variable cost of production in the CARICOM ranges form US$ 0.15-35/lb compared to the United States which reportedly averages about US$ 0.60/1b.for cayenne peppers with yield of about 12000/lbs per acre. Variable cost of production in Mexico and Costa

Rica were not available but farmers in both countries are paid about US$ 0.20-0.22/lb for habanero, but this price appears to exclude some or all of the cost of the inputs which are often provided by the companies that contract the farmers. The information available suggest that CARICOM is more cost competitive than its competitors in the production of habanero peppers, due to the high productivity of the West Indian Red.

Average yield of 25,000 kgs./hectare in the Caribbean for habanero grown under the "best practice" recommendations, appears to be 150% to 200% greater than yields being obtained by our competitors, which averages, 12-15000 lbs per acre.

The production of hot peppers in nearly all CARICOM countries provide the region with a supply risk advantage, in that member countries can substitute for each other in the case of major disruption to supplies in one or more countries due to natural disasters.

There are wide ranges of micro-climate between and within countries and given hot peppers sensitivity to micro-climate the region is well placed to produce a range of cultivars of habanero products.

The capability of the University of the West Indies and the work it has already begun in bio-technology with respect to genetic engineering and extraction of volatiles and oleoresins.

The production research capability of Caribbean Agricultural and Research and Development Institute (CARDI) and a number Ministries of Agriculture.

Regional hot pepper indigenous genetic resources that have been collected and stored by CARDI and the University of the West Indies.

The recognition by the stakeholders in the industry of the need for organisation of the industry and the commitment from the regional development organisations to support this, coupled with the action by some countries, such as a Belize, to organise their industry and expand product range.

Marketing

Close proximity to the large and growing USA market resulting in low freight costs for most countries and freight cost comparable to Costa Rica.

Excellent airfreight connection with North America and Europe places many CARICOM countries in a similar position to Costa Rica and Mexico in respect of the Eastern Board of the USA market and in a more advantageous position in respect of the European market.

The number of marketing companies based in Miami which are owned by CARICOM nationals and their willingness to give priority to the Caribbean in the sourcing of hot pepper products.

The Caribbean's reputation of producing peppers products of superior flavour, aroma, hotness and the general acceptance of the market that the Caribbean is the market leader in the habanero segment of the pepper market.

The recognition the region has gained from the cross-over to the non-ethnic market of pepper based products such as jerk seasoning and Pickapepper sauces and collateral benefits from products such as the Angostura bitters.

The long relationship that the Region has with major importers and supermarket chains in Europe through the supply of banana.

The distribution network in member countries which allow for hot pepper processed products to reach even deep rural areas.

The high level of domestic/regional consumption and the demand base that this and tourists population provide for regional production.

The preference of people of Caribbean origin for Caribbean pepper products.

The capacity of the Caribbean Export Development Agency and of the Caribbean Agri-business Marketing Intelligence Network (CAMID) to facilitate joint action by producers and marketers in the region.

Processing

The large numbers of firms with experience in the processing of hot peppers.

The 6 firms that are currently in the process of putting in place HACCP quality systems.

The product development capacity of the University of the West Indies, CARIRI and the Scientific Research Council in Jamaica.

The availability of financial resources from international development agencies for investment in developmental activities and the availability of low cost commercial funding available in Trinidad and Tobago.

13.2 WEAKNESSES

Production

The absence of specific national policies in most countries for the development of the industry.

Diseconomies of scale base on the small size farms, averaging ½ acre, compared to the much larger farms in the USA (average 30 acres) and Mexico where the large and medium size companies are responsible for over 70% of production.

Low level of mechanisation of land preparation estimated to be less than 50% in CARICOM compared to 100% in the USA and over 80% in Mexico.

Extremely low level of irrigated production, estimated at 25%, compared to estimated 90% in USA, 70% in Mexico and over 60 % in Costa Rica.

Limited product range, with Chinense being the only commercial species grown and only two major varieties of this species. This compared to the production of the 5 commercial species and 10 major varieties in Mexico, 3 species and several varieties in the United States, and 2 species and three varieties in Costa Rica.

Significant pest and disease problems in some countries, particularly in Jamaica, and significantly less research capacity than those of our competitor to respond to these threats.

The absence of farmers' organization that would allow for co-ordinated production and collaboration in obtaining inputs and technical assistance at a lower cost. This is unlike the situation in the competing countries of Mexico, USA, and Costa Rica where there are strong farmers associations and co-operatives.

The absence of crop insurance to reduce the risk of natural disasters unlike the case in United States and Costa Rica. In these competing countries the risk is also shared between the farmers and the processing companies that contract the farmers and provide production inputs.

Marketing

The fact that the products produced in the Caribbean are largely confined to the Caribbean ethnic market.

The inability of individual companies to provide the financial resources to effectively promote their products in the domestic and export markets.

Limited ownership by Caribbean nationals of the distribution system in New York in and in the United Kingdom and Canada.

The absence of effective systems in place to provide current and accurate marketing intelligence, trouble shooting and marketing development support to the industry.

Processing

1. Product range and innovation is limited to low technology products such as sauces and seasonings, whereas competing countries are into value added products based on dried products and pepper extracts for the pharmaceutical and other industries.

Low level of mechanisation of processing operations resulting in higher costs and lower extrinsic product quality.

Weak quality control systems in most processing facilities with only about six of the many plants, having are or putting HACCP systems in place.

Poorly designed plants leading to inefficient operations and increased cost.

Limited product range and thus higher market risks and higher unit overhead costs.

Low level of training of food plant staff in many plants.

Limited range of packaging material, particularly bottles, and difficulty in sourcing supplies.

13.3 Opportunities

Marketing
Growth in demand for hot and spicy pepper products regionally and internationally and growth in demand for Caribbean foods in particular.

Preference of consumers of Caribbean origin for Caribbean pepper products

Specific growth in demand for habanero peppers in which the Caribbean is still a market leader.

Interest expressed by U.K. supermarket chains Safeway and Sainsbury in purchasing Caribbean seasoning pepper.

Unsatisfied demand for Caribbean hot pepper by existing importers in all extra-regional markets.

Unutilised airspace to Europe and Miami particularly on the chartered airlines that brings tourist from Europe to the Caribbean and space available on DHL Courier cargo planes to all markets.

USA Bio-terrorism legislation that requires all fresh produce to be labelled with country of origin for retail sales, which would allow for easy recognition of products of Caribbean origin and provides a means for exposing competing companies which seek to position themselves as being of Caribbean origin.

Interest of Dutch importer in obtaining Cayenne peppers from the Caribbean and the indications based on experience in Trinidad that this species and its varieties can be achieve high productivity in the region.

The fresh weight equivalent of 5000 tonnes of pepper that the region can produced to replace the imported dried pepper and paprika and the potential to impose higher tariffs on these imported products to facilitate their production by Caribbean producers.

Potential to significantly increase yields by investing in irrigation and thereby expanding the Caribbean advantage in the productivity of habanero peppers.

Scotch Bonnet and West Indian Red are well established in the minds of regional consumers, but there is good opportunity for introducing other types of products such as Jalapeno and Cayenne.

The potential to segment the export and regional markets based on degree of hotness and colour and to produce products targeted on these segments.

Opportunity for Caribbean processors to produce the authentic products on behalf of the many overseas companies that are carrying products that are positioned as being of Caribbean origin. This could be done through the supply of final products or through the production of intermediary products. This should be the preferred strategy for small and medium size companies which will not have the financial resources to support slotting fees, liability insurance and promotional expenses. At least two Caribbean companies, one in Jamaica and the other in Dominica, have implemented this strategy,

The level of penetration and frequency of use of hot peppers in the market in the UK and Canada is quite low and therefore the scope for increasing sales should be quite high.

Since consumers who have used the product have the greatest influence in getting new consumers to try the product, marketers must ensure that product sampling and consumer evaluation are major parts of a marketing strategy. Funds should not be spent on mass-market media until in-store sampling and direct marketing promotional strategies have been exploited.

The opportunity for increasing household penetration appears good as purchasing frequency in all the export markets is low and could perhaps be increased by decreasing the unit size of each package. For example, McIlhenny's Tabasco 2oz package is their leading export package size.

Freshness and flavour are the major attributes of importance to consumers. Research work should seek to determine both the extrinsic and intrinsic factors that affect perceptions of freshness, flavour and degree of hotness of the product as a matter of priority, and incorporate these findings into product development and promotional efforts.

Importers in the United States are now indicating a definite preference for large green thick pericarp peppers and some Caribbean cultivar meet this requirement.

Fresh hot pepper is not widely distributed in the smaller supermarkets and shops in both urban and rural areas in the Caribbean. In the case of the supermarkets this is apparently due to absence of cool storage facilities. Pepper sauce and wet pepper based seasonings are not as widely distributed in the rural areas as other non-perishable products though there are distribution systems in place.

The institutional segment provides significant and growing opportunity for the use of fresh hot pepper, but greater opportunity lies in the market for the non-hot pimento variety, for dried ground pepper and for hot and spicy barbeque seasonings such as Jerk seasonings.

There are opportunities to increase consumption during the major holidays by undertaking specific promotional activities in the Caribbean and the United States.

Promotion of the Caribbean origin of fresh hot pepper will add value to the Caribbean products and increase consumer loyalty and purchase.

The opportunity to develop and market a range of non-food pepper products for the souvenirs and gift market.

Processing

The market for dried ground pepper and pepper extracts provides significant opportunities for regional producers.

The potential to provide the market with a range of hot versions of nearly all food products such as beverages, snacks, meats, soups etc.

The range and magnitude of different uses could justify formulating different products for different segments based on use. For example, the hot sauce for seasoning meat could perhaps have a higher amount of seasoning ingredients relative to the amount of hot pepper whilst that for making homemade sauce could be manufactured with a higher percentage of hot peppers or from peppers with a high level of hotness.

13.4 THREATS

Production

The USA investment in research to develop mechanical harvesters and considerable success already achieved in mechanical harvesting of ripe peppers for processing. This could significantly reduce their cost.

The plan by Mexico and Costa Rica to expand their production of Habanero and the highly organised nature of the industries in these countries compared to the disorganised nature in most countries.

The frequency of drought or floods reducing yields and supplies and further eroding the Caribbean capacity to be reliable suppliers.

The requirement for farmers to put in place and maintain production records in compliance with the traceability systems for the export market as well as the domestic and regional tourism markets.

Processing

The inadequate capacity of countries to carry out pesticide residue tests.

The many firms that are not HACCP certified.

The need to put traceability systems in place.

Marketing

The difficulty of putting in place traceability system for Europe and the United States particularly with respect to the US Bio-Terrorism Legislation and the US$10,000.00 fine that exporters face for lack of compliance.

The reputation of Costa Rica and Mexico as reliable suppliers and their commitment to capture increasing share of the Habanero market segment in which the Caribbean is recognised as a leader.

The household use of hot pepper sauce in the region is quite high. Opportunity for increasing household sales appears to lie in suppliers' ability to increase usage per household rather than through greater penetration in terms of number of households.

Regional trade in hot pepper products could be constrained by strong consumer expression of preference for products from their own countries.

Suppliers must get into the supermarket retail channel if they are to reach regional consumers effectively and many supermarkets are reluctant to take on new brands.

The Jalapeno variety clearly dominates the consciousness of the consumers in the cross over market. The names of Caribbean varieties are generally known only to people of Caribbean origin and only to a limited extent. It is clear that marketers of the varieties other than Jalapeno have a tremendous amount of promotional work to do if they are to penetrate the wider non-ethnic market.

Many importers, wholesalers and retailers in the export market do not know the difference between different Caribbean varieties and other types of Habanero and wrongly identify the products. In some cases the intermediaries know the difference but seek to pass off non-Caribbean varieties as being Caribbean to enhance sales. This is doing significant damage to the reputation of the Caribbean product and to the advantage the Caribbean has in terms of aroma and pungency.

Distribution strategy needs to include supermarket and green grocers if suppliers are to reach a significant percentage of the market in the region and extra-region and penetration of these segments have become quite difficult with the range of financial and quality criteria that has to be met, by suppliers. The rapidly growing demand of supermarkets for their own brand of any product that has a large demand further makes it difficult for new suppliers to gain entry into the supermarket channel.

The level of awareness of Scotch Bonnet is low in both markets, therefore the need for major promotional activity is evident, and funds would likely have to be derived firstly, from development agencies.

The low prices of other varieties such as Cayenne, Jalapeno, may exclude Caribbean suppliers from entering these segments. A study of this needs to done, commencing with production cost trials.

14.0 STRATEGIC PLAN

14.1 Role of The Hot Pepper Association

The Caribbean Hot Pepper Association shall be responsible for leading the development of the industry in the region through;

Support for collaborative action among all stakeholders
Support for the development of National Pepper Associations
Facilitation of industry analysis and planning
Facilitation of the preparation and implementation of Industry Development Plans
Facilitation of the development and implementation of appropriate policies and programs
Sourcing and managing developmental financing
Facilitation of information generation and dissemination

14.2 Membership

The Caribbean (regional) association shall be comprised of national pepper associations, regional institutions and extra-regional buyers of Caribbean pepper products. Individuals, firms and associations in each country will be required to be members of their national associations.

14.3 Vision

A highly viable, flexible, and sustainable Caribbean pepper industry characterized by the extensive use of regional pepper germplasm in the production and global marketing of high quality fresh and processed pepper products driven by committed and motivated stakeholders.

14.4 Mission Statement

To promote and coordinate the sustainable development of the Caribbean pepper industry through collaborative advocacy, policy development, planning and execution of research, production and marketing of high quality fresh and processed peppers products of regional origin in local, regional and extra regional markets.

14.5 Goal

To increase the traded value of pepper products of Caribbean origin by 50% over the estimated 2002 value.

14.6 Objectives

Germplasm Development

To collect, characterize and catalogue the indigenous germplasm of the Caribbean region.

To design and implement appropriate policies and systems for efficient maintenance and intra-regional transfer of the regional pepper germplasm.

To design and implement appropriate systems for the economic and sustainable utilization of regional pepper germplasm.

Technology Development & Transfer

To develop and/or adapt, and effectively transfer, appropriate technologies to increase productivity and quality of peppers in the region.

Processing

To facilitate improved competitiveness of pepper processors through upgrading of manufacturing operations, rationalization and differentiation of primary and secondary processing activities, and introduction of new innovative pepper products.

Marketing

To expand local, regional and extra-regional market opportunities for fresh and processed pepper products of regional origin.

14.7 PRODUCT FOCUS

The association shall provide support for the production and marketing of;

Primary products

Caribbean chinense

Cayenne

Secondary products

Mash, whole Dried, Ground (powder)

Tertiary products

Pepper sauce, Jerk Seasoning, Pepper Jelly, Pepper Wine, pepper extracts.

National associations will be encouraged to develop their indigenous products so as to facilitate product differentiation and product diversity across the region.

14.8. PRODUCT POSITIONING

The Association will work with the national members to define a clear positioning of the regional industry which will be consistent with the positioning of individual countries.

14.9 TARGET MARKETS

The association will encourage its members to target;

All segments in the regional market

The 'ethnic Caribbean market' in North America and Europe.

The high end of the main stream market in Europe, North America and Japan

The global gift market

14.10 PROCUREMENT STRATEGY

The association will encourage and facilitate;

Contract production of primary products

Joint procurement of high quality packaging and other raw materials

Joint procurement of technical services,

Identification and procurement of "state of the arts" equipment,

Sourcing of low cost financing.

14.11 PRODUCTION STRATEGY

The association will facilitate;

The registration and certification of hot pepper growers based on the utilization of Good Agricultural Practices (GAP)

The increased utilization of irrigation

Increased use of IMP technology

The implementation of HACCP quality systems in processing facilities.

Establishment of appropriate quality regulations and product standards

Establishment of appropriate supplier record keeping systems

14.12 DISTRIBUTION AND SALES STRATEGY

The association will facilitate,

The evaluation of importers and distributors.

The establishment of a certification mark for use by members which will provide assurance that minimum standards are met.

Joint marketing under a common Caribbean brand

Access to an e-commerce facility for 'gift' marketing

Pricing Strategy

The association will facilitate the provision of information to allow for transparency in costing and pricing throughout the production and marketing chain and will encourage collaborative pricing among regional fresh hot pepper exporters.

14.13 PROMOTIONAL STRATEGY

The association will facilitate the promotion of a Caribbean brand and the increased utilization of Caribbean pepper products in the domestic, regional and extra-regional market, using the full range of promotional tools.

Research Development & Technology Transfer

The Association, based on the needs of the membership will facilitate the identification, prioritisation and implementation of the research, development and technology transfer needs at all levels of the regional industry.

14.14 INFORMATION & COMMUNICATION

The Association will facilitate access to an integrated information system inclusive of;

A marketing and production database
A supply and demand forecast database
A transportation database
These will be capable of providing timely and reliable planning and trading information to stakeholders throughout the industry.

14.17 EDUCATION & TRAINING

The Association will facilitate the training and capacity strengthening of stakeholders at all levels of the industry to enhance international competitiveness.

14.18 POLICY STRATEGY

The Association will aggressively advocate and lobby for the development and implementation of policy measures that will support the sustainability of the industry.

14.19 INSTITUTIONAL ARRANGEMENTS

A Steering Committee will be established which will lead the Association until it is officially launched and officers are elected based on the Association's Constitution.
During this interim period CARDI will house and act as the Secretariat of the Association.

14.20 FINANCING STRATEGY

The Association will fund this development programme through the following strategies:

(i) Membership fees
(ii)Commercial Promotional Events
(iii) Source funding from developmental agencies
(iv) Contribution from Governments
(v) Partnering with agencies with similar objectives (in kind, contributions)
(vi) Sale of non-food promotional items based on pepper
(vii) Service charge on imports & exports of pepper products
(viii) Production and marketing of seed

14.21 THE REGIONAL INDUSTRY DEVELOPMENT COMMITTEE

The following persons were selected to form the Regional Industry Development Committee (RIDC)

Farmer -Soeren Hofdahl
Processor -Erica Mc Intosh
Fresh Pepper Exporter – Rita Symes-Hilton
Marketing - Vassel Stewart
Technology Development & Transfer-- UWI, CARDI
Production - Marcus Mycoo

Processing - IICA (Ena Harvey)

Financing - CABFI (Caribbean Association of Banks and Financing Institutions) and CARICOM

Vassel Stewart was also selected as Chairman of the Committee.

The workshop also defined the Terms of Reference of the Committee as outlined below;

Preparation of draft constitution of the Association

Establish or reactivate National Industry Development Committee (NIDC)

Facilitate the identification of priority national projects

Coordinate the preparation of project profiles by the NIDCs

Coordinate the preparation of the industry development plan

Plan and execute the launch of the association for the 30th March 2004

14.22 PROCESS FOR THE PREPARATION OF THE INDUSTRY DEVELOPMENT PLAN

Establish or reactivate the National Industry Development Committee

Circulate the various industry studies and the strategic plan to the members of the National Industry Development Committee (NIDC) and the Regional Industry Development Committee (RIDC)

Selection of the areas for priority attention in each country by the NIDCs.

Preparation of project profiles by the NIDCs based on the areas for priority attention.

Selection of priority regional projects based on national priorities.

Preparation of Draft Regional Development plan consisting of regional projects involving or benefiting several countries and national projects involving or benefiting individual countries.

Circulation of the draft regional plan to the NIDC

Finalisation of the plan by the RIDC based on NIDC feed back.

Presentation of the plan at the official launch of the Regional Pepper Industry Association in March 2004.

APPENDICES

APPENDIX I: TAXONOMY, ANATOMY AND CHEMICAL CHARACTERISTICS OF CAPSICUM

Kingdom: Plantae

Division: Magnoliophyte

Class: Magnoliopside

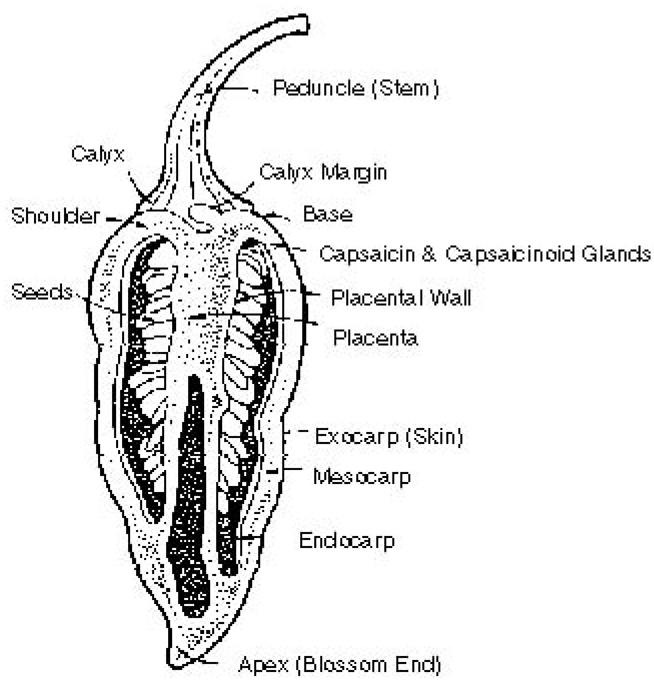
Order: Solanales

Family: Solanaceae

Genus: Capsicum

Capsicum consists of 38% pericarp, 2% inner sheath, 56% seeds, and 4% stalks. The property that separates the Capsicum family from other plant groups and the quintessence of the chilli pepper is an alkaloid called Capsaicin (kap-sa-i-sin), an unusually powerful and pungent crystalline substance found in no other plant. Capsaicin is the source of pungency and heat in Capsicums.

Diagram showing the anatomy of a capsicum



Capsaicin is a colourless, crystalline, bitter compound present in capsicum [Previously referred to as capsicine]. It has a molecular weight of 305.46. Capsaicin has a Melting Point of 65ºC, Boiling Point of 81ºC, Vapour Pressure of 40 and a Vapour Density of 1.59 (Air=1). The range in capsaicin content in the pericarp of an average capsicum is about 0.17% to 0.58% and the inner sheath is 6.6% to 7.7%; color is concentrated mostly in the pericarp. Chilli seeds contain 19% oil with 0.024% capsaicin content. The percentage of capsaicin in the capsicum plant depends on the species, geographical origin and the climatic conditions.

Glands at the juncture of the placenta and the pod wall produce capsaicin. The capsaicin spreads unevenly throughout the inside of the pod and is concentrated mostly in the placental tissue. The seeds are not sources of heat, as commonly believed. From one Kg. of cayenne pepper for example, approximately 2.13 g. of crude capsaicin can be isolated, which is about 20 times the amount found in paprika.

APPENDIX II: EXAMPLES OF HOT PEPPER SPECIES

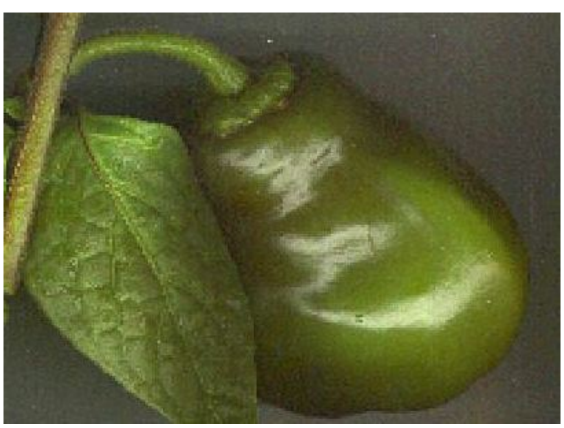
Capsicum Annuum

Capsicum Baccatum

Capsicum Chinense

Capsicum Frutescens

Capsicum Pubescens



APPENDIX III: MARKET ENTRY REQUIREMENTS FOR HOT PEPPERS

Quality Criteria

Hot peppers should be fresh, bright, large, firm, of the color required by the importer, intact green stems and free from breakdown, shriveling, softening and darkening of the stems.

POST-HARVEST HANDLING SYSTEM

Hot peppers may be stored for four to fourteen days depending on the growing conditions and the utilization of the correct post-harvest handling techniques.

Harvesting

Hot peppers are harvested by removing them from the branch and ensuring that the stem remains intact and attached to the fruit. Only hot peppers attaining the required color and size should be harvested and over-ripe soft fruit removed from the tree and out graded. During harvesting, fruit can be placed directly into plastic field crates or into smaller buckets which are then transferred to field crates at the side of the field. Alternatively, cotton waist bags can be used to collect the peppers which are then transferred to field crates. All crates and produce should be kept in shaded conditions, protected from sun, wind and rain.

Harvesting is preferred during the early part of the day; harvesting during or Just after rain is not recommended as wet conditions enhance the breakdown of the pepper fruit.

When transporting from the field to the packing facilities, plastic field crates are required. Transport in sacks or mesh bags result in mechanical damage.

Export Grading and Packing

Hot peppers should not be washed, as water on the surface will accelerate breakdown; debris or soil is removed by gentle rubbing. No post-harvest treatments are used to prolong the storage life or to prevent collapse and breakdown. Hot peppers are graded by hand either on a moving conveyor or a standard grading table. Conveyor operation is more rapid than standard tables; experienced graders should line the conveyor to remove reject fruits and allow the acceptable fruits to continue to fill directly into cartons. All fruits showing signs of mechanical or insect damage, disease, undersized or softening should be rejected at this point. The fruits are loose packed with no separate size grading, assuming that all peppers attain the minimum size specifications. Net weights are dependent on the market and the importer, varying from 3 to 8 kg (7 to 18 lbs). Hot peppers are packed into cartons according to importer requirements. This is based on colour as follows:

1. Only red peppers
2. Mixture of red, green and yellow (may be together or separated in the same carton
3. Only green

Where no cool storage facilities are available, peppers should be graded, packed and exported within 24 hours of harvesting. Even with cool storage facilities at 12øC, to ensure high quality on arrival, export is preferred within 48 hours of harvest. This is particularly apparent with peppers from certain growing areas which exhibit short storage and shelf-lives. Pre-cooling prior to shipment is advisable, particularly during the summer months where ambient temperatures in importing countries are high and will accelerate fruit softening.

Packaging

Hot peppers can be packed in full- or half-telescopic two-piece fiberboard cartons. If the larger carton is used ("banana" type), a central divider should be included. Burstink strength 200 to 250 lb/in2. Where staples are used in carton construction, care should be taken to ensure complete staple closure to prevent fruit damage.

Carton internal dimensions:

1. 20 by 51 by 34 cm (7.9" by 20" by 13.4")
2. 16 by 37.7 by 27.9 cm (6.3" by 14.6" by 11")

Transportation

Hot peppers should be exported by air transport, preferably the day after harvest. Air-craft pallets are preferred to enclosed containers due to the build-up of temperature and gases. When transferred from low temperature conditions prior to shipment, four to five hours is required prior to loading to prevent the build-up of moisture from condensation which will occur in enclosed conditions when the temperature is increased. Sea-shipment of hot peppers Is possible with relatively short shipment times (maximum 14 days between harvest and arrival in the market), but it should be noted that peppers from different growing regions show varying storage capacities. Where sea-shipment is possible, temperatures of 12ø to 13øC are required.

POTENTIAL POST-HARVEST LOSSES

Mechanical Damage

Peppers are susceptible to mechanical damage particularly if transported in sacks or bags. Mechanically damaged peppers, shown by cracks, splits and punctures, will deteriorate rapidly.

Physical Factors

Contact with moisture, which remains on the pepper when packed, will cause rapid breakdown. Harvesting during rain is to be avoided. Storage and quality is also affected by seasonal factors related to the weather conditions; low quality and poor storage are shown during the periods June to November.

Pathological Factors

Infection from micro-organisms generally occurs as secondary infection after the fruit has commenced breakdown and collapsed as a result of over-ripening and softening.

Variety

1. Scotch Bonnet

Characteristics

1. Red, yellow or green velour with greens stem, glossy, characteristic bonnet shape.

Size

1. Minimum diameter: 2.5 cm (1")

    Condition

    1. Free from soil and debris
    2. No over-ripe or softening fruit
    3. Free from microbial infection or insect infestation
    4. No mechanical damage, splitting or cracking

5. Stems intact and green

Market Requirements

1. All markets show reduced demand for hot pepper during June to November as a result of competing European produce and reduced quality.

2. Small cartons with a mixture of red, green and yellow at a ratio of 60:20:20.

Handling in Importing Countries

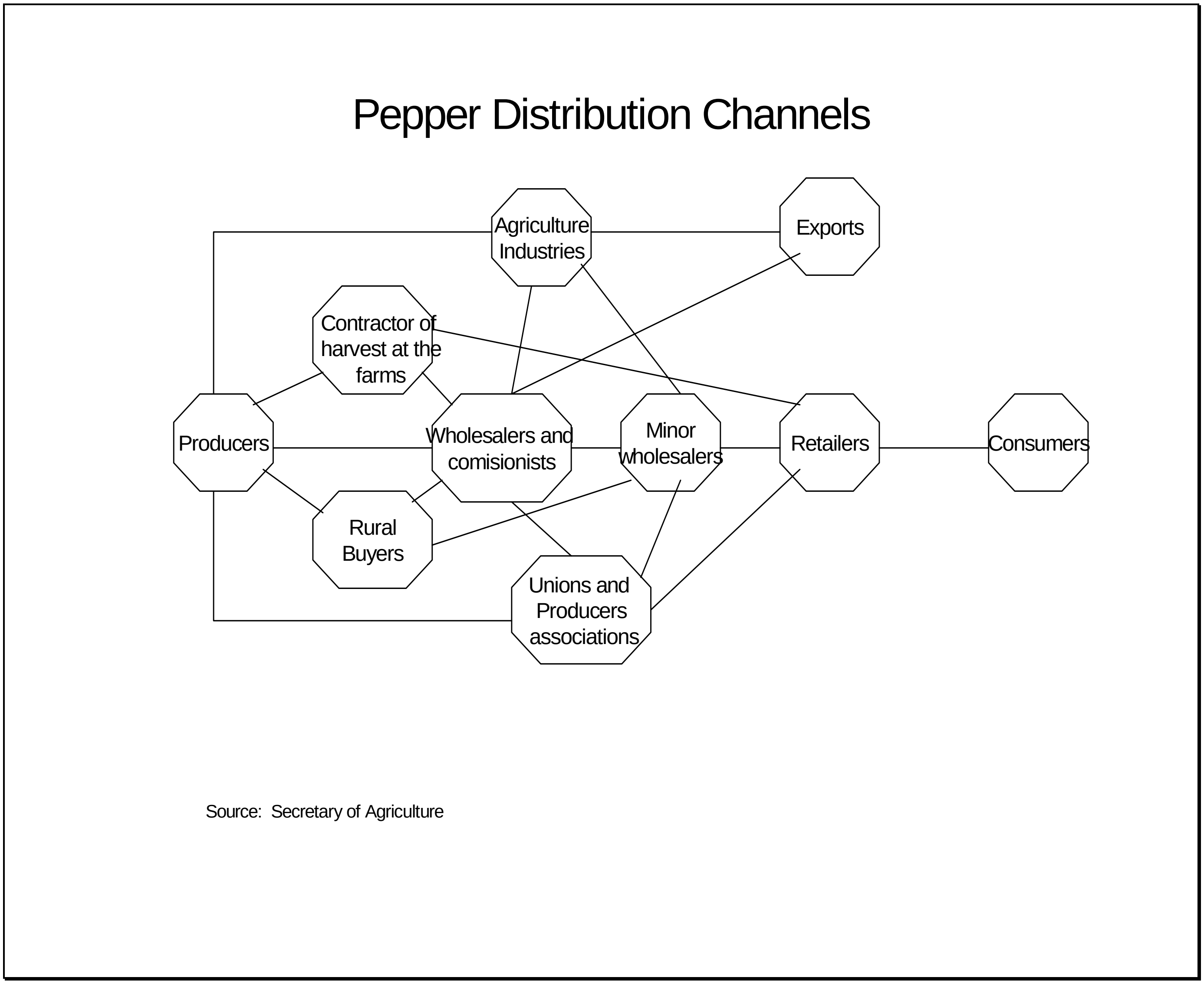
1. For maximum marketing period, hot peppers should be stored at 10ø to 12øC; exposure to low or high temperatures in importing countries will lead to rapid quality loss. Decaying hot peppers produce significant amounts of ethylene, which may enhance ripening and decay in other products; storage with ethylene sensitive products should therefore be avoided.

Adapted from Product Specification and Post-harvest Handling for Fruits, Vegetables and Root Crops Export from the Caribbean by Dr. A.P.Medlicott

APPENDIX IV: REGIONS PRODUCING HOT PEPPERS

Appendix V: Hot Pepper Home Décor

REGIONS	COUNTRIES
Africa	Algeria, Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Madagascar, Mali, Niger, South Africa, Sudan, Tunisia, Zimbabwe, Ecuador, Mauritius, Nigeria
East Asia	China, Bhutan, Cook Islands, Fiji Islands, French Polynesia, Indonesia, Japan, Dem People's Rep Korea, Republic of Korea, Philippines, Thailand
South Asia	India, Maldives, Nepal, Sri Lanka,
Caribbean	Antigua & Barbuda, Barbados, Belize, Dominica, Dominican Republic, Jamaica, St. Kitts & Nevis, Montserrat St. Vincent & the Grenadines and Trinidad & Tobago, Cuba
Europe	Austria, Belgium, France, Greece, Guadeloupe, Hungary, Ireland, Italy, Netherlands, Portugal, Spain, United Kingdom
Latin America	Argentina, Chile, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Panama, Uruguay, Venezuela, Rep of Bolivia, Colombia, Bolivia, Honduras, Paraguay, Peru
North America	Canada, Puerto Rico, United States of America
Middle East	Bahrain, Cyprus, Egypt,, Iran, Rep of Islamic, Iraq, Israel, Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Qatar, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen
Eastern Europe	Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Macedonia, the Federal Republic of Yugoslavia, Romania, Slovakia
Oceania	Australia, New Zealand
Commonwealth of Independent States	Republic of Azerbaijan, Kazakhstan, Republic of Moldova, Ukraine, Uzbekistan,


Pepper Distribution Channels
Agriculture Industries
Exports
Contractor of harvest at the farms
Producers
Wholesalers and comisionists
Minor wholesalers
Retailers
Consumers
Rural Buyers
Unions and Producers associations
Source: Secretary of Agriculture

APPENDIX: VI: LIST OF PARTICIPANTS TO THE REGIONAL HOT PEPPER STRATEGIC PLANNING WORKSHOP.

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