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# **AGRICULTURAL MARKETING IMPROVEMENT STRATEGIES PROJECT**

Under contract to the Agency for International Development, Bureau for Science and Technology, Office of Rural Development  
Project Office 4800 Montgomery Lane, Suite 600, Bethesda, MD 20814 • Telephone: (301) 913-0500 • Telex: 312636

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## **The Export Market Potential for Selected Bolivian Agroindustrial Products**

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Submitted to:

U.S. Agency for International Development

La Paz, Bolivia

by:

The Agricultural Marketing Improvement Strategies Project

(AMIS)

Aidan Gulliver

January 1991

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## LIST OF ACRONYMS

ALADI	Latin American Association of Economic Integration
AMIS	Agricultural Marketing Improvement Strategies Project
ASEAN	Association of South-East Asian Nations
ASTA	American Spice Trade Association
CF	Cost and Freight
CIF	Cost, Insurance and Freight
EBDC	Ethyl Bromide Dichlorides
FAO	Food and Agriculture Organization of the United Nations
GSP	General, System of Preference
IQF	Individually Quick Frozen
ITC	International Trade Center
LDDC	Less Developed Developing Country
MITI	Japanese Ministry of Trade and Industry
NES	Not Elsewhere Specified
PDAC	Cochabamba Alternative Development Program
PNCTF	Processed Non-Citrus Tropical Fruits
RSA	Republic of South Africa
USAID	United States Agency for International Development
USDA/ERS	U.S. Department of Agriculture, Economic Research Service

## **EXECUTIVE SUMMARY**

### **Introduction**

The Chapare region of the Department of Cochabamba in Bolivia, a humid tropical zone in the foothills of the Andes mountains, is one of the world's principal production zones for coca, the precursor to cocaine. Since the 1960s, the United States Agency for International Development (USAID) has been cooperating with the Government of Bolivia in efforts to find alternative sources of income and employment for the inhabitants of this region. In 1987 these efforts were extended to include the High Valleys zone of the same Department, an arid and poor area that is believed to provide the majority of the population inflow to the Chapare.

As part of this program of assistance, the USAID Mission to Bolivia in La Paz decided in late 1989 to contract the services of the Agricultural Marketing Improvement Strategies (AMIS) project to identify and develop new potentials for agroindustrial exports from these two areas. The AMIS project, centrally supported by the Science and Technology Bureau of USAID in Washington, offers market related services to USAID missions worldwide.

The AMIS assignment consisted of three key elements:

1. An assessment (Rapid Appraisal) of the existing agroindustrial marketing system within Bolivia to identify potentials and constraints to the expansion of marketing activities, particularly in the export sector. This activity is described in the Report 'Bolivia Agroindustrial Marketing System Study' AMIS, October 1990.
2. A review of potential markets for Bolivian agroindustrial products in domestic and export markets. The domestic study has been undertaken independently under joint agreement with the Cochabamba Alternative Development Program (PDAC) and is expected shortly. The export element of the study is the subject of this report.
3. The development of contacts with United States agribusiness firms to determine their potential interest in joint-venture opportunities within the Bolivian agroindustrial sector. Those firms responding positively have been invited to visit Bolivia and enter discussions with Bolivian representatives of producers, processors and exporters. The report on the results of this section of the assignment is currently in preparation.

### **Export Market Study Outline**

The export market study undertaken by AMIS as the second element of their contract with USAID Bolivia consisted of the following tasks:

- The identification of potential Bolivian agroindustrial export commodities and commodity groups.
- The selection of target markets for testing at both the regional and international levels.

- The commissioning of field studies in each target market, involving statistical data collection, interviews with traders and the determination of potential interest in Bolivian products.
- The analysis and synthesis of data collected.

### Product Selection

Drawing upon those products identified under the previous phase of the assignment (see 'Bolivia Agroindustrial Marketing Systems Study'), as well as existing constraints within the Bolivian marketing system, the study team determined characteristics deemed essential for potential export commodities. These included (a) proven or likely agronomic suitability to Bolivian conditions, (b) a high value-to-weight ratio to minimise the impact of the absence of a maritime coastline (c) a 'fit' to global trends in demand for agroindustrial products (d) a probable comparative advantage or at least equality with respect to competing producers, including high use of labour, low usage of sophisticated machinery, probability of bulk markets and short production life-cycle.

Based upon these criteria, the team selected the following product groups as displaying the most potential for export creation within the Bolivian agroindustrial sector:

- **Non-citrus tropical fruits**, including carambola, cherimoya, mango, naranjilla, papaya, passion fruit, prickly pear, soursop and tumbo. For regional markets pineapple was also included.
- **Herbs and Spices**, including allspice, anise, capsicum spp. (chile, paprika etc.), cardamom, coriander, cumin, garlic, ginger, oregano, pepper and turmeric.
- **Essential Oils and Colorants**, including annatto, citronella, cochineal, eucalyptus, lemongrass, menthol and spearmint.
- **Other commodities** which do not fit within a specific group, including dried tomatoes, animal feed ingredients and olive oil.

### Market Selection

The intention of the study was to examine market potentials in two key areas; neighbouring countries and industrialized countries. Selection of the specific targets within each of these zones was achieved through a review of (a) production patterns in target countries (b) importance of the country as an importer, and (c) likelihood of trade relations establishment with Bolivia. The countries selected were:

- **Argentina & Chile:** Temperate, not tropical, agricultural production, relatively wealthy, established transport links.
- **United States of America:** A key world importer and a major trading partner for Bolivia.

- **Germany:** Major European importer of tropical products, no colonial connections (unlike U.K. or France), large wealthy population.
- **Japan:** Dominant Asian market, wealthy population, increasing trade links to Latin America.

### The Market for Non-Citrus Tropical Fruits

A number of reasonable potentials appear to exist for the export of Processed Non-Citrus Tropical Fruits (PNCTFs) from Bolivia. Regionally, there appears to be good opportunities for canned pineapple in the Argentinean market, although no growth is expected in the near future. In Chile pineapple is also in demand, but better opportunities probably exist for passion fruit and other exotic pulps for use in drinks and dairy products (yogurts, ice creams etc.). A number of Chilean companies expressed their strong interest in discussing Bolivian supplies in more detail.

Internationally, the U.S.A. clearly offers the best opportunities in both overall market size and the diversity of imports handled. Here, key constraints to Bolivian entry arise from entrenched competition from other Latin American and, to a lesser extent, Asian, suppliers. It would seem best for Bolivian exporters to concentrate on the less well known tropical fruits in this market (e.g. soursop), although the development of completely unknown products (such as naranjilla) may be difficult at first. There are a number of North American firms actively looking for reliable alternative sources of tropical fruit products, and these opportunities can be pursued further.

Germany also offers potential, although here the market appears more conservative, and passion fruit, guava and mango may be the best products for initiating Bolivian exports. To offset this limited range of demand, however, German firms appeared amongst the most eager to establish long-term trading operations, including possibly investment in Bolivia. The more exotic items are apparently handled in Europe largely by specialist Swiss trading firms, and the development of links with German importers could create opportunities for sales of other products to Swiss traders as well.

Japan offers little hope at present unless an exporter is looking for sales marginal to his/her principal business. Even were processed tropical fruit a growing market in Japan (which it appears not to be at the moment), competition from other Asian suppliers (e.g. Thailand, Philippines) would be extremely difficult to overcome.

The field studies also revealed that the choice of processing and packaging is important. Canned fruits of any form or type are diminishing in popularity -- a trend that extends far beyond the fruit segment of the food market. The only exception noted to this is the Argentine market for pineapple, which still appears to be predominantly in canned form. Frozen product has largely taken over in the last decade as the form of preference for processed fruit in industrialized countries, although there are now indications that aseptically packed product is likely to surge in popularity in the 1990s. This trend is supported by the decrease in aseptic packaging costs, the ability to discard the expensive and difficult cold-chain, and the view of aseptic packing as more 'natural' than any other. Dried fruit continues to maintain a steady market. Other forms of processing, including flours, leathers and candied fruits, have their niches but are likely to continue as minor markets (not that this need discourage exporters from Bolivia who are unlikely to move significant quantities in the foreseeable future).

The scarcity and cost of packaging materials in Bolivia strongly suggests the advisability of bulk, rather than retail, packaging. Fortunately, trends in the international processed fruit trade seem to support this option. While some of the international agribusiness firms are moving more and more of their operations off-shore, and packaging for retail in producing countries, there appears to be a growing demand for processed fruit as an ingredient in further processing. This market demands cheaply packaged (but high quality) material in bulk, almost always either frozen or aseptic.

Finally, increasingly strict legislation, as well as consumer demand, is placing a higher and higher importance upon 'organic' product. Although this includes absence of contamination from inorganic sources such as stones and dirt, its principle focus is upon the exclusion of agricultural chemicals such as pesticides. Bolivian firms seriously interested in export development must give close attention to this area. Those exporters able to demonstrate that their product has been grown without any chemical additives at all (perhaps even including chemical fertilizers) may be able to obtain a significant premium.

### The Market for Herbs and Spices

Several characteristics of the herb and spice market make it an attractive one for Bolivia. The product has a generally high value to weight ratio, is only marginally perishable, and requires no complex processing equipment, as the exported product is typically only dried and cleaned. (It should be noted, however, that according to at least one Japanese buyer, air dried product is not acceptable under health regulations).

The greatest opportunities worldwide exist within the market for pepper, specifically black pepper. World trade in this product in 1987 totalled nearly US\$750 million dollars (almost 150,000MT), with no single exporter holding more than a 20% share (FAO Yearbook of Trade, 1987). Pepper prices tend to be extremely cyclical, with the most recent high occurring in 1986-88, and the market now facing a severe downturn. This aspect would require care for Bolivian producers and exporters entering the system, as the commencement of exports in the low portion of a cycle might destroy producers' confidence in the crop and result in failure of the export program. The U.S.A., Germany and Japan are all large importers, but Bolivia might be best served by initially targeting the regional market in Argentina and Chile. Together these two markets are valued at nearly US\$2 million per annum, sufficient to support a new export industry in Bolivia.

Good possibilities may also exist for cumin exports. This crop is already in production in the High Valleys (and in the Mesothermic valleys of Santa Cruz), so some Bolivian producers are already acquainted with its production. Sources in Argentina and Chile even suggested that exports are under way to these countries, although they do not appear in official statistics. While the Argentine market is tiny, Chile currently imports US\$0.5 million of cumin per year, and offers a real potential for Bolivia. Cumin demand is also said to be strong in the U.S.A., with an average import value in the range of US\$4.5 million.

A third category that appears well worth exploring is that of capsicums, particularly the hotter members of the capsicum family. At least one broker in the U.S.A. suggested that the Andean variety (aji) could become a profitable speciality line in the future, while other, more established, forms of chilies are also experiencing strong growth. Opportunities for aji and other chilies might also exist in Europe and Chile.

Other possibilities include ginger and sesame for export to the United States. Unfortunately, Japan appears to offer few real possibilities for export development in the herb and spices product group, with intense competition from producers in Indonesia, Malaysia and the Indian sub-continent.

Several Chilean firms expressed interest in pursuing further the possibility of spice imports from Bolivia. A positive response was also received from a number of firms contacted in the U.S. and requests for samples were made by both U.S. and Chilean importers.

It should be noted that a problem exists worldwide with respect to quality of traded herbs and spices. Considerable dissatisfaction was noted among traders in all countries reviewed with respect to contamination levels in imported product. Almost no exporting country was seen as totally reliable in quality terms. Although physical contamination has been the traditional problem (stones, dirt, animal remains), buyers are becoming more and more worried about chemical contamination from insecticides and other sprays, thus echoing the concerns of the traders in fruit. This situation offers both opportunities and risks to Bolivia and suggests that any attempt to penetrate international markets be accompanied by an extremely strict quality control program and close attention to limitations on the use of agrochemicals.

#### Essential Oils and Colorants

A number of recent changes have had a profound impact on the international essence and colorant market. One of the most important has been increased public awareness of, and resistance to, the use of chemical and synthetic additives and other substances in foods. This trend away from 'artificial' additives and towards 'natural' substitutes has led to legislation in both North America and Europe that is likely to profoundly affect the nature of the food additive industry and to increase enormously the demand for vegetative and animal-based products.

Another important development has been the increased understanding of the potential possessed by some plants as tools in the search for unusual or unknown pharmaceutical components, in the development of process-specific enzymes (or their inhibitors) and in a multitude of other bio-engineering and genetic modification roles. Plants previously given little consideration, such as the periwinkle or the evening primrose have been found to contain substances of potentially enormous worth to the expanding 'bio-industrial' sector. This appraisal of previously unstudied plants (often of tropical origin) is likely to intensify in the future.

There is no doubt that strong market demand already exists for natural sources of a number of colours, and exporters able to offer new natural colorants to the market will receive a warm welcome from additive and ingredient traders in the U.S., Europe and Asia. Even so, existing colorants will also experience a boost in demand as legislation eliminates synthetic alternatives in Europe and North America. In particular traders are interested in new sources of cochineal and, to a more limited extent, annatto. Political and economic developments in Peru (a major supplier of both commodities) is likely to have a significant impact on markets. Marigold appears to offer less opportunity because it is used primarily as an animal feed colorant, and hence is not directly subject to additive legislation introduced for products destined for human consumption.

The same pattern is expected for essential oils used in food flavourings, but not, as yet at least, for those used in cosmetic and other non-edible uses. Unfortunately most of the oils considered in this

section are utilized primarily in inedible applications. Despite these cautions, traders did see market opportunities for lemongrass oil, eucalyptus oil and the various mints (peppermint and Japanese or cornmint oil in particular). Requests for samples were received from traders in all three international markets areas (U.S.A., Germany and Japan) for these products. Even menthol is of interest to a number of traders, although concerns about the tobacco industry render this an uncertain long term area.

The advantages possessed by essential oils and colorants for Bolivia, including its often very high value-to weight ratio, and the absence of any need to refrigerate the product over a moderate time span, as well as the frequently labour-intensive production process, suggest strongly that attention should continue in this area. Assuming quality can be maintained there is no reason why Bolivian exporters can not develop a secure market in a number of product areas, and the potential exists for exploitation of new opportunities in the future.

### Other Potential Export Products

A number of minor products were also selected for market review in specific markets. Among these were:

- Animal Feed Components for the Chilean market
- Olives and Olive Oil for the Argentine market
- Dried Tomatoes for the U.S. market

Strongly positive findings were made for the animal feed ingredients, particularly with respect to the export of dried yuca. Computer simulation models run by the University of Santiago suggest that, as a substitute for maize and other more traditional ingredients, yuca would have a value CIF Chile of between US\$75-100/MT, with maize at US\$123/MT. There is no readily available cost of production data for yuca, so it is impossible to state if production, drying and transport could be achieved for that price, but the existence of significant demand in Chile from animal feed ration manufacturers suggests strongly that such a cost of production study would be a worthwhile effort.

Moderately positive findings were made with respect to dried tomatoes. Dried tomatoes, which have traditionally been restricted to small ethnic markets, have recently undergone a transformation in popularity and the growth rate in consumption in the U.S.A. in recent years has been in double digits. The market has now reached an estimated US\$750,000 per annum -- a small figure, but much greater than 5 years ago. The recent acceptance of the product by major supermarket chains would suggest even greater growth in the future. Market growth is primarily for artificially dried tomatoes, however, as the sun-dried product is heavily salted to prevent mould, and North American tastes run to the sweeter, unsalted product. Exploitation by Bolivian producers of this new market opportunity would probably require investigation of cheap solar powered driers to enable the production of the unsalted type. The newness of the market, however, combined with the high prices fetched for dried tomatoes, makes the market an appealing one.

The import market for olives and olive oil in Argentina was found to be almost zero, and no potential is seen for Bolivia in this area. In fact, export statistics show that Argentina is one of the world's major exporters of this category of goods.

### Export Market Potentials not Covered in the Study

A number of products were identified as export potentials that did not get included in the final list for this study. The reasons for their rejection included: Not enough known about their agronomic suitability to conditions in Bolivia; their concentration in areas of Bolivia outside of the Chapare and High Valley zones, and; insufficient knowledge of the product itself. It is suggested that these products may be considered for future investigation, should resources become available.

- **Natural Insecticides and Medicinal Plants:** An area of tremendous growth, but one requiring such specialised knowledge that it could not adequately be included in a general market study of this type.
- **Contra-seasonal Fresh Fruits and Vegetables:** It is possible that Bolivia could follow the example of Chile (including Chilean expertise and investment) and enter contra-seasonal fresh produce production. This would not be suited, however, to either the Chapare or High Valleys regions of Cochabamba. The Mid-level valleys around the city of Cochabamba and the Mesothermic valleys of Santa Cruz may be appropriate.
- **Speciality Frozen Vegetables:** Again, as for fresh produce, production of this commodity group would require a temperate climate. Demand, however, is believed to be strong for miniature frozen brussels sprouts and other speciality items.
- **Silk Worm Production:** A number of Korean investors are currently investigating the suitability of various parts of Santa Cruz for silk production based upon mulberry bushes. Little is known on this subject by the study team.
- **Seed Testing and Multiplication:** It is understood that seed companies in the United States are interested in locating suitable Southern hemisphere locations for winter multiplication and testing of seeds. Ideal conditions are said to include temperate climate and isolated valleys where little cross contamination is likely to occur. These conditions might be ideally met by the Mesothermic valleys of Santa Cruz.

## 1.0 INTRODUCTION

### 1.1 The Chapare Coca Replacement Program

Although the cultivation of coca (*Erythroxylon* sp.) has been practiced in the Andes for centuries, the dramatic increase in popularity of its derivative, cocaine, as a recreational drug in the industrialized world in the 1970s had a major impact on Bolivia and indeed many other countries. In particular, significant changes occurred in the Bolivian economy and social structure, as massive shifts in labour and capital took place to service the boom in coca production and trading.

One of the areas most affected by these changes was the Chapare region of the Department of Cochabamba. Previously a sparsely settled foothills area of the Andes, bordering on the Amazon basin, the population of the Chapare has been estimated to have grown from a few tens of thousands to somewhere approaching half a million people over a period of little more than twenty years, converting the Chapare into one of the most important coca production sites on earth.

Development agencies, particularly USAID, had been involved in the Chapare since the mid-1960s but by the late 1970s the problems caused by cocaine use in the United States, and the effects of coca production on Bolivian society, became so strong as to necessitate specific action. As a result a series of projects were mounted in order to encourage growers and labourers to seek alternatives to employment in the coca sector. A number of factors, including the high returns possible from coca production during this period, led to these projects achieving only limited success, however.

Much of the effort targeted to farmers focused upon the conversion of coca acreage to alternative crops and the Government of Bolivia and USAID have funded substantial research into the agronomic potentials of replacement crops. Only limited attention was given to the availability of markets for these new crops, however, resulting in some cases in the subsidized production of output that was subsequently largely unsaleable.

In 1987, with the implementation of the Cochabamba Alternative Development Program (PDAC), a number of new approaches were taken. Among these were the decision to include within the purview of the project the area known as the High Valleys. This semi-arid, impoverished area has been identified as the source of much of the workforce that has flooded into the Chapare, and thus made the tremendous boom in coca production possible. It was hoped that the provision of economic alternatives for inhabitants of this region would contribute to a slow down in activity in the Chapare.

A further aspect of the new PDAC was the decision to place marketing as a key element in the development of viable alternatives to coca production. Specific project staff were contracted to be responsible for this aspect of the work on site. The recognition that domestic markets were unable to absorb new products from the Chapare or High Valleys also led to the identification of a need for a better knowledge of the export potential of some of the crops being studied or grown in these areas. This need was incorporated into the 1989 AMIS 'buy-in' undertaken by the Bolivia Mission of USAID.

## 1.2 The AMIS Task

The Agricultural Marketing Improvement Strategies (AMIS) project of USAID (described in more detail below) was contracted by the Bolivia Mission of USAID to provide assistance in identifying and developing export markets for alternative crops from the Chapare and High Valleys regions of Cochabamba.

The overall task assigned to the AMIS team comprised three key activities:

- Undertake a Rapid Appraisal of factors favouring or limiting the development of an agroindustrial marketing system within Bolivia, with particular reference to the needs of producers in the Chapare and High Valleys areas.
- Plan and implement a series of export studies that would identify likely opportunities, and where possible buyers, for selected products from the Chapare and High Valleys in both regional and international markets.
- Contact and meet with leading U.S. agribusiness firms and determine their interest in assisting in agroindustrial development in Bolivia through investment or purchase of Bolivian products. Where possible, assist these businesses in contacting Bolivian enterprises and exploring such opportunities.

The first of these activities was completed with the delivery to USAID Bolivia of the report entitled "Bolivian Agroindustrial Marketing Systems Study" (October 1990). The following report comprises the output from the second activity. The third activity is under way and is expected to be completed before the end of 1990.

## 1.3 The AMIS Project

The Agricultural Marketing Improvement Systems (AMIS) project was created by the Science and Technology Bureau of USAID in 1987. With a duration of five years, this centrally funded project attempts to fulfil two aims:

- To provide to USAID missions throughout the world assistance in evaluating and resolving problems related to agricultural marketing systems within their countries of responsibility. This assistance is provided through mission 'buy-ins' of AMIS services. AMIS assistance can take many forms but can be sub-divided into three broad categories:
  - Rapid Appraisals - Short-term (typically 1-3 months) evaluations of marketing systems and marketing system elements in order to identify key constraints and opportunities existent within the system. The Rapid Appraisal methodology has been extensively refined and developed during the course of the AMIS project and involves, where possible, local participation in field activities.

- Applied Research - To permit USAID missions to obtain more profound and long-term analyses of identified constraints or opportunities within marketing systems, applied research contracts (typically 6-12 months) would normally involve significant systems analysis and participation of country nationals and academic staff.
- Applied Innovation - While the AMIS project is not intended as a vehicle for the implementation of major projects, the pilot innovation category allows missions to test possible solutions to marketing system constraints through localised or short term (no more than 2 years) activities.
- To provide the Science and Technology Bureau of USAID with a deeper understanding of commonalities in marketing system structure and operations and guidance in the optimising of interventions into such systems through the evaluation of experience gained in buy-ins around the world. Core funds are also provided to permit AMIS staff to undertake research, independently of specific buy-ins, into particular aspects of marketing system operation that are of general interest. The resulting materials, including the extensively tested Rapid Appraisal methodologies are a key output of the AMIS project.



## 2.0 MARKET STUDY BACKGROUND

In the following section details are provided of three parameters of the market study undertaken: the selection of products and product groups; the selection of export markets, and; the study methodology followed. Each of these is described in more detail below.

### 2.1 Product Selection

The range of potential products capable of being produced even within the narrowly defined confines of the Chapare and High Valley regions of Bolivia is enormous. The combination of humid tropical lowlands (Chapare) and dry temperate uplands (High Valleys) together with variations in soil types, altitude and precipitation throughout the two areas, ensures an extremely wide range of possible environments. The previous study in this series (Bolivian Agroindustrial Marketing Systems, October 1990), undertaken by the AMIS group for USAID identified almost 50 existing or potential crops, and the list is by no means exhaustive.

In order to reduce the scope of the proposed marketing studies to a level that is feasible, given resource and time limitations, it was necessary to shorten this list considerably. The purpose of this sub-section, therefore, is to provide a brief description of the factors taken into account in drawing up the short list for study.

Four key selection considerations were evaluated; agronomic potential, apparent global trends in consumer demand, value to weight ratio of the exported product, and possible comparative advantages possessed by Bolivia in relation to its competitors. Each of these is discussed briefly below.

#### 2.1.1 Agronomic Potential

The Bolivian Agroindustrial Marketing Systems study referred to previously attempted to delineate product groups with apparent agronomic potential. The use of the word apparent is necessary because the range of commercial crops currently grown in either the Chapare or High Valley regions is extremely limited.

The product groups identified by the study were; Herbs and Spices, Flavourings and Colorants, Tropical Fruits, Citrus, Commodities and a number of other products not so easily classifiable, including:

Bananas	Plantains
Cassava	Maize
Potatoes	Wheat
Tomatoes	Peanuts
Grapes	Freshwater Shrimp
Olives	Macadamia Nuts

Under the **Herbs and Spices** group, it is possible to identify a number of crops that have already achieved at least partial acceptance in the two regions, including turmeric, ginger, cumin, anise, oregano and black pepper. Others, such as cardamom, cayenne, allspice, coriander (culantro)

and capsicum peppers (chili, paprika etc.) are not grown commercially but trials and evidence from similar species within the regions suggests that agronomic conditions may be suitable for their production.

A similar position exists for those within the **Flavourings and Colorants** group. Here, such oil crops as lemongrass, eucalyptus and ginger are all available or being processed, while annatto (also known as achiote), mint, cochineal, garlic and spearmint have all been grown on at least a trial basis.

In the **Tropical Fruits** group, current crops include papaya, pineapple, chirimoya and tumbo (a high altitude variant of the passion fruit), while local consumption or trials suggest potential for such crops as avocado, passion fruit, carambola (star fruit), naranjilla, soursop and tuna (prickly pear).

**Citrus** is the largest commercially grown group in the Chapare, with oranges accounting for some 2/3 of this total (mostly criolla or unimproved varieties, with some valencia), mandarins account for the majority of the remainder, with limited amounts of grapefruit. No citrus is grown commercially in the High Valleys.

Three possible **Beverage** crops were identified in the Marketing Systems Study; coffee, cocoa and tea. None of the three is produced on a commercial scale in the Chapare (none of these crops are suitable for the High Valleys), although limited cultivation does exist.

All of the crop groups listed above, plus the individual species first mentioned, can be considered to possess at least prima facie indications of agronomic suitability to either the Chapare or High Valley regions.

### 2.1.2 Apparent Global Trends in Demand

There is little doubt that food consumption patterns in industrialized nations are experiencing strong and continuing shifts in demand. A range of factors including disposable income levels, family size, health and nutrition concerns, increased 'ethnic' populations, and changes in where food is eaten (at home or outside), all have had a dramatic impact on the consumption of different types of agroindustrial products over the last 10-20 years.

While a declining pattern of demand does not of course exclude the possibility of exports within that category, common sense suggests that the entry of new exporters (i.e. Bolivia) into such narrowing markets would be fraught with difficulties. Established exporters will generally possess an excess supply capacity (as a result of the decline in demand), while their existing links to the market will place them in a favourable position to capture the reduced market. Only where a producer can identify strong areas of comparative advantage (see 2.1.4) does it make sense to attempt entry into declining markets.

Based upon this assumption, and its converse truth - that entry into expanding markets is relatively easy - the selection process for Bolivian candidates for export should be influenced by a knowledge of where growth in consumption is occurring. Several key factors can be identified as of particular importance, although it is important to bear in mind that few trends can be said to be truly universal in scope -- some areas (e.g. North America) may exhibit the trend, for example, more

strongly than others, or vice versa.

- **Freshness:** Although an extremely difficult term to define, consumers have an increasingly strong preference for products seen by them as 'fresh'. This may include processed products made from 'fresh' ingredients. This trend is a principal reason for the declining importance of canning as a packaging and preservation method and the growing importance of freezing and, more recently, aseptic and modified atmosphere packaging.
- **Convenience:** The trend towards convenience foods, although to some extent conflicting with the desire for freshness, is also strong. This is reinforced by the increasing amount of food expenditure made on items for consumption outside the home. In the U.S.A., for example this percentage rose from 30% in 1965 to 46% in 1989 (National Food Review, USDA/ERS, Vol.13, Issue 3)
- **Purity:** Although more evident in some consuming regions than others, there is an undoubted trend in the industrialized world towards products without additional 'chemical' ingredients. This includes both residues from the production process and artificial additives incorporated into the product during processing and packaging.
- **Ethnic Flavour:** The increasing mixture of ethnic backgrounds in industrialized countries, together with the growing sophistication of consumer palettes as a result of exposure to foreign travel and restaurants, has led to a trend towards 'exotic' flavours. This tendency may be expressed through a demand for tropical products, previously largely unavailable to consumers in cold temperate areas (the location for the majority of the industrialized populations), as well as through demand for 'spicy' or 'tangy' flavours.
- **Health:** Strong health related concerns, particularly in North America, have led to significant changes in consumption in recent years. Products such as eggs and dairy items have suffered from concerns about cholesterol, while products with bran and other perceived 'healthy' foods have benefitted. One recent new area of concern of particular importance to tropical countries such as Bolivia is the increasing rejection of 'tropical' vegetable oils such as coconut and palm. Concerns have been expressed also about coffee, but the health related evidence is too inconclusive (at least as yet) to cause major swings in consumption in this area.

The impact of these trends on future export market potentials for Bolivia is, of course, speculative. However a number of inferences can be drawn.

- To establish a successful export industry in perishable products, Bolivian agribusiness firms must be thinking in terms of frozen and aseptically packaged product, not canned (although regional markets provide a strong exception to this rule (see Section 3.2.1).
- Market demand is likely to be strong for intermediate products; that is those which are destined for incorporation into ready-to-eat items (e.g. yoghurts, sauces, sandwiches etc.). Intermediate products are desirable for Bolivia as they do not require retail packaging, brand recognition or a high degree of processing

technology.

- Purity concerns are likely to result in a premium (perhaps substantial) on product produced without the addition of chemicals. Here Bolivia, with its low use of agrochemicals may possess an advantage. This trend (backed by law in several key market areas - see Section 5), will also likely result in increased demand for natural flavourings and colorants.
- Increased consumption of 'exotic' foods and ethnic tastes will tend to result in greater demand for tropical fruits, spices, and herbs. It may also lead to exotic forms of existing products (see dried tomatoes - Section 6.3).
- Health concerns will also tend to support the consumption of fruits and spices (to replace salt) while diminishing the consumption of traditional oils, meats, beverages (tea and coffee, perhaps chocolate) and possibly peanuts (aflatoxin levels are the current concern in the U.S.A.).

Overall, therefore, crystal ball gazing with respect to consumption trends in industrialized countries tends to lead to the identification of high potentials for such groups as:

- Herbs and Spices to provide spicy, ethnic taste
- Natural Flavourings and Colorants to replace artificial ingredients
- Tropical Fruits to add exotic taste to products
- 'Organically' grown and packaged products to meet purity concerns

Equally, product groups that may experience difficulties and declining demand in the years ahead, include:

- Vegetable Oils
- Beverages (tea, coffee)
- Products with artificial additives
- Canned products

### 2.1.3 Value to Weight Ratio

The initial Agroindustrial Systems study undertaken by AMIS identified the absence of a maritime border, with its attendant sea ports, as a key disadvantage faced by Bolivia in developing an export trade. The impact of being land-locked arises from the high cost of transport for heavier products which would normally be shipped by sea.

Such costs derive not only from the cost of transport itself -- the Chapare and High Valley regions lie at least 2-3 days journey by road from the nearest sea ports -- but also from the problems of maintaining an adequate infrastructure (roads, railways, cold storage facilities, customs inspection stations), and providing for backhauls for the trucks and containers used on the outward (export) leg of the journey.

As a result, any heavy or bulky products exported by Bolivia would have to possess a significant cost advantage over other competing producers in order to absorb the financial (and economic) costs of their shipment.

These disadvantages are minimised, however, where the product exported bears a high value-to-weight ratio. In this case either the cost of the additional shipment is a far smaller part of the overall cost of the product, or, alternatively, the product can be exported by air, eliminating the disadvantages of being land-locked.

It seems only logical, therefore, that when selecting candidate products for export market evaluation, attention should be given primarily to products with a high value-to-weight ratio. In particular these would include:

- Herbs and Spices
- Essential Oils and Colorants
- Beverages (coffee, tea, cocoa)
- Exotic fruits
- Shrimp and other speciality items

The following categories of products, however, would tend to have low value-for-weight ratios:

- Potatoes
- Citrus juices
- Cassava
- Banana and plantain

#### 2.1.4 Comparative Advantage

Comparative advantage refers to the ability of Bolivia to produce a product for export more efficiently or cheaply than its competitors. In selecting products for export market study, therefore, it is useful to try and determine which of the potential candidates appear to possess such advantage.

While an accurate determination of comparative advantage would require estimates of domestic resource costs for both Bolivia and its competitors, a rough approximation can be obtained by looking at the factors in Bolivia which may be beneficial and those that may be deleterious, in international terms. Here the assumption is made that Bolivia's competitors for North American markets are primarily neighbouring Latin American countries, Central America, the Caribbean islands and, in some cases at least, S.E. Asian producers. European markets tend to face strong competition from African producers, while the Japanese market is dominated of course by Asian producers. In all cases competition also exists from domestic production in consuming countries.

Among the beneficial factors, one can include:

- Cost of land: Land costs in the Chapare and High Valley regions, as well as in some other areas of Bolivia are relatively low.

- **Cost of labour:** Again, in comparison with countries such as Chile or those in Central America or the Caribbean, Bolivia's labour costs are low, reflecting the lack of alternative uses for it. Costs are probably higher, however, than costs in some Asian countries where population levels are extremely high. Labour costs are, of course, much lower than in the consuming nations.
- **Access to Capital:** While industrial and agricultural credit may be difficult to obtain in Bolivia, the recent stability of the currency and its full convertibility into U.S. dollars is an important advantage. Assuming loans can be obtained (and a number of international agency credit programs exist) there are few difficulties in purchasing necessary foreign equipment or inputs. This is not the case in a number of the competing countries.
- **Southern Hemisphere location:** For some products this counter seasonal location (in relation to the principal consuming areas) is of considerable benefit. In particular, temperate zone products can be produced during the Northern hemisphere winter.
- **Distance to Regional Markets:** This may be a key comparative advantage for sales into countries such as Chile, Argentina and Brazil, although it is also a disadvantage for some international markets (see below). For neighbouring markets Bolivia can deliver the product both more cheaply (in terms of transport) and more rapidly (in terms of interval between order and delivery) than most other competitors. The key exception here is probably for tropical products from Brazil (to Argentina) and Peru/Ecuador (to Chile).

Areas of likely comparative disadvantage include:

- **Poor infrastructure:** The lack of effective infrastructure at airports, in roads and telecommunications, as well as in storage facilities, documentation and legal procedures all place Bolivia at a disadvantage in terms of exports in comparison with countries such as Chile, Costa Rica and Guatemala. It may be a key advantage for Bolivia, however, in relation to Peru, where infrastructure is under extremely heavy pressure.
- **Lack of processing and packaging expertise and capability:** Here Bolivia suffers an obvious comparative disadvantage with most other competitors. Bolivia has no history of exporting agricultural products and has never developed the expertise and supply systems necessary for product processing and packaging. Furthermore, the limited industrial capacity of Bolivia has not permitted the indigenous development of industries producing either tools or materials for processing and packaging.
- **Lack of a strong domestic production base:** While not an insuperable problem, Bolivia faces the difficult task of developing capacity based almost entirely on external demand. With the low rate of participation by the Bolivians in the commercial economy, many of the products considered above have no potential for general production in Bolivia without export sales -- the domestic market is simply

unable to absorb them. As a result producers have had relatively little experience in their production. This poses a key 'chicken and egg' situation where production for export markets is difficult to achieve until demand exists, and demand is difficult to develop until there is a product to sell.

- Distance to international markets: Bolivia is considerably further (both in terms of miles and in terms of transport routes) from major industrial producing areas than its competitors in Central America and the Caribbean. Mexico can even truck fresh produce to U.S. markets overnight. Furthermore, flights out of La Paz face the additional problems of severe weight limitations due to the high altitude.

The area of lack of sea ports has been left aside in this discussion because it is covered in detail above under value-for-weight considerations. It is, however, a strong comparative disadvantage for Bolivian exporters.

Based upon these considerations, it is clear that in general Bolivia should attempt to identify products with the following characteristics:

- Labour-intensive production and handling
- Land-intensive production
- Products requiring relatively simple processing and handling
- Bulk sales so as to minimise the effects of expensive packaging materials
- Fast growing crops and other products so as to reduce the interval from production start-up to export

#### 2.1.5 Summary

The preceding sub-sections have outlined some of the key factors applied in determining the most attractive products for export market analysis. Clearly, these factors lead towards the selection of products that are relatively valuable for their weight, that appeal to expanding markets in consuming countries, and that take advantage of those natural and economic factors in Bolivia's favour, while at the same time limiting demands on the poor infrastructural and technology base that Bolivia is faced with.

These factors are summarized in matrix form in Table 2.1. Here 13 products or product groups are evaluated for their standing in relation to the factors listed above. Because the factors considered are to some extent subjective, and because data availability was not complete, the ratings given in the matrix are inevitably open to argument. In addition, the responses for a single candidate may differ depending upon the nature of the end product considered (dried, canned, fresh packed, etc.). It is believed, however, that the ratings do present some idea of the potential of each product as an export commodity for Bolivia.

It can be seen that according to the matrix no single product is ideal in all areas. One of the most promising product groups, for example -- the flavourings and colorants -- has only poor potential in neighbouring markets and requires relatively sophisticated technology in processing. On all other counts, however, it scores well and would certainly be one of the best potentials for investigation.

Table 2.1 Matrix of Product Selection Factors for Market Studies

Potential Export Product	Experience In Production	Length of Production Cycle	Apparent International Demand	Value/Weight Ratio	Land/Labour Usage	Inputs/Infrastructure Requirements	Processing/Handling Needs	Neighbouring Markets	Other Factors	Summary
Banana/Plantain	Good	Short	Stable	Low	High	Moderate/High	Low/Moderate	Possible	Could be marketed fresh or processed	Strong competition from Ecuador
Beverages (coffee, tea, cocoa)	Limited	Long	Declining	Moderate	High	Moderate	Moderate	Poor	Brazil is major producer/exporter	Strong competition and long lead time to production
Olive products	Moderate	Medium/Long	Stable	Moderate	High	Low	Low	Possible	Large Italian population in Argentina	May be regional potential
Citrus	Good	Long	Stable	Low/Moderate	Moderate	Moderate/High	Moderate	Poor	Brazil is major producer/exporter	Strong competition over-supplied market
Exotic Tropical Fruits	Limited	Medium/Long	Strong	Moderate/High	Moderate	Low/Moderate	Moderate/High	Possible		Long lead time in some cases but growing market
Flavourings and Colorants	Moderate	Short/Medium	Strong	High	High	Low/Moderate	Moderate/High	Poor		Major potential in market and high value to weight ratio
Grapes	Moderate	Medium	Stable	Moderate	Moderate	High/Moderate	Low/Moderate	Poor	Chile is major producer/exporter	Strong competition from Chile and poor infrastructure to ship
Herbs & Spices	Good/Moderate	Short/Medium	Strong	High	High	Low	Low	Possible		Low demands on processing and infrastructure high value, good market outlook
Nuts	Limited	Long	Moderate	Moderate/High	High/Moderate	Low	Low	Possible	Only Macadamia under trial	Long lead time but high value and low infrastructure needs
Cassava	Good	Short	Unknown	Low	Moderate/High	Low	Low	Possible	Potential use as animal feed	May be regional potential despite low value
Peanuts	Good	Short	Stable	Moderate/Low	Moderate	Low	Low	Poor	Aflatoxin scare may reduce demand	Low infrastructure needs but only moderate value
Freshwater Shrimp	None	Medium	Strong	High	High	Moderate/High	Moderate/High	No estimate		High value but no experience in production Needs significant infrastructure
Tomatoes	Good	Short	Stable	Low	Moderate	Moderate/Low	Moderate	Poor	Dried product offers market potential	May be potential for dried product - high value and low handling problems



<b>Regional Markets:</b>	Brazil Argentina Chile Peru	
<b>International Markets:</b>	North America -	U.S.A. Canada
	Europe -	Britain France Germany Italy Netherlands Switzerland
	Asia -	Japan Hong Kong Singapore Korea Taiwan

Resource and time limitations rendered it necessary to reduce this initial list to approximately five final markets. The decision was therefore made to select a single country within each international regional grouping and two of the four neighbouring countries.

The North American market was rapidly narrowed to the U.S.A. Much of Canada's imports of the types of products under consideration in this study pass in any case through the United States and little additional benefit was seen to extending the study to Canada.

The European country selection was more difficult. Britain, France and Germany were all initially considered due to their high per capita incomes and extensive use of 'non-traditional' imports. Switzerland and the Netherlands were judged too small to be representative of Europe as a whole. Germany was finally selected on two grounds: There is a significant ethnic German population in Bolivia, leading to the likelihood of mutual trade relations, and Germany has no former colonies, as is the case for Britain and France, which could be expected to be given tariff and quota preference at the expense of Bolivia. The chances of Bolivia attaining market share in Germany were thus judged better than would be the case in the other two countries.

Once the decision had been made to select only a single country in S.E. Asia, Japan became the obvious choice. Its size, wealth and extensive trading relations rendered Japan by far the most promising of the countries in this group.

Regionally, only two of the four neighbouring countries could be selected. Brazil, despite significant market potential in some areas, was rejected on the grounds of similarity in agroclimatic conditions and because of its size. The similar environments faced by many Brazilian and Bolivian producers meant more likelihood of competition for Bolivia exports from domestic producers, while the size of Brazil suggested the need for greater resources than could be justified in this study.

Peru was also eliminated, largely due to the similarity of Peruvian exports to many of those identified for Bolivia (particularly colorants and fruit products), but also because the poor state of the Peruvian economy raised the possibility that foreign exchange payments could pose a serious problem for Peruvian importers.

Argentina and Chile both possess essentially temperate climates, reducing domestic competition with Bolivian products, and Chile offers a comparatively wealthy market by Latin American standards, as does Argentina, albeit with severe foreign exchange limitations at the moment.

## **2.3 Conduct of the Study**

Terms of reference were drawn up for field research in each target country and an example copy (for the United States) is provided as an example in Appendix A. Where possible, use was made of national offices of Deloitte & Touche, one of the members of the AMIS consortium. This proved to be the case in Chile, Argentina, Japan and the United States. For Germany, use was made of the specialist London-based consulting group Produce Studies Inc.

Although specifics differed slightly from country to country, the basic tasks to be carried out under the field contracts was the same in all cases:

1. Identify and compile data relating to trends in the volume, value and origin of imports of all specified product categories over the last 5-10 years.
2. Identify key players in the market for each specified product category such as importers, brokers, processors and trade associations. Undertake personal visits to at least 3-4 of these market participants for each product category. Determine participant views on:
  - . Current use by the participant of products in the category
  - . Future potential of listed products in their category, as well as any others not mentioned
  - . Interest in exploiting new sources of such products
  - . Attitude towards Bolivia as a potential supply source
  - . Specifications for such purchases (volumes, prices, grades, seasonality etc.)
3. Identify tariff and non-tariff barriers to entry of the specified products including phyto-sanitary or health regulations, quotas, packaging regulations and labelling requirements.
4. Summarize the potential of the listed products in each category as shown by the above research.

Field researchers were encouraged to focus upon those products within each category which appeared to have the greatest potential, either due to significant existing imports or because of respondent attitudes. As a result not all countries provided reports on all commodities listed in

Section 2.1.4 above. In many cases -- particularly with the lesser known fruits or essential oils -- there simply was no information of relevance available.

Reports were then submitted by each field researcher to the AMIS team for collation and analysis. This document represents the results of that process.

### 3.0 PROCESSED TROPICAL FRUITS

#### 3.1 Introduction

An assessment of the market for tropical fruit products was carried out in two regional markets -- Chile and Argentina -- and three international markets -- Japan, Germany and North America.

The list of products submitted to field staff in each country focused upon what is termed in this study Processed Non-Citrus Tropical Fruits (PNCTFs) and included the following ten products:

- Carambola (Starfruit)
- Cherimoya
- Guava
- Mango
- Naranjilla
- Passionfruit
- Prickly Pear
- Soursop
- Tamarind
- Tumbo

As for other product groups discussed in subsequent sections, field staff were not asked to provide an exhaustive analysis for each individual commodity. Instead they were asked to identify those of most importance in their target market area, as well as those arousing most interest among commercial traders, brokers and users of products in the overall category. The amount of detail provided below on each product, therefore, is a direct reflection on the importance of the commodity in the market discussed.

The definition of PNCTFs varies to some extent from country to country, depending upon consumption and trade patterns. Guidelines were provided as follows:

PNCTFs comprise all fruits not including:

- Citrus
- Fruit of temperate origin
- Fresh fruit
- Bananas
- Pineapple (except regional studies)

Pineapple and bananas were not considered for international markets on the basis that competition from established major producers, together with the relatively low value to weight ratio of the product, rendered them unsuitable as a general export commodity for Bolivia. A history of pineapple sales to neighbouring countries rendered it worthwhile to investigate market potentials for this crop regionally, while plantain was also considered for sale to Chile as a feed component in animal rations (see Section 3.2.2).

Adherence to these guidelines was not always easy. Trade statistics for target countries, for example, tend to identify key imports (often comprising citrus, banana, apple and similar) and group other fruits into 'other' or NES (not elsewhere specified). It should be borne in mind, therefore, that while the statistics provided below provide a broad indication of PNCTF imports and volumes, they will often include some level of products not within the group (e.g. in some minor categories,

fresh and processed fruit may be grouped together, or temperate fruits may be grouped with tropical). In general, however, the data provided is believed to at least approximate to existing market size.

The same problems of data grouping meant that it was not always possible to identify trading volumes for specific exotic fruits. In this case considerable reliance was placed upon estimates of market traders.

## 3.2 Regional Markets

### 3.2.1 Argentina

The deteriorating state of Argentina's economy in recent years and scarcities of foreign exchange have not been conducive to significant imports of PNCTFs. Although the market study did identify imports of papaya, cherimoya and passionfruit within the last five years, the quantities have been too small to be recorded.

#### **Pineapple**

The only tropical fruit that is imported in significant quantities into Argentina is pineapple. In 1989 a total of 1,410MT of all types of processed pineapple was imported, for a CIF value of US\$1.24 million. This was a steep decline, however, from the levels achieved earlier in the decade which exceeded 5,000MT in 1986 (approximately US\$4 million).

Pineapple consumption in Argentina assumes various forms, including juice, pulp, crushed and cubes, but slices account for the bulk of the market. Some 90% of these slices are imported in 1Kg. or 2.5Kg. tins.

Opportunities for Bolivia to enter the market appear good. Bolivian pineapple has previously entered the Argentine market and achieved acceptance. Problems that would face the renewal of such exports include:

- Competition from established suppliers. The Republic of South Africa (37%) and Brazil (36%) and Mexico (12%) were the key points of origin in 1989, with the RSA showing strong growth at the expense of the other suppliers - in 1988 it accounted for less than 16%, and in 1987 less than 1% of the import market.
- Maintaining quality standards. This is especially true in the packaging area, where it is reported that previous Bolivian exports failed, but would also apply to the syrup and fruit itself (see below).
- Price. Current import prices approximate US\$15 CF per box of 24 1Kg. tins (850g net contents), with RSA fruit at US\$16/case, Brazilian at US\$17 and Mexican at US\$13.50/case (all for standard grade).

Entry standards for pineapple, as well as other processed fruit products, are well specified. Pineapple slices must be between 8 and 20mm thick and must be graded between standard and select, depending upon a number of factors including the syrup and the absence of damage or discoloration to the fruit. Specifications also apply to the packaging material.

Based upon the tariffs imposed by Argentina on canned pineapple from Brazil and Mexico, there would be a 7.5% specific import duty, a 3% statistics charge and a 0.5% export promotion tax as of June, 1990. A merchant and marine promotion fund charge of 12% is also levied. All of these are on FOB values.

Retail prices must support the CIF import price, plus a 15.6% sales tax, a 10% insurance charges, and duties and margins for market traders. Retail prices commonly approximate US\$1.50-2.00/tin, an increase of some 90-150% over the import value.

### **Market Potentials**

All five of the firms interviewed in Argentina expressed interest in possible new sources of canned pineapple. No interest was obtained for any other fruit product. Firms interviewed are listed in Appendix B.

#### **3.2.2 Chile**

The success of Chilean exporters in recent years with respect to contra-seasonal temperate fruit exports and wine have led a resurgence in the Chilean economy. This growth has, in turn, created a strong and growing demand for new products - especially those unable to be produced in Chile itself. Foreign exchange is not a significant problem and, in fact Chile runs a significant trade surplus with Bolivia.

This new wealth is reflected in the recent growth of PNCTF imports, particularly pineapple and passion fruit, although they are still a minor element in Chile's import structure. Tropical fruits are used typically in fruit drinks, juices, yoghurts and ice cream.

### **Pineapple**

Pineapple has been a traditional import to Chile but has grown in importance in recent years, from 1.27 million MT in 1985 to nearly 3.3 million MT in 1989. In terms of value, total CIF amounts increased from US\$1.43 million to US\$2.91 million over the same period, resulting from a 25% decline in average cost per kilogram for canned pineapple and a 12% fall in average cost for juice. The cost of pineapple concentrate (60° Brix) in 1990 was approximately US\$1,600/MT for major importers.

Some 85% of the volume imported is accounted for by canned pineapple, principally in sliced form, with the remainder being pineapple juice. Approximately 1.1 million MT of fresh pineapple was also imported in 1989 (US\$425,000).

Pineapple juice has traditionally been imported in 200-250Kg. drums at -14°C, although there is increasing interest in aseptic packaging techniques as a result of the cost of maintaining cold

chains during transport. Pineapple slices are normally handled in cases of 24 570g. or 840g. cans, although some 3Kg. cans are reported.

Key current suppliers for slices in 1989 are RSA (70%) and Thailand, with Brazil also an important source, depending upon exchange rate fluctuations. Juice and concentrate come chiefly from Brazil (89%) and Peru, although some dissatisfaction was expressed with the quality of Brazil's product. Brazil also supplied 100% of the small (23MT/annum) pineapple pulp market.

Interviews with major importers and users of pineapple products in Chile indicated that, in contrast to Argentina, little interest exists in new suppliers of canned pineapple, with declining prices and steady supply from traditional sources being maintained. For juices, however, particularly concentrates, the situation is very different. Major brokers and users foresee an 'explosive' growth (in the words of one source) in concentrate purchases, focused upon school and away-from-home consumption. The prepared drinks market is currently growing at over 12% per annum. Concentrate purchasers are actively seeking new suppliers but say that lack of representation by Bolivian exporters has resulted in no business being undertaken with Bolivia. Several said that they would welcome an approach from Bolivian exporters.

No legal import restrictions apply to the import of pineapple products (fresh pineapple must meet phyto-sanitary regulations) but a general tariff of 15% is applied. Bolivia, as a member of ALADI, can obtain exemption from this charge but has so far failed to apply for such exemption.

### **Passion Fruit**

The other significant tropical fruit import into Chile is passion fruit. As recently as 1987 there were no imports of passion fruit at all into Chile. Imports commenced the following year, however, and in 1989 had reached more than 250MT of juice and pulp, valued at US\$257,000. Pulp accounted for more than 99% of this amount.

Ecuador is the overwhelming source of passion fruit juice, accounting for over 98% of supply. Product is imported in a similar form to pineapple concentrate (60° Brix in 200-250Kg. drums at -14°C) and is used primarily in tetra pak cartons (250ml and 1,000ml) as well as in yoghurts and other dairy flavourings. Passion fruit concentrate sells for slightly less than the current US\$1,600/MT of pineapple and its price is linked to it.

Growth in passion fruit juice consumption is seen as even more rapid than that expected for pineapple juice, due to its suitability as a flavouring element in tropical drink blends, and importers and users predict extremely strong growth in the future. As for pineapple, major purchasers are interested in new supply sources -- the almost 100% dependence upon Ecuadorean supplies is seen as dangerous.

The legal and tariff position for passion fruit is similar to that for pineapple (see above).

### **Other Tropical Fruits**

Although not currently imported into Chile, or consumed in Chilean products, other PNCTFs, such as naranjilla, carambola, tumbo and cherimoya, may find their best opportunity for export development in this country. Several key factors suggest that this opportunity may exist:

- The strong growth and relative economic prosperity of the Chilean economy renders the market attractive for new products and flavours. Import growth has been strong.
- The prime market in Chile is for concentrated juices for blending into prepared drinks. This rapidly expanding market does not rely upon recognition of fruits used, especially where the drink is sold as a 'tropical blend' etc. Thus drink manufacturers can use relatively unknown ingredients if the resulting flavour is good.
- The size of the Chilean market is such that it may be well suited to Bolivian production potential in the short to medium term. True exotics, such as those listed above, would probably sell no more than several tens or, at most, hundreds, of metric tonnes of concentrate per year in the early stages. Bolivian production capacity in early years would be little more than this. Attempts to open international markets could well backfire, as Bolivia would be unprepared to meet any resulting demand (in the thousands of metric tonnes).

### **Market Potentials**

Three of the five firms interviewed during the course of the study expressed interest in juice and juice concentrates, particularly passion fruit and pineapple but possibly also mango and others. One firm expressed interest in bulk pineapple chunks for use in the preparation of yoghurts and ice-creams. A list of firms interviewed and their responses is included in Appendix C.

## **3.3 International Markets**

### **3.3.1 Overview**

Although differing considerably in many respects, the three international markets studied do have a number of features in common which are worth describing before attention is given to individual markets.

Firstly, all international markets share strict and increasingly restrictive quality standards for imported products of all classes. PNCTFs are not immune from these. Any attempt by Bolivia to sell into international markets must be accompanied by a real commitment to establish and maintain effective quality standards with respect to foreign contamination, pesticide residues, processing chemicals and packaging.

Secondly, there exists little opportunity for imports of fresh produce into most international markets due to problems of insect infestation in the fresh product. European markets have traditionally been more tolerant than the Japanese or North American in this respect, but such a position may not last indefinitely. Processed products largely escape such phyto-sanitary standards.

Thirdly, production to buyer specifications is important and can only be expected to increase with time. Such factors as Brix number, volume per unit package, type of packaging, variety of fruit, and percentage acid level, are all required to meet individual buyer specifications in many cases. Although in the case of pure exotic products, which tend to be bought from brokers, the end user does not have the opportunity of setting such standards, they nevertheless exist as they are specified

instead by the broker.

Finally, value to weight ratios become of major importance when dealing with international, as opposed to regional, markets. Fruit products intended for international markets must therefore reflect these higher value ratios.

### 3.3.2 United States

#### **Trade Statistics**

Interpreting import volumes for the United States, like many other countries, is complicated by the lack of specific identification for less important commodities such as exotic tropical fruits. To add to the problem, the universal categories of 'other' or NES (Not Elsewhere Specified), do not necessarily include (or exclude) the same commodities in each category (see notes to Table 3.2 for example).

Nevertheless, some indications can be drawn. A compilation of all categories for PNCTFs within the U.S. Foreign Agricultural Trade Statistics, results in the data presented in Table 3.1. According to this data, total imports of PNCTFs (as far as they could be defined) in 1988 equalled more than 150,000 tons, for a value exceeding US\$125 million. That amounts to approximately 7% of total U.S. fruit imports by value (US\$1.9 billion) but only 3.5% by volume (4.3MT) in 1988 (fresh and processed fruit).

Import volumes of PNCTFs have held fairly steady over recent years, while values climbed 15% over the three years between 1986-88.

Within the overall amounts, juices and other non-alcoholic beverages that are not pure juices (including nectars and drinks) accounted for the bulk of imported volume (73% in 1988) and two thirds of imported value -- a figure that has remained relatively constant over the last few years (see Table 3.1).

By contrast, other categories are of much less importance. Preserved fruits accounted for 17% of volume and only 13% of value, pulps and pastes just over 8% of both volume and value, and jams and jellies around 7% of volume and 6% of value in 1988 (see Table 3.1).

#### **Sources of Origin**

Looking at the origin of PNCTF imports (Table 3.2), it can be seen that, in 1988, Latin America (including Mexico and the Caribbean) accounted for some 60% of fresh or frozen imports of 'other' fruits, 36% of imports of 'other' prepared or preserved fruits, and 35% of other fruit juices (i.e. non-orange). These figures are reduced significantly, however, when values are taken, rather than volumes (changing to 41%, 22% and 32% respectively).

Bolivia does not appear in any of the above categories as a source of origin. In fact, the data for Latin America are dominated by a three countries -- Chile, Argentina and Mexico. In other fresh and frozen fruits, Chile accounts for 82% of regional exports to the U.S.A. (87% by value), while under other fruits prepared or preserved, Chile and Mexico account for 71% (68% by value) and in other fruit juices, Chile and Argentina account for 76% (68% by value).

Table 3.1: Imports of Selected Processed Fruit into the United States, 1986-88

Code	Product	1986		1987		1988	
		MT	\$000	MT	\$000	MT	\$000
1480800	Mangos, prepared or preserved	1,855	2,187	1,630	2,034	1,805	2,104
1478500	Guavas, prepared or preserved	746	555	1,157	801	701	618
1486500	Papaya, prepared or preserved	2,115	2,106	2,003	2,046	1,942	1,977
1494000	Tamarind, fresh, prepared or preserved	830	597	579	603	756	639
1496000	Fruits, veg., prepared or preserved	5,097	7,333	4,503	6,142	5,308	7,253
1500200	Fruits, mixed, prepared or canned	4,254	3,707	2,612	2,350	4,338	3,858
1500550	Fruits, other mixes, prepared or preserved	136	129	6,692	4,408	3,503	2,972
1520500	Fruit flour, veg.	1,308	785	1,153	1,213	1,212	994
1522200	Fruit peel, veg. crude, dried, brine	25	39	10	17	30	80
1523800	Fruit peel veg., prepared or preserved	7	15	103	163	192	284
1524300	Cashew apple paste & pulp	729	642	620	603	627	610
1525000	Fig paste & pulp	3,030	1,755	3,898	3,154	2,797	2,539
1525400	Guava paste & pulp	6,453	2,879	4,333	2,324	6,551	3,440
1525800	Mango paste & pulp	1,608	1,514	1,397	1,334	1,653	1,742
1526000	Tamarind paste & pulp	270	249	363	241	691	511
1526500	Papaya pulp & paper	540	262	410	203	336	159
1528840	Other paste & pulp veg.	1,847	1,764	745	893	1,306	1,334
1530200	Cashew jelly, jam	90	215	163	263	53	123
1530800	Guava jam & jelly	365	186	472	257	639	368
1532000	Papaya jelly & jam	86	67	58	49	11	11
1533200	Jam & jelly, veg.	6,037	6,938	5,350	6,698	4,755	6,486
1543500	Fruit peel candied veg.	1	9	0	1	9	15
1545300	Candies fruit, veg.	1,280	2,540	1,334	2,934	1,844	3,720
1655500	Fruit juice, unmixed, other	503,099	26,815	303,015	25,672	347,235	32,451
1656500	Fruit juice, mixed, other	19,253	995	4,355	307	17,494	1,150
1657000	Fruit juice, over 1% alcohol, other	1,631	14	0	0	349	59
1664040	Other beverages veg.	<u>645,701</u>	<u>44,467</u>	<u>559,422</u>	<u>41,441</u>	<u>781,405</u>	<u>49,639</u>
	TOTAL	155,677	108,764	136,264	106,151	155,708	25,136
	of which juices =	34%	26%	23%	25%	23%	26%
	other beverages (veg) =	42%	41%	6.48	39%	50%	40%
	pastes & pulps =	8.8%	8.3%	8.6%	8.2%	9%	8.3%
	preserved fruits =	9.7%	15.3%	14.1%	17.3%	11.8%	13.2%
	jams & jellies =	4.2%	6.8%	4.4%	6.9%	3.5%	5.6%

Source: Table 17, Foreign Agricultural Trade of the United States 1988 Supplement, ERS/USDA.

Table 3.2: Imports of Selected Processed Fruit into the United States by Origin, 1987-88

1. <u>Other Fruits Fresh or Frozen</u>	1987		1988	
	<u>MT</u>	<u>\$000</u>	<u>MT</u>	<u>\$000</u>
World	160,241	150,140	167,033	152,199
Latin America (including Caribbean)	87,872	55,527	100,223	62,273
	54%	37%	60%	41%
Chile	72,153	47,194	81,710	54,029
	82%	85%	82%	87%
Other S. America	6,409	3,676	7,495	3,589
	7%	7%	8%	6%
Excluding: strawberries, apples, citrus, grapes, mangoes, melons, pineapple				
2. <u>Other Fruits, Prepared or Preserved</u>				
World	194,258	227,635	194,120	225,920
Latin America (including Caribbean)	52,168	34,797	69,909	50,688
			36%	22%
Chile	7,523	5,682	18,200	15,587
			25%	31%
Mexico	29,562	18,427	31,086	18,869
			45%	
Other S. America	5,780	5,077	9,453	9,008
			14%	18%
Excluding: pineapple				
3. <u>Other Fruit Juice</u>				
World	11,878,625	275,247	11,015,072	269,470
Latin America (including Caribbean)	3,890,457	86,524	3,808,754	86,937
			35%	32%
Chile	465,445	10,452	439,809	9,626
			12%	11%
Argentina	2,498,727	48,267	2,425,285	49,468
			64%	57%
Other S. America	349,206	11,731	371,318	12,259
			10%	14%
Excluding: oranges				
All processed fruit:	12,233,124	\$653,022	11,376,225	\$647,589

The same pattern of domination of supply by a single supplier is even stronger for minor commodities. Looking at frozen products, for example, 100% of carambola imports originate in the Philippines, while the Dominican Republic accounts for 100% of frozen cherimoya, 100% of tamarind, 97% of soursop and 93% of passion fruit. The Dominican Republic and Brazil between then account for 92% of frozen guava imports, while Mexico and Guatemala account for 71% of frozen mango imports.

### **Consumption Trends**

Consumption trends for processed fruit products indicate considerable potential for exporters to the U.S.A., at least in certain product categories. Overall, consumption of all fruits has increased by 15% between the periods 1970-74 and 1985-88, reaching an average of 136lbs. per capita per annum by the end of 1988. Strongest growth has occurred in frozen product, up 36% over this period, while consumption of fresh (23%) and dried (20%) fruit has also increased. Canned fruit, by contrast, has suffered a significant decline, with per capita consumption falling by 18% over this period.

The figures are similar for imported fruit at a 27% increase in volume and a 31% increase in value between 1985-88. The growth is even more impressive if citrus is excluded. The category of 'other' fresh and frozen, for example, increased by 61% by volume and 72% by value over the same period. Other prepared fruit products did not fare so well, however, with increases of only 7% and 15% (volume and value) over this 3 year period.

### **Market Categories**

The study undertaken in the U.S.A. identified a number of distinct market categories for PNCTFs. These are described briefly below:

- **Value Added Tropical Fruits.** This category consists of products where labour-intensive preparation and some shelf-life extension has taken place, but where the product is essentially still fresh fruit. This market category tends to be dominated by large international agribusiness operations, which have the facilities and capital to develop, manufacture and market the products. Examples include Del Monte cut and chilled pineapple for food service, Oval Kent fresh fruit salads and Del Monte aseptic fruit cups. These are generally prepared in source countries to take advantage of labour cost differentials and shipped to the U.S.A. as finished product. The end user of such product may be the consumer, or more frequently, the food service industry (restaurants, hotels etc.).
- **Dried Fruits.** The total retail market for dried fruits in the U.S.A. is between US\$500-600 million. However, when raisins, prunes, apricots, dates and figs are excluded, the remainder of the market totals no more than US\$25 million. Despite growth in this segment, supermarket sales of 'other' dried fruits actually declined from 1984-88, suggesting that any potential in this segment will lie with further processing.

- **Other Prepared Fruit Products.** This relatively small line includes candied fruits and peels, fruit leathers, fruit flour, jams and jellies and similar items. Candied fruit imports to the U.S.A. totalled US\$7 million in 1988, while peels accounted for U.S.\$1.5 million (all but \$284,000 in citrus peel), and fruit flour was valued at nearly \$2 million (equally divided between banana/plantain and others). Jam and jelly imports amounted to US\$26.5 million in 1988, of which approximately \$7 million was accounted for by 'other' fruits. Growth in this sector has been uneven. For example, retail statistics indicate that fruit rolls and bars (leathers and related products) have grown by 66% over 5 years, while jams and jellies have experienced almost no growth (see Table 3.3).
- **Processed Ingredients for Consumer Sale.** Well known examples in this line would include bottled lime and lemon juice for cooking, concentrated juices for home dilution. Other, more recent innovations in this line include the French SPID group with their line of tropical fruit pulps in aseptic cartons, including grapefruit, guava, passion fruit, mango, orange and pineapple. It is difficult to distinguish between juices for consumer purchase and those for further manufacture, but the bulk of this category will comprise different juices. Retail sales growth in the segment has been strong for non-traditional fruit juices (77% increase in 5 years - see Table 3.3) but less so for orange, grapefruit and other more established lines.
- **Processed Ingredients for Further Manufacture.** This segment contains those products destined for the juice, nectar, drink, alcoholic beverage, yoghurt, frozen novelty, ice cream, snack and bakery categories. Basic requirements for purchase appear to include reliable quality supply and a stable bulk format. No strong preference exists at the moment between frozen, canned, dried or aseptic packaging. A number of major players have entered this market and are offering extremely comprehensive manufacturing ingredients within their area of speciality. For example Chiquita Brands offers banana as:
  - Stabilized puree (canned)
  - Puree and slice mixtures (frozen)
  - Puree (aseptic or frozen)
  - Diced, sliced and whole bananas (frozen)
  - Slices in syrup (canned)
  - Clarified concentrated juice (canned)
  - Essence (refrigerated)
  - Concentrated puree (aseptic)
  - Diced stabilized puree (frozen)

Another key area within this category is the production of blended juices and drinks from bulk imported (or locally produced) ingredients. R.W. Knudsen of California, for example, offers more than 70 flavour blends including 10 'tropical' blends (including mango, papaya, pineapple, guava, passion fruit and coconut) and 14 exotic blends (mostly lesser known temperate berries blended with other fruits).

**Table 3.3 U.S. Retail Sales Trends for Fruit Related Categories**  
(millions of U.S. dollars)

Categories	1984	1985	1986	1987	1988
Total food	302,701	312,028	321,890	334,725	345,945
Index	100	103	106	111	114
Yogurt	1,647	1,898	1,967	2,260	2,432
Index	100	113	119	137	148
Ref fruit juice/drink	1,679	1,854	1,979	2,149	2,482
Index	100	110	117	128	148
Other fruit juice/drink	47	52	67	74	83
Index	100	110	142	157	177
Ice cream	4,587	4,750	4,496	5,122	5,095
Index	100	103	98	112	111
Specialty	1,340	1,427	1,495	1,624	1,604
Index	100	106	111	121	120
Frozen fruits	126	129	128	134	132
Index	100	102	99	106	105
Other frozen fruits	38	40	40	42	38
Index	100	105	105	111	100
Froz. fruit juice conc.	1,797	1,808	1,554	1,469	1,546
Index	100	100	86	82	86
Other frozen fruit conc.	36	38	40	40	46
Index	100	105	111	111	128
Frozen fruit drinks	141	148	145	146	148
Index	100	105	102	104	105
Other frozen fruit drinks	41	44	44	47	48
Index	100	107	107	115	117
Fresh fruit	11,644	12,291	12,780	13,148	13,628
Index	100	105	109	113	117
Other fresh fruits	5,230	5,549	5,676	5,790	5,926
Index	100	106	108	111	113

**Table 3.3 U.S. Retail Sales Trends for Fruit Related Categories (Continued)**  
(millions of U.S. dollars)

Categories	1984	1985	1986	1987	1988
Baby food, fruits & juices	333	358	351	372	415
Index	100	107	105	112	125
Canned fruit	1,703	1,740	1,808	1,848	1,950
Index	100	102	106	109	115
Other canned fruit	333	331	324	315	306
Index	100	99	97	95	92
Canned/bottled juices/drinks	3,626	3,777	3,971	4,177	4,607
Index	100	104	109	115	127
Other fruit juices	29	31	30	35	38
Index	100	106	103	121	131
Fruit drinks	1,153	1,203	1,257	1,340	1,494
Index	100	104	109	116	130
Aseptic juices/drinks	389	446	585	691	806
Index	100	114	150	178	207
Dried apricots	27	27	26	27	27
Index	100	100	96	100	100
Other dried fruits	28	28	32	31	25
Index	100	100	114	111	89
Citrus marmelade	13	14	14	14	14
Index	100	107	107	107	107
Fruit butter	7	7	7	7	7
Index	100	100	100	100	100
Jams, preserves, jellies	986	993	1,003	1,015	1,044
Index	100	100	101	103	106
Fruit rolls & bars	199	245	297	344	330
Index	100	123	149	173	166

Source: Supermarket Business  
Annual Consumer Expenditures Studies

Supplied in part by the Food Institute.

Growth, especially for non-traditional ingredients, has been strong, carried along by matching growth in manufactured products utilising fruits. Yoghurt retail sales, for example, have increased by 48% over the five years 1984-88 (see Table 3.3), baby foods are up 25%, aseptic prepared drinks are up by over 200% and 'other' fruit drinks (bottled, canned - non-traditional flavours) are up by 31%.

Despite the presence of such industry giants, this market segment offers perhaps the best hope to developing country exporters because:

- Bulk packaging eliminates the need for expensive containers and high quality packaging design.
- Intermediate processing of the type required in this category generally requires less elaborate machinery and hence reduced capital outlay.
- Brand loyalty is less evident in the industrial market than for consumer purchases, providing greater opportunity for new entrants.
- Smaller suppliers may have greater flexibility than large agribusiness firms to produce a product exactly to the specifications of the customer.

### **Trends in Market Development**

Extensive interviews with major players in the processed fruit sector revealed considerable optimism about the continued strong growth in demand for PNCTFs. Among other points made, the buyers and brokers emphasized:

- The tendency for shorter product cycles as marketing systems become more sophisticated. Thus products move from 'exotic' to regular status very rapidly. This tendency results in rapidly accelerating demand for products that 'catch' - usually beyond the capacity of producers to supply - followed typically by overproduction as demand stabilizes at its mature level.
- The increasing demand for 'intense' flavours that will provide distinctiveness and character to blends. Major surpluses of some traditional juices on world markets have led to strong demand for flavours that can be blended with denatured apple and grape in particular to create 'tropical' blends. Cost is relatively unimportant if the product (e.g. passion fruit) can contribute this flavour 'kick' in small quantities.
- The general increase in popularity for blended flavours in drinks, yoghurts and other products. Although this trend derives in part from surplus considerations (see above), there is also an increasing demand from the public for flavour 'cocktails'.
- 'Organic' products are becoming increasingly important and their role is only likely to accelerate in the future. This means supplies that can be certified as pesticide and other residue free, and which are packaged with as little change as possible in the natural state of the product. This trend should favour aseptic packaging.

- A trend appears to be developing towards a preference for larger particles in juices and pulps (for yoghurts etc.). Partly linked to the 'organic' phenomenon (see above), it may also reflect simple changes in flavour and texture preference among consumers. This trend should lead to increased demand for partial pulps and pulp/juice mixes where high particulate levels are present.
- Increased labour costs in North America are giving impetus to an increasing trend towards off-shore processing of product. In some cases (see Chiquita examples above), this processing is to a point-of-sale product. In other cases it entails preparing a bulk product which simply requires re-packaging in consumer containers in N. America.
- As consumers become more discriminating, varietal sales become of more importance. In the case of the traditional products, for example, one can already find 'Granny Smith' apple juice and sauce, as well as Reisling and Zinfandel grape products. Better known PNCTFs are also likely to follow this route, especially where marketing muscle exists to develop consumer awareness.

### **Import Restrictions and Requirements**

Processed products avoid many of the problems facing fresh fruit. In fact, a review of regulations concerning food imports to the U.S.A. revealed far fewer regulations applying to processed fruit than are in existence, for example, with respect to meat products. Specific restrictions may apply to individual species of fruit or even packaging methods. Such restrictions can not be examined in a study of this nature. Nevertheless regulations that will generally apply include:

1. Normal industry standards (irrespective of product type) for frozen, canned and aseptic processing will apply.
2. General tariff structures are set at 10%, but exceptions are available, depending upon the species, by excluding them from the 'all other citrus' category. Passion fruit, for example, has entered tariff free.
3. Buyer specifications are clearly more stringent in almost all cases than those imposed by government. The determination of these specifications requires contact with individual importers, brokers etc.
4. Pesticide contamination levels are of clear and growing concern. The key concern for fruits of Latin American origin is the presence of traces of ethyl bromide dichlorides (EBDCs). No EBDC residue level is acceptable and it may take several seasons for a producer to eliminate such residues from the product. Further product-specific information can be obtained from the United Fresh Fruit and Vegetable Association (see Appendix D).

## **Market Recommendations**

A number of recommendations were developed by the field study, arising from the interviews with market participants and trade and retail trends. These are given below:

- For lesser known exotics within the PNCTF category, focus upon selling to flavour and ingredient houses which in turn sell fruit preparations to dairy, beverage and bakery manufacturers. The quantities involved of these new products (e.g. naranjilla or cherimoya) are such that direct sales to manufacturers are unlikely. They do not know the product, lack the facilities to test them adequately, and in any case would require initially such small quantities as to make direct purchase uneconomic. It may be necessary to work with flavour houses to identify appropriate uses for, and blends of, new exotics.
- Rapid gains will be most easily made with recognized exotics such as passion fruit, mango and guava. Here the buyer may be the flavour houses or direct users. The disadvantage of this category is the level of competition faced from established producers, both in terms of geography (Philippines, Dominican Republic) and interims of trading operations (Chiquita, Del Monte etc.).
- Where demand already exists, attempt to identify and work with a major retailer (supermarket chain, own label producers, etc.). These buyers have the marketing presence to both establish the product quickly and to utilize the ingredient in more than one category of product (e.g. drinks, yoghurts, baby foods).
- Where producers are willing to accept relatively low value added for their product, many problems of export market development and exploitation can be overcome by working with large vertically integrated agribusiness concerns (e.g. Chiquita). In any case, such an approach may be worthwhile in the early stages of national development of a product because these companies provide proven expertise in product development and marketing.
- Develop and maintain contacts throughout North America through communication with representative organizations (see Appendix D), trade promotion groups and business publications.

A number of firms contacted have expressed interest in particular products which may, or may not, be available from Bolivia. These include the George Bradford Company seeking soursop products, Kraft General Foods in Canada seeking product for surplus capacity on their aseptic fruit snacks packing line in Toronto, Kraft Foods in the U.S. with general interest in exotics for research and development work and several major U.S. retailers. Firms contacted during the study are listed in Appendix D , and firms wishing to pursue market contacts with Bolivia are identified.

### 3.3.3 Germany

#### Trade Statistics

Germany was selected as representative of, and a leading indicator of, European demand and consumption of PNCTFs, particularly with respect to those of Latin American origin. This is reflected in its share of European trade in this area and its per capita consumption of juices (34l/annum), the highest on the continent. (Note: All references here are to the former West German state.)

In the total juice market, the most important segment of the European processed fruit trade, Germany holds a key position. The German share of the total European market for fruit juice products is summarized in Table 3.4 below.

Import statistics for Germany only allow an approximate disaggregation of PNCTFs within overall fruit imports. In Table 3.5 these data are provided for juices (excluding citrus, pineapple and tomato) and for preserved fruit (excluding most temperate fruits). A further 76,500MT of frozen fruit (mostly strawberries, raspberries and cherries) were imported into Germany in 1989. This fruit is used primarily in the manufacture of jams and other preserves. In addition to these numbers, 15,000MT of banana pulp were imported into Germany in 1988.

**Table 3.4: European and German Consumption of Fruit Juice Products, 1988**

Product	Europe Volume (million litres)		Germany Volume (million litres)	
	volume	% of juice	volume	% of Europe
Pure Juice (100% juice)	4,134	43	1,352	33
Nectars (35-99% juice)	1,699	17	989	58
Juice Drinks (1-34% juice)	3,583	37	798	22
All juices	9,416	100	3,139	33

Overall, growth has been strong in recent years. In terms of volume, all fruit categories grew 63% over the five year period 1984-88 for an eventual import volume of nearly 100,000MT/annum. Strongest growth is seen in the preserved and prepared fruits (no sugar added). This category grew by 124%, increasing from 16,000MT to 37,000MT over the period. It is noticeable that the product categories with sugar are weaker than those without, reflecting some of the same trend towards natural products seen in North America.

**Table 3.5 Trends in Non-Traditional Fruit Product Imports to Germany, 1984-88**

	1984		1985		1986		1987		1988		CHANGE 1984-1988	
	MT	\$000	Vol	Val								
Fruit and vegetable Juices - "Other" No added sugar	17,249	14,464	22,292	17,662	22,045	24,907	25,608	38,150	26,627	32,881	+52%	+127%
Fruit and vegetable Juices - "Other" Added sugar	6,457	9,877	7,250	9,443	7,481	13,592	8,402	19,048	7,688	18,269	+19%	+85%
Prepared and preserved Fruit, No sugar "Other"	16,356	10,756	10,783	7,149	9,114	6,698	8,831	7,499	36,668	25,482	+124%	+137%
Prepared and preserved Fruit, Sugar added "Other"	20,707	10,190	21,587	9,870	22,490	13,570	24,186	17,335	28,271	18,024	+37%	+77%
<b>TOTAL</b>	<b>60,679</b>	<b>45,286</b>	<b>61,912</b>	<b>44,124</b>	<b>61,130</b>	<b>58,767</b>	<b>67,067</b>	<b>82,032</b>	<b>98,894</b>	<b>94,656</b>	<b>+63%</b>	<b>+109%</b>

Average import value 1984 = US\$746.4/MT

Average import value 1988 = US\$957.4/MT

Increase = 28%

Source: NIMEXE - External Trade Statistical Tables, Germany.

The volume growth over this period was exceeded, however, by even stronger value growth (when measured in US\$). Total import value of processed other fruit into Germany over the five year period increased by more than 100%, resulting in an average increase in per unit value from US\$746/MT in 1984 to US\$957/MT in 1988, an increase of 28% over this period (Table 3.5). It should be stressed, however, that a very different story emerges if the data is examined in the original ECU units. A substantial increase in the value of the ECU against the US\$ over this period (from US\$0.678 to US\$1.182) is responsible for almost all the apparent increase in value. A German importer, working in ECU, would have seen only a 40% increase in value from 1984-88 and a 14% decrease in value per metric ton (from ECU946/MT to ECU810/MT).

### **Sources of Origin**

The bulk of Germany's 'other' fruit product imports are accounted for by Italy and other Mediterranean countries. Italy alone is responsible for nearly 60% of all German 'other' fruit product imports. Unfortunately, this statistic says more about the inability to disaggregate data concerning specific low-volume products than it does about origins of imported products. Italian products will largely be sub-tropical fruits, such as grapes, and will certainly not normally include mangoes, guavas, passion fruit etc. The same can not be said for Dutch imports. Accounting for approximately 10% of German imports, many of these will be tropical products transhipped through the Europort in Rotterdam.

Latin American products shipped directly into Germany (primarily through Hamburg) accounted for only 4% of total imports in these categories in 1988, although previous years averaged closer to 6% (see Table 3.6). The principal supplier is Brazil, although Colombia and, to a lesser extent, countries such as Ecuador, Venezuela and Peru also participate.

It should be noted that the only category in which Latin American imports are significant is juices with added sugar -- the category with the lowest rate of growth (see Table 3.5).

### **Consumption Trends**

With an average annual consumption of 34 litres of juice per capita per year, West Germany has the highest juice consumption rate in Europe and accounts for 35% of total European consumption. Other major per capita consumers include: Switzerland (33 litres), Austria (24 litres), Denmark (24 litres), Netherlands (20 litres) and Sweden (19 litres). No other country consumes more than 15 litres of juice per capita per annum. Within the 'other' juices category, Germany's position is not so dominant, representing only 16% of total European consumption, compared with more than 40% of the European market (1.4 million litres in 1988).

### **Product Categories**

Passion fruit is probably the most important of the PNCTFs marketed in Germany. The main variety traded is the yellow passion fruit (*Passiflora edulis flavicarpa*) which tends to originate from Latin America. A wide range of passion fruit products are traded including jams, nectars, squash pulp and fruit in syrup, but juice is the most important. The product is used as a standard item in the manufacture of beverages, nectars, jellies and ice-creams.

Table 3.6: Source of Origin of German Non-Traditional Fruit Product Imports 1987-88

		<u>Total</u>	<u>L. American</u>	<u>%</u>
1. Juices, No Sugar	88	26,267	1,057	4%
	87	25,608	1,557	6%
2. Juices, Sugar Added	88	7,688	1,603	21%
	87	8,402	2,035	24%
3. Prepared and Preserved Fruit, No Sugar	88	36,668	716	2%
	87	8,831	-	0%
4. Prepared and Preserved Fruit, Sugar Added	88	28,271	716	2.5%
	87	24,186	203	<1%
TOTAL	88	98,894	4,092	4%
	87	67,027	3,795	6%
	84	60,679	3,371	6%

Source: NIMEXE - External Trade Statistical Tables, Germany.

Unfortunately, recent world production is judged by German traders to have been surplus to requirements. Prices have recovered recently, rising from US\$650-750/MT CIF for single strength juice in 1989 to US\$1,000-1,150 today, but it is feared that they will decline again. At their peak, in the early 1980s, prices as high as US\$3,000/MT CIF were being paid for single strength juice. Concentrated passion fruit juice sells for approximately US\$3,000-3,500/MT CIF currently. It is estimated that no firm price recovery will occur for another 3-4 years, depending upon the relative growth rates of supply and demand.

The current European market is in the region of 15,000MT/annum, of which the Netherlands (as primary transhipper) accounts for some 75%. Direct imports to West Germany (excluding that purchased through Holland) averages 2,000MT/annum. Overall import volumes are, however, considerably higher. One company interviewed claimed to handle some 3,500-4,000MT/annum. Other importers typically handled 500-1,000MT/annum, suggesting a total import of somewhere in the range of 7,500-10,000MT/annum for Germany.

The product is traded as a single strength juice (13-16°Brix) and as a concentrate with a maximum of 50°Brix. Typically shipment is in 250Kg. double poly lined drums, deep frozen at -18°C. Importers prefer concentrate due to the ease of handling compared with single strength juice and lower freight rates.

Mango is also a popular PNCTF, being a basic ingredient for multi flavour/multi vitamin drinks that are increasingly popular in West Germany. Mango is also used widely in baby foods, frozen drinks, ice-cream, yoghurts and bakery products. Growth in mango imports is said to be slow but steady.

Although juice is the preferred form for trading, mango is also sold in brine for the manufacture of chutney and other preserves. It is also available as a pulp. Continuing technical problems with effective concentration of mango juice has led to a preference for single strength juice over concentrate.

The most highly regarded mango is 'Alphonso', normally obtained from India and it attracts a premium price. It is often shipped in small 3Kg. aseptic packs using a pulping process followed by heat sealing in A-10 cans. This is referred to as 'hot pack'. A total of 36,000MT of hot packs were imported to Germany in 1988 but this quantity included a number of fruits other than mango. Based upon interviews with traders, who were typically handling 100-500MT/annum of mango, it is estimated that total imports for West Germany (including Dutch transhipments) are in the region of 5,000-7,500MT/annum.

Typical CIF prices for single strength mango are currently in the region of US\$850-1,100/MT, depending upon quality, variety and availability of other stock at the time of purchase. Single strength juice is normally 14-17°Brix and shipped in the typical double poly lined steel drums of 250Kg. Shipping temperatures, however, are lower than for passion fruit, being normally -35°C. Concentrate, where used, is normally 28-30°Brix and pulp is 14-16°Brix.

Guava is steadily traded in West Germany but the market is strongly dominated by the Republic of South Africa. Over more than 10 years, the South Africans have set the standards for the more desirable 'pink' fleshed variety, typically shipped as a pulp. There is a minor trade in guava jellies also, particularly from Brazil and the Caribbean.

Total imports of guava to West Germany are estimated to be little more than 1,000MT/annum for pink and only a fraction of that for white pulp.

Guava pulp can be obtained milled or unmilled (seeds). The milled product attracts a premium of between 5-10% over the current unmilled CIF prices of US\$450-600/MT for pink guava pulp. Interestingly, the low price of guava pulp apparently discourages stock holding, resulting in a trade pattern that emphasizes frequent small shipments of the product.

Shipment typically occurs in the ubiquitous 250Kg. drums, but there is also an increasing move towards aseptic packs, as they are seen as more efficient and hygienic. The pulp is normally traded at between 8-10°Brix.

Papaya constitutes the last of the significant PNCTFs traded in Germany, although the market is primarily for fresh product. Nevertheless, a market does exist for papaya in two other forms, as canned chunks, slices and balls, or as single strength pulp. The pulp is used almost exclusively in multi vitamin drinks.

Variety is an important factor and the best papaya is seen as originating from Latin America, with imports from Colombia, Brazil, Venezuela and Mexico. The pulp may be single strength (typically 8-10°Brix) or a concentrate up to 50°Brix.

Papaya is not a widely traded commodity at the processed level and it is likely that there are no more than a half dozen companies active in the area, each one typically importing 100-400MT/annum, for a total import volume of 1,000-2,000MT/annum.

Prices for single strength papaya pulp are currently in the region of US\$700-800/MT, while concentrate may fetch US\$1,800/MT.

The limited market for papaya, and its primary use in multi vitamin drinks has led to little expectation for growth in volumes in the near to medium term future.

Other Products were also investigated with respect to the German market but all were traded at very minor levels at best. In general products such as carambola, soursop, cherimoya, naranjilla, tamarind and tumbo would be purchased by West German traders through the spot market in Rotterdam, or from a specialist dealer in exotics in Switzerland. The German market, therefore, is not as advanced as the North American market in terms of use of PNCTFs.

General comments of traders with respect to other products were:

- Prickly Pear: Not known in processed form. Samples had been handled from Mexico and Peru but without success.
- Carambola: Again not well known in processed form although a market potential may well exist for preserved form for inclusion in tropical fruit salads. The juice is considered too bland (neither sweet enough nor acid enough) to have success in the drink market.

- Cherimoya and Soursop: Used occasionally in multi vitamin drinks and almost always purchased through a specialist Swiss trader as needed. Direct imports have been undertaken from Brazil and Kenya but problems of quality and reliability of shipment caused these to be abandoned. Soursop is much better known than cherimoya, with trading companies in Germany typically handling between 1-2MT/annum each, although one company claimed to handle up to 100MT/annum. Prices are currently quoted as US\$850/Mt for 42-46°Brix soursop.
- Naranjilla: Only very specialized companies will handle naranjilla. The total European market was estimated by one firm at not more than 200MT/annum, supplied almost totally by Peru. Replies indicated that it was seen as a competitor to orange juice, which would suggest a significant ignorance of the product.
- Tumbo and Tamarind: Not traded in Germany to the knowledge of the traders contacted.

### **Import Restrictions and Requirements**

Germany possesses some of the strictest food quality requirements in Europe and all incoming items must comply with the respective 'RSK' values concerning contamination and quality. Products must in general be completely 'natural', that is without any additives. Even for the bulk trade, packaging is very important, with dented or punctured drums being rejected. Importers normally require new drums to be used for each trip. Where product is shipped frozen, cold storage and reefer facilities must meet specifications. Importers will also require details of processing equipment used as considerable importance is placed on this aspect. Aseptic packaging is increasing in importance

Although fruit products are generally subject to a 15-22% duty (depending upon the product), Bolivia as a Less Developed Developing Country (LDDC) is entitled to duty free entry. A second level, that of those countries with the General System of Preference (GSP), also exists with a 17-18% duty.

### **Market Recommendations**

West German importers express considerable confidence over the growth of the market for PNCTFs. One of the largest traders of exotic fruit products in Germany (Verbord Der Deutschen Fruchtsaft) estimates average growth in the exotic segment of the market at 10% per annum over the next few years. This confidence is partly based upon the still largely unexploited market in Germany for many lesser known tropical fruits. With one of the highest standards of living on the continent, it is seen as inevitable that demand for these exotics will grow. The confidence is also partly based upon the enormous growth potential offered to Germany as a result of reunification and the newly independent East European countries.

The inclusion of the German Democratic Republic within a new Germany has resulted in more than 20 million new consumers entering the German market, while other East European countries are expected to follow more slowly. Growth in these markets, however, is likely to be dominated in the medium term future by cheap, large volume fruit imports such as bananas and citrus. The PNCTF market will likely be slow to develop.

Response from trading organizations suggests that immediate market opportunities are best sought in the more established PNCTFs, including passion fruit, mango and guava, although limited markets may be identified for products such as soursop. Traders would prefer to develop long-term partnerships with exporters, rather than 'one-off' deals, and five firms stated that they would welcome contacts from Bolivian exporters with the intention of developing such relationships. These companies are indicated in Appendix H. Samples of products will be needed immediately, probably followed by a trade visit to Germany. Any such attention to German markets should be combined with approaches to Dutch transshipment companies and Swiss exotic trading specialists.

### 3.3.4 Japan

#### **Trade Statistics**

Data presented in Table 3.7 indicates that the total volume of PNCTFs into Japan in 1989 exceeded 100,000MT, for a value of approximately US\$190 million. This volume has increased some nearly 70% since 1985 (63,000MT) suggesting a major surge in this category in recent years. Growth has not always been steady, however -- between 1980 and 1985, PNCTF imports actually fell by some 5%.

Unlike Germany or the United States, the Japanese market is not dominated by juices and pulps, at least not in the PNCTF segment. Total juice imports in 1989 amounted to no more than 4% by volume and 8% by value (see Table 3.8). Instead, the majority of the market is held by two closely related categories: provisionally preserved fruit (28% by volume and 36% by value) and other non-pulp fruit (24% by volume and 12% by value). Together, these two classifications account for approximately 50% of all PNCTFs, and are largely destined for the same usage -- reprocessing. If one adds fruits preserved in vinegar (acetic acid), which is largely for chutney and related reprocessed sauces, this figure rises by another 5% or so. The only other segment accounting for more than 10% of the PNCTF market by value is frozen fruit (11%).

#### **Sources of Origin**

The overwhelming bulk of Japan's PNCTF market is supplied by S.E. Asian countries, which is not surprising given their advantages in terms of shipment costs, existing trade patterns and tariff concessions (see below). Of the major categories, for example, 91% of 'Other preserved fruits and nuts', accounting for more than 25% of all PNCTF imports, is imported from Taiwan, while 'Fruits NES, preserved with or without sugar, not in pulp form', accounting for 24% of PNCTF imports, is 82% derived from China. In these two key categories the only Latin American presence is Mexico, with 1.4MT, or less than 0.01% of the latter import category.

Other significant suppliers to the Japanese PNCTF market include the Philippines, Thailand and India. Mexico captures 15% of the small 'Other fruits and nuts, frozen' market (a share equal to approximately 1,200MT or US\$3million), while Brazil is also represented in small quantities with shipments of candied fruit. It should be noted, however, that Mexico has a far more important presence when fruits other than the PNCTF category are taken into account.

Table 3.7 Japan Imports of Processed Non-Citrus Tropical Fruit, 1980-89

<u>Code</u>	<u>Category</u>	1980	1985	1989	
		MT	MT	MT	<u>\$000,000</u>
0804-50-090	Guavas, mangoes and mangosteens, dried	8.4	-	46.8	0.11
0811-90-190	Other fruits and nuts with sugar, frozen	615.8	2,522.5	524.8	0.69
0811-90-220	Tropical fruits, no sugar added, frozen	448.7	403.8	3,178.8	7.70
0811-90-290	Other fruits and nuts, no sugar added, frozen	3,627.1	8,716.0	8,299.8	18.93
0812-90-420	Tropical fruits, preserved	219.7	100.7	45.6	0.03
0812-90-490	Other fruits and nuts, provisionally preserved	24,230.9	12,136.9	29,344.4	67.98
0813-40-021/2	Tropical fruits, dried (including persimmons)	2,892.5	2,193.9	4,316.8	6.21
0813-40-029	Other fruit, dried	851.5	1,584.8	1,044.3	1.39
2001-90-110	Tropical fruits, preserved with vinegar, with sugar	66.6 (82)	309.3	557.7	0.55
2001-90-140	Other fruits, nuts or vegetables preserved with vinegar, with sugar	702.7 (82)	1,662.1	1,067.2	1.16
2001-90-220	Mangoes and mangosteens with vinegar, without sugar	-	14.8	42.8	0.05
2001-90-290	Other fruits, vegetables and nuts preserved with vinegar, no sugar added	562.6	1,312.6	4,820.5	4.93
2006-00-029	Fruits, nuts, fruit-peel, preserved by sugar	3,651.1	1,954.7	4,136.8	8.63
2007-99-111	Jams, with sugar, not of citrus	4,846.9	4,011.1	3,351.1	8.72
		(incl. citrus)	(incl. citrus)		
2007-99-119	Fruit jellies, with sugar, not citrus	593.2	679.2	344.8	0.55
2007-99-121	Jams, no added sugar, no citrus	19.8	244.9	92.4	0.34
2007-99-129	Jellies, no added sugar, no citrus	19.8	244.9	33.9	0.06
2007-99-210	Fruit purees and pastes, with sugar, no citrus	72.2	210.2	569.5	1.71
2007-99-220	Fruit purees and pastes, no added sugar, no citrus	1,345.7	813.0	1,836.5	2.81
2008-92-110	Mixed fruit, preserved, with sugar	6,100.6	9,120.6	9,342.5	11.16
2008-92-120	Mixed fruit, preserved, no added sugar	3,065.2	0	58.3	0.11
2008-92-219/229	Mixtures of fruit, no pulped, with or without sugar	19.6	9.2	692.4	1.39
2008-99-211/222	Fruit in pulp form	935.9	916.2	1,151.9	2.36
2008-99-213/214/224/225	Bananas, avocados, mangoes, guavas and mangosteens, not in pulp form	1,859.8	1,542.1	2,441.3	3.15
2008-99-221	Bananas, avocados, mangoes, guavas and mangosteens, in pulp form	2,047.3	2,375.0	1,831.3	1.59
2008-99-219/229	Fruits, n.e.s. with or without sugar, not in pulp form	3,482	3,336.1	21,927.7	20.53
2009-80-111/119/121/129	Juice of any other single fruit, with or without sugar	3,453.2	6,373.8	3,812.5	13.46
2009-90-119/121/129	Mixtures of juice n.e.s. with or without sugar	<u>139.5</u>	<u>370.7</u>	<u>388.4</u>	<u>1.15</u>
	TOTAL	65,885.7	62,914.2	105,302	\$187.46

Source: Japan Tariff Commission Records.

Table 3.8: Percentage Share of Japanese Processed Non-Citrus Tropical Fruit

	MT		\$000,000	
Frozen	11,733.4	11.1%	27.3	14.6%
Provisionally Preserved	29,390.0	28.8%	68.0	36.3%
Vinegar	6,488.7	6.2%	6.7	3.6%
Dried	5,407.9	5.1%	7.7	4.1%
Candied Fruit	4,136.8	3.9%	8.6	4.6%
James and Jellies	3,822.2	3.6%	9.7	5.2%
Purees and Pastes	2,406.0	2.3%	4.5	2.4%
Mixed Fruit	10,093.2	9.6%	12.7	6.8%
Pulps	2,983.2	2.8%	4.7	2.1%
Other Non-Pulp Fruit	24,371.0	23.1%	23.7	12.6%
Juice (of single fruit or mixed)	4,200.9	4.0%	14.6	7.8%
	105,033.3	100%	188.2	100%

Source: Japan Tarriff Commission Records.

## **Consumption Trends**

While import statistics show that the PNCTF category has grown over the last five years, major processed fruit traders are not optimistic over possibilities for growth in the current Japanese market. Two factors mitigate against a strong demand for PNCTFs, especially those from Latin America in the near future.

Firstly, in the exotics field, public attention has been focused very strongly upon the fresh produce end. Here extremely high prices are sometimes paid for the latest fashion item. One trader was quoted as saying that Picaya (a prickly pear), imported fresh from Colombia, had fetched more than US\$25/Kg. at peak demand. While such prices might excite the interest of Bolivian exporters, serious problems exist in realizing them. Not only is the market extremely unstable (today's fashion is unsaleable next week), but Bolivia has no certified clearance for Mediterranean Fruit Fly, rendering fresh fruit imports into Japan technically illegal. While some traders maintained that the exclusion of non-certified fruit was not practised for small quantities, it would be a very unsound basis for trade development.

The second factor rendering an increase in Japan's PNCTF segment unlikely, at least in the short-term, is the recent liberalization of trade legislation in Japan with respect to temperate fruits. Many fruits from Europe and North America, previously luxury items purchased only on special occasions, are now more reasonably priced and becoming seen increasingly frequently in stores. The current fashion, therefore (in the opinion of traders interviewed) is towards these Northern Hemisphere products, and away from tropical items.

The result of these factors has been a decline in consumption of many better known tropical items, although there are still 'fashion leaders' such as acerola, which has experienced a big surge in popularity as a natural vitamin C source. Traders reported that the market for mango concentrate, papaya pulp and passion fruit juice have all declined recently and are expected to continue on this trend.

## **Product Categories**

With the exception of pineapple, few traders could identify a tropical processed item experiencing steady and sustained demand at high levels. The purple passion fruit market (var. flavicarpa) is weak at no more than 100MT/annum, according to the largest importer of this product, although the company would be interested in talking to new suppliers. Current prices are in the region of US\$1/Kg. CIF. The company is currently riding the wave of demand for acerola with considerable success. Other traders placed mango concentrate demand at no more than 40MT/annum, a very low figure, although it does exclude mango preserved in vinegar, a much larger market. Mango concentrate imports were said to have exceeded 100MT/annum several years ago.

Demand for papaya pulp, supplied by Hawaii, has also declined steeply, being estimated in 1989 at no more than 30MT/annum, as opposed to 200MT/annum several years ago. One major trader indicated that they had imported trial quantities of soursop and carambola but had little luck with either. A very small market does exist for cherimoya but volume estimates were impossible to obtain.

In terms of packaging preferences, recent studies by ASEAN have shown a stagnant or declining market for canned fruit products, similar to that experienced in the U.S.A., although total canned fruit imports (not only PNCTFs) are in excess of 50,000MT/annum (mostly accounted for by temperate fruit). Between 1980 and 1985, for example, the value of fresh fruit purchases by Japanese households increased by 15%, while the value of canned fruit purchases declined by over 12%. Frozen fruits, by contrast have done well, increasing by over 60% between 1985 and 1988 (all fruits).

### **Import Restrictions**

A plethora of rules and regulations apply to the import of all types of commodities into Japan, including foodstuffs. Regulations govern import procedures, health inspections, documentation and storage, shipment temperatures (when frozen or chilled), and the JAS regulations applied (on a voluntary basis) specifically to agricultural items. These JAS standards affect principally quality and labelling.

Imported goods are also classified as quota or non-quota items. Quota levels are usually established twice a year and are set by MITI (the Japanese Ministry of Trade and Industry). Although many processed fruit items have been governed by quotas in the past, these were removed in April 1990 for all fruits except oranges (due for removal in 1992).

While import duties and tariffs can be quite high (30% or higher is not uncommon), rates for tropical fruits are sometimes lower than for temperate products. Some rates that appear to apply to tropical fruits include: Juices (0%), Purees and pastes (40%), jams and jellies (28%), pulp (35%), tropical frozen fruit (12%)

### **Market Recommendations**

A number of features combine to render the Japanese market a difficult one for Bolivian exporters, including the dominance of S.E. Asian suppliers, the relatively high transport costs, complicated and demanding standards for imported products, and the relatively stagnant market for PNCTFs under current conditions. Nevertheless, some market opportunities may exist, particularly for those exporters already servicing stable markets elsewhere, and hence not dependent upon the Japanese trade.

Frozen and other non-canned fruit ingredients appear to offer the best possibilities, with one company expressing interest in purple passion fruit concentrate. There may also be a small market for guava pulp. One firm was seeking a replacement to Colombia for supplies of fresh 'picaya', believed to be prickly pear (tuna).

In any case, the creation of an export market in Japan would depend upon the development of close ties with one or more trading companies. Such ties are essential in order to comply with the myriad regulations affecting imported items. Appendix I provides a list of firms interviewed during this study. Those companies interested in further contacts with regard to supplies are marked.

### 3.4

### Conclusions

A number of reasonable potentials appear to exist for the export of Processed Non-Citrus Tropical Fruits (PNCTFs) from Bolivia. Regionally, there may be good opportunities for canned pineapple in the Argentinean market, although no growth is expected in the near future. In Chile pineapple is also in demand, but better opportunities probably exist for passion fruit and other exotic pulps for use in drinks and dairy products (yogurts, ice creams etc.). A number of Chilean companies expressed strong interest in exploring Bolivian supplies in more detail.

Internationally, the U.S.A. clearly offers the best opportunities in both overall market size and the diversity of imports handled. Here, key constraints to Bolivian entry arise from entrenched competition from other Latin American and, to a lesser extent, Asian suppliers. It would seem best for Bolivian exporters to concentrate on the less well known exotics in this market (e.g. soursop), although the development of completely unknown products (such as naranjilla) may be difficult at first. There are a number of North American firms actively looking for reliable alternative sources of tropical fruit products, and these opportunities can be pursued further.

Germany also offers potential, although here the market appears more conservative, and passion fruit, guava and mango may be the best products for initiating Bolivian exports. To offset this limited range of demand, however, German firms appeared amongst the most eager to establish long-term trading operations, including possibly investment in Bolivia. The more exotic items are apparently handled largely by specialist Swiss trading firms, and the development of links with German importers could create opportunities for sales of other products to Swiss traders as well.

Japan offers little hope at present unless an exporter is looking for sales marginal to his/her principal business. Even were processed tropical fruit a growing market in Japan (which it appears not to be at the moment), competition from other Asian suppliers (e.g. Thailand, Philippines) would be extremely difficult to overcome.

The field studies also revealed that the choice of processing and packaging is important. Canned fruits of any form or type are diminishing in popularity -- a trend that extends far beyond the fruit segment of the food market. The only exception noted to this is the Argentine market for pineapple, which still appears to be predominantly in canned form. Frozen product has largely taken over in the last decade as the form of preference for processed fruit in industrialized countries, although there are now indications that aseptically packed product is likely to surge in popularity in the 1990s. This trend is supported by the decrease in aseptic packaging costs, the ability to discard the expensive and difficult cold-chain, and the view of aseptic packing as more 'natural' than any other. Dried fruit continues to maintain a steady market. Other forms of processing, including flours, leathers and candied fruits, have their niches but are likely to continue as minor markets (not that this need discourage exporters from Bolivia who are unlikely to move significant quantities in the foreseeable future).

The scarcity and cost of packaging materials in Bolivia strongly suggests the advisability of bulk, rather than retail, packaging. Fortunately, trends in the international processed fruit trade seem to support this option. While some of the international agribusiness firms are moving more and more of their operations off-shore, and packaging for retail in producing countries, there appears to be a growing demand for processed fruit as an ingredient in further processing. This market demands cheaply packaged (but high quality) material in bulk, almost always either frozen

or aseptic.

Finally, increasingly strict legislation, as well as consumer demand, is placing a higher and higher importance upon 'organic' product. Although this includes absence of contamination from inorganic sources such as stones and dirt, its principle focus is upon the exclusion of agricultural chemicals such as pesticides. Bolivian firms seriously interested in export development must give close attention to this area. Those exporters able to demonstrate that their product has been grown without any chemical additives at all (perhaps even including chemical fertilizers) may be able to obtain a significant premium.



## 4.0 HERBS AND SPICES

### 4.1 Introduction

The potential market for Bolivian herbs and spices was examined both regionally -- Argentina and Chile -- and internationally. International market examined comprised North America and Japan.

The list of potential herbs and spices submitted to field staff in each country included products both already in production within Bolivia and those which so far have only been grown at an experimental or trial level. In all cases the identified crops were those that appeared to be suitable for conditions in the two target areas of the AMIS project, the Chapare and the High Valleys.

Selected herbs and spices included, but were not necessarily limited to:

- Allspice
- Anise
- Cardamom
- Cumin
- Ginger
- Oregano
- Pepper
- Turmeric

As for other product groups discussed in other sections, field staff were not asked to provide an exhaustive analysis for each individual commodity. Instead they were asked to identify those of most importance in their target market area, as well as those arousing most interest among commercial traders, brokers and users of products in the overall category. The amount of detail provided below on each product, therefore, is a direct reflection on the importance of the commodity in the market discussed.

The form of imported product to be considered was left largely to the requirements of each market that was considered. Nevertheless, it was expected that these herbs and spices would be traded primarily as dried, cleaned product, with little additional processing. Indeed, some spice or herb based products are considered separately in the essential oils and colorants section when offered in the form of extracts and essences.

Again, as for other product categories, trade statistics tend to focus primarily upon those commodities traded in large quantities (e.g. pepper); spices and herbs with minor traded volumes are often subsumed within 'other' or NES (not elsewhere specified), rendering it difficult in some cases to provide specific data.

## 4.2 Regional Markets

### 4.2.1 Argentina

#### Trade Statistics

As with many other imported products, the overall pattern for herbs and spices in Argentina has been one of declining volumes in recent years, although the 1,510MT imported in 1989 did produce a 16% increase on 1988 import volumes. In general, however, levels are considerably down on the averages of 2,000-3,000MT seen in the early 1980s (see Table 4.1).

The trend in imports with respect to value presents a completely different picture. Here values, after declining steeply in the mid 1980s in parallel with volumes, soared in the second half of the decade to reach US\$12.4 million CIF in 1987, for an average price of approximately US\$7,000/MT -- nearly triple the average price of previous years. Such high per unit values could not last, and declined to US\$4,000 in 1988 and a record low of US\$1,200/MT in 1989.

Of the total US\$1.5 million CIF in spice and herb imports in 1989, nearly 90% was accounted for by pepper imports, principally black pepper. Only two other products registered at all in that year -- 163MT of oregano, valued at US\$167,000 and 1.2Mt of cardamom, valued at US\$10,700. Ginger, cumin and anise were all imported in 1988 but in generally minor quantities. Over the last decade, pepper has averaged 80% by volume and 87% by value of all imports in this category (Table 4.1)

#### Sources of Origin

Pepper, the predominant import item, is sourced largely (some years entirely) from Brazil. In 1989, 80% of pepper imports derived from that country. Almost the entire remaining proportion was accounted for by Singapore, which acts as a transshipment point for product from Indonesia, Malaysia and other S.E. Asian nations. Singapore's presence in the Argentine market is recent, commencing only in 1987.

Oregano is imported primarily from Peru (73% by volume in 1989) but with Chile as another important source, accounting for the remaining 27%. Turmeric is reported by buyers to be derived principally from Peru, with minor quantities being supplied by Bolivia. Much of the turmeric is said to enter the country through the contraband trade and hence is not reported. In any case, no separate statistics are maintained for this commodity but total imports are estimated by dealers at approximately 200MT/annum. Ginger is reported to be purchased from various sources, including Peru, Singapore and Germany. The very minor quantities of cardamom that enter the country are reported to derive from France (processed) and Central America.

Both cumin and anise are largely supplied through domestic production and no significant imports occur. Traders did quote Egypt and Turkey as sources of cumin, however.

Table 4.1 Herb & Spice Imports by Commodity, Argentina 1980-89

Year	Pepper		Ginger		Cumin		Cardamom		Anise		Oregano		Total Spices	
	MT	US\$ 000	MT	US\$ 000	MT	US\$ 000	MT	US\$ 000	MT	US\$ 000	MT	US\$ 000	MT	US\$ 000
1980	1,567.6	4,220.8	7.6	14.5	83.3	166.9	1.1	13.0	101.16	206.7	456.4	1,002.1	2,217.5	5,624.0
1981	2,361.7	4,830.5	0.0	0.2	10.4	117.5	0.6	6.4	7.6	94.8	470.2	1,672.3	2,850.5	6,721.6
1982	1,779.1	3,080.8	2.9	7.8	0.0	0.0	1.2	7.9	0.0	0.0	301.1	647.7	2,084.3	3,744.3
1983	1,342.7	2,303.7	10.0	19.8	0.0	0.0	0.5	7.9	0.0	0.0	405.3	509.8	1,758.5	2,841.3
1984	1,242.7	3,980.8	4.4	16.7	0.0	0.0	0.9	11.9	0.0	0.0	387.6	500.1	1,535.6	4,509.5
1985	727.9	2,658.4	4.5	13.0	0.0	0.0	0.1	3.0	0.0	0.0	371.0	439.1	1,103.5	3,113.6
1986	881.8	5,455.7	10.1	24.4	0.0	0.0	0.9	11.1	0.0	0.0	420.9	529.1	1,313.7	6,020.2
1987	1,687.7	12,144.9	8.0	15.1	0.0	0.0	1.9	51.5	0.0	0.0	73.5	177.1	1,771.2	12,388.6
1988	1,003.6	4,770.9	11.1	20.1	0.0	0.1	0.3	2.3	0.1	0.4	285.9	474.3	1,300.9	5,268.0
1989	1,345.3	1,639.8	0.0	0.0	0.0	0.0	1.2	10.7	0.0	0.0	163.0	167.2	1,509.5	1,817.7
<b>TOTAL</b>	<b>13,940.1</b>	<b>45,086.3</b>	<b>58.6</b>	<b>131.7</b>	<b>93.8</b>	<b>284.5</b>	<b>8.4</b>	<b>125.8</b>	<b>109.3</b>	<b>301.9</b>	<b>3,335.0</b>	<b>6,118.8</b>	<b>17,545.2</b>	<b>52,048.9</b>
<b>ANNUAL AVE</b>	<b>1,394.0</b>	<b>4,508.6</b>	<b>5.9</b>	<b>13.2</b>	<b>9.4</b>	<b>28.4</b>	<b>0.8</b>	<b>12.6</b>	<b>10.9</b>	<b>30.2</b>	<b>333.5</b>	<b>611.9</b>	<b>1,754.5</b>	<b>5,204.9</b>

NOTE: VALUES ARE EXPRESSED "C.I.F."

SOURCE: INDEC

## Consumption Trends

Despite the rather bleak picture presented by the import statistics (Table 4.1) it appears that spice and herb consumption in Argentina have held fairly steady over the last decade. The disappearance of imports for cumin and anise arise from the success of domestically grown replacements, while those products not grown in the country -- particularly pepper and cardamom - have fluctuated around a steady mean. For oregano, the decline in imports is also linked to domestic production, with spice traders estimating imports at no more than 10% of total consumption in 1989, a considerable decline from the beginning of the decade when import volumes were triple current levels.

That is not to say, however, that Argentine spice consumption presents an encouraging trend for would-be importers. Little foreign exchange exists for the importation of items not considered important to the diet and most day-to-day needs in this area can be met by locally produced cumin, oregano and anise, as well as other herbs not examined such as thyme, basil, coriander, parsley and laurel. Only pepper has managed to maintain its place as an import of significance within the Argentine economy. Little growth in the consumption of imported herbs and spices can be expected under current economic conditions.

Patterns of consumption are estimated to be divided fairly evenly between consumers and others, with retail sales accounting for some 50% of spice and herb sales, while agroindustry accounts for another 20% and the institutional segment the remaining 30%.

## Product Categories

**Pepper** is imported almost entirely in bulk, in 50Kg. sacks, and ground and packaged for retail sale in country. White pepper was quoted at approximately US\$4-5/Kg. wholesale price in Buenos Aires, while black pepper was about US\$1/Kg. cheaper. These prices are almost double those quoted at port of entry (in the range of \$2-3/Kg.) due to duties, port charges and importers margins.

**Turmeric** has an estimated average import value of approximately US\$0.90/Kg., based upon an assumed 200Mt at a total value of US\$180,000. Wholesale prices, however, vary considerably according to the form of product handled. Whole dried turmeric was reported by one trader at \$0.50/Kg. while others, dealing in processed powder, quoted prices as high as US\$2-3/Kg.

**Ginger** consumption is estimated at around 5-6MT/annum in Argentina, although held over stocks from previous years may result in an almost complete absence of imports in any particular year. This small volume is traded at an average wholesale price of approximately US\$2/Kg., although one trader reported Chinese ginger at \$4.50/Kg. (presumably in fully prepared form).

**Cumin** statistics are difficult to obtain because of the local nature of the trade in this herb. It is estimated by dealers, however, that approximately 60MT of cumin are sold per annum, for a total value of some US\$90,000, or \$1.50/Kg. Those traders selling imported cumin (principally Egyptian) quoted prices nearer US\$2.00-2.50/Kg.

**Cardamom** is handled at levels of probably no more than 1MT/annum, for a value of approximately US\$11,000. Its use is restricted almost entirely to prepared foods and a few speciality

shops.

**Oregano** is largely locally produced and fetched prices of around US\$0.70-0.90/Kg. at wholesale in 1989. Imported oregano was considered slightly more expensive at perhaps US\$1.00/Kg. Traders estimate that total annual consumption, at 1,600MT/annum, was worth approximately US\$1.5 million in 1989.

### **Import Restrictions and Requirements**

Argentina has a number of quality standards and restrictions with respect to spices and herbs. Each recognized product is defined in terms of botanical variety, ash and fibre content, and minimum levels of active ingredients (essences and acids). Levels of contamination of the product by foreign objects are also specified.

### **Market Recommendations**

It is difficult to see any serious export opportunities to Argentina in herbs and spices with the exception of whole pepper. Here the US\$1.5 million import level may be attractive to Bolivian producers, especially as Argentina appears to be in the process of abandoning its traditional supplier in Brazil. Four of the six traders interviewed expressed interest in investigating Bolivia as a potential supplier of black pepper.

Apart from quality considerations, however, Bolivian exporters would have to be capable of delivering pepper to Argentina for little more than US\$2/Kg. at current prices (it should be remembered, however, that these are the lowest prices in a decade and may rise substantially in the future).

Lesser opportunities may exist for turmeric and oregano, with each of these two products accounting for imports in the US\$150,000-200,000 range. Some interest was expressed by companies in these product areas. The considerable importance of Peru as a supplier to Argentina in these categories may be inadvertently of use to Bolivia if civil disturbances in Peru cause a further deterioration in production and exports from that country.

#### **4.2.2 Chile**

### **Trade Statistics**

In 1989 Chile imported nearly US\$900,000 of 7 principal spices, amounting to almost 600MT of product (Table 4.2). The bulk of these imports -- 76% by volume and 55% by value -- was accounted for by cumin, while whole black pepper contributed a further 19% by weight and 35% by value of the total. No other product in this category accounted for more than 3% of the value of total imports. Anise, cardamom, cumin, ginger, oregano, white pepper, powdered pepper and turmeric all recorded values of only a few thousand dollars each.

This pattern is typical of the import statistics since 1982 (Table 4.2), although there have been occasional exceptions (anise in 1982, for example). Recorded cardamom imports have never exceeded US\$230 in any year during this period, while ginger imports were greater than US\$10,000 only in one year, 1986. Turmeric peaked at US\$52,000 in 1987.

Table 4.2 Herb & Spice Imports by Commodity: Chile 1982-89

Commodity	1982		1983		1984		1985		1986		1987		1988		1989	
	MT	US \$000	MT	US \$000	MT	US \$000	MT	US \$000	MT	US \$000	MT	US \$000	MT	US \$000	MT	US \$000
Anise	104.2	255.2	0.5	1.4	0	0	0	0	0.5	1.4	0	0	0	0	3.2	5.5
Cardamon	0	0	0	0	0	0	-	0.7	0	0	0.2	1.8	0.1	2.3	0	0
Cumin	197.4	395.5	188.8	369.5	163.3	228.7	103.7	107.7	137.6	147.7	193.4	341.4	243.7	319.2	453.7	486.7
Ginger	0.4	7.8	3.7	1.0	4.9	4.9	0	0	7.3	11.2	0.1	0.3	3.7	3.4	0.2	0.4
Oregano	0.1	0.4	0	0	0	0	0	0	0.1	0.3	5.5	5.6	0	0	-	-
Pepper (Black)	161.0	105.4	76.0	110.9	147.4	288.0	32.1	88.5	23.6	105.7	105.2	515.2	70.6	274.2	114.7	311.6
Pepper (White)	0.5	1.2	2.4	6.4	20.1	68.0	17.8	80.6	18.3	115.1	13.3	93.2	26.5	153.5	16.6	72.7
Pepper (Other)	34.6	67.4	21.0	32.0	71.3	163.7	14.8	44.7	11.5	42.7	10.8	58.7	20.4	81.4	-	0.5
Pepper (Powder)	0	0	0	0	0	0	0	0	0	0	0	0	22.1	84.0	0.1	0.8
Turmeric	2.6	2.8	4.4	5.4	5.5	6.7	23.6	35.4	27.4	40.8	35.0	52.0	27.0	33.0	6.7	6.3
<b>TOTAL</b>	<b>500.8</b>	<b>805.7</b>	<b>296.8</b>	<b>526.6</b>	<b>442.5</b>	<b>76.0</b>	<b>192.0</b>	<b>357.6</b>	<b>226.3</b>	<b>464.9</b>	<b>363.5</b>	<b>1,088.2</b>	<b>414.1</b>	<b>951.0</b>	<b>595.2</b>	<b>884.5</b>
<b>Ave Value/MT</b>	<b>1,609</b>		<b>1,774</b>		<b>1,842</b>		<b>1,863</b>		<b>2,054</b>		<b>2,939</b>		<b>2,297</b>		<b>1,486</b>	

Source: Agricultural Plannings Office (ODEPA)

## Sources of Origin

Cumin, the most important imported product in this category in Chile, is derived principally from Turkey (86% by value in 1989), with small amounts from Iran and China. In the past India has also been an important supplier. Turkey is also the principal supplier of anise.

More than 60% by value of black pepper imports, by contrast, were supplied by Brazil in 1989, with Singapore and Malaysia contributing another 15-20% each. Interestingly, Paraguay supplied some 3.5% of black pepper imports. Despite its apparent dominance, Brazil's importance as a supplier has declined over the decade (from 86% in 1982), with the S.E. Asian suppliers benefiting.

This pattern is even clearer for white pepper imports, where Brazil has moved from a sole supplier in the early part of the decade to holding less than 10% of the market by 1989.

A similar loss of regional markets has also occurred with respect to the minor spices and herbs, with Peru, which held some 75% of the turmeric market (by volume) in 1982, declining to only 30% by 1989. The competition, once again, has come from Asia -- in this case China. Peru still controls almost the entire oregano market in Chile, and the bulk of the ginger trade. Both, however, are tiny.

## Product Categories

**Cumin's** dominance of Chilean import statistics is somewhat surprising, particularly when it is realized that Chile is also an important producer of cumin itself. The answer lies in the need for cumin in most recipes for 'empanadas' (meat pies) -- a traditional and very popular snack food item in Chile. Traders reported that imported cumin is often preferred over domestic because of better quality control of the product, and is imported in 50-55Kg. sacks, usually a container at a time. The importing firms then sell individual sacks to traders all over Chile who repackage in small consumer or restaurant-sized bags. For the month of August 1989, 6 importers received shipments of cumin, typically of 12.5MT/shipment and paid an average of US\$1.03/Kg. CIF for the cargo.

**Black Pepper** is also imported in bulk, usually by the container load. Brazilian pepper can be delivered in approximately 30 days from ordering, as opposed to Asian supplies which require 100 days notice. This was stated as an important consideration to importers who wish to avoid tying up capital in large inventories. Brazilian pepper was also said by some traders to be better quality than Malaysian and Chinese, but prices are clearly lower from these sources. This is reflected in the range of CIF values quoted by companies, ranging from US\$5/Kg. and over for some importers to US\$2-3/Kg. for others in August 1989. While these prices are, of course, affected by volume, a clear dual range is apparent. A total of 9 importers were identified as receiving shipments during this month, covering loads of as great as 42MT to as little as 500Kg.

**Other Spices.** Demand for imported oregano is absent principally because of the large domestic production, not because of any lack in demand for the product. A single import of 54Kg. in August 1989 was valued at U.S.\$504, or over \$9/Kg. CIF, suggesting strongly that it was prepackaged for retail sale. Ginger was imported by two firms in the same month at an average CIF price of US\$3.6/Kg., again suggesting prepackaged retail units. The principal importer of

turmeric during this period was Nestle Chile, which purchased 7.5MT at an average CIF price of US\$1.39/Kg., presumably for agroindustrial manufacturing processes. Finally, the small quantities of anise imported are largely attributable to the liquor manufacturers, who paid approximately US\$3/Kg. in mid-1989.

### **Import Restrictions**

In addition to the standard quality controls, defining maximum permitted levels of contaminants as well as required levels of active ingredients, Chile imposes a 15% duty on spice and herb imports. This duty could be waived on Bolivian imports under the ALADI convention, but Bolivia has not as yet applied for such a waiver.

### **Market Recommendations**

Little growth appears to be occurring in the spice and herb market in Chile, and major importers did not seem to anticipate any near term change in this pattern. Nevertheless, the volume of cumin and pepper imported by Chile presents potential opportunities for Bolivian exporters. Several of the companies contacted (see Appendix C) expressed their interest in investigating new sources of supply in this category. There may even be possibilities, at an extremely limited scale, for import of some other types of imported spices and herbs into the Chilean market. While the volume of imports in these categories is obviously insufficient to support an industry in Bolivia, it is possible that they might provide an early market for growers not yet producing sufficient volume to enter larger international markets.

Obstacles to export market development in Chile centre around competition from Asia. Bolivia does, however, possess two strong potential advantages -- low transport costs and fast delivery times. These considerations may render Bolivia able to compete for at least some proportion of the market. Other problems that must be addressed include removal of existing tariff barriers (also a potential plus for Bolivia), and the development of trading relations with Chilean companies.

## **4.3 International Markets**

### **4.3.1 The United States of America**

#### **Trade Statistics**

In 1988, the United States imported some 150,000MT of various spices and herbs, with a CIF value of more than US\$350 million (Table 4.3). This represents an increase of approximately 20% by volume but a decline of nearly 10% by value, from 1986. The volatility of spice and herb prices is considerable, however, and it is unwise to read too much into year-by-year fluctuations in value. A number of commodities hit an all time high value in the period 1986/87 and the reduction since can be seen as a correction in the most extreme of these. Over the three year period, for example, black pepper prices declined nearly 40%, and pepper accounts for some 27% by value of all imports in this category. Other products, by contrast, have experienced significant increases in

total value. Coriander is up 135% from 1986, oregano 105%, and even white pepper has made marginal gains, increasing its total value by nearly 5%.

Overall, U.S. imports in this category have grown in value by an average of 9.9% per annum over the 6 years from 1982-88, starting from a value of US\$171 million in 1982.

Black pepper, with nearly US\$100 million in imports in 1988, holds an unchallenged position as the most important individual commodity within the spice and herb group. Only sesame seed (sometimes not included in the category in any case) at 7.1% (\$26 million), and white pepper, at 5.4% (\$19 million), of total imports by value can claim to exceed the 5% mark. The next most important product is paprika, which claims only 2.4% of total market share (\$8.5 million). This diversification of market share is not surprising when it is considered that USDA data lists 64 separate commodities, including sesame, within this category (some are different forms of the same product, however).

It should also be remembered that the U.S.A. is a spice and herb producer and exporter in its own right. In 1988 the U.S.A. exported some 8,500MT for a value in excess of US\$27 million.

### **Source of Origin**

As might be expected given the number and variety of spices and herbs imported into the United States, the diversity of sources is also great. Nevertheless, it is fair to say that the Middle East (Turkey, Egypt) and S.E. Asia (Indonesia, China, Taiwan) are the dominant producing areas (Table 4.4). Latin America also contributes. Among other countries; Mexico, as the principal U.S. source of coriander (culantro) and sesame seed; Guatemala, as the principal U.S. source of cardamom; and Brazil, as the principal U.S. source of ginger, are of note. In all, Latin America (including the Caribbean) accounted for just over 10% of U.S. spice and herb imports in 1988, with South America contributing 80% of that share (mostly Brazil). Bolivia is the only Andean country not represented in the importers' list.

Many products are dominated by a single supplier. At its extreme, this can amount to a virtual monopoly (e.g. 99% of bay leaf imports originate in Turkey, or 97% of white pepper imports originate in Indonesia). Even at lesser levels, however, the control by one or more suppliers is impressive. Among those commodities listed in Table 4.4, there is not a single case where the top two producers fail to account for at least 70% of the U.S. import market. This implies that new entrants into the field will inevitably face powerful and well entrenched competition.

### **Consumption Trends**

The pattern of spice and herb consumption in the United States is of major importance to the industry world wide. An International Trade Centre (ITC) report undertaken in the late 1970s indicated that the U.S.A. accounted for one quarter of all world imports, and it is not believed that the position has changed significantly since then. It should be noted that the Canadian market, which functions as a sub-set of the U.S. industry, would possibly add another 10% to U.S. import figures.

Table 4.3: United States Imports of Selected Spices & Herbs, 1986-88

Commodity	1986		1987		1988	
	MT	US \$000	MT	US \$000	MT	US \$000
Anise	840.8	1,281.9	1,191.4	2,222.6	776.8	1,408.5
Basil	1,394.6	1,929.5	1,608.3	1,879.8	1,776.4	2,417.6
Cardamom	144.2	807.3	178.7	849.4	134.3	578.0
Coriander	3,416.6	1,409.5	3,292.3	1,716.3	5,937.8	3,322.3
Cumin	3,737.5	4,183.1	4,698.6	6,846.3	3,699.9	4,461.2
Cariic (dried)	1,397.2	1,230.9	1,847.5	1,752.3	3,713.6	1,366.0
Ginger (ground or candied)	230.0	453.3	464.8	826.4	347.2	838.1
Ginger (dried)	5,234.4	4,985.8	4,647.3	3,782.8	4,575.8	3,768.5
Bay (laurel leaves)	554.7	893.7	666.5	1,610.2	613.4	934.0
Oregano (crude)	5,496.1	3,239.1	5,232.9	12,869.7	3,454.3	6,659.5
Paprika	6,579.6	9,766.9	5,267.1	8,757.8	4,917.3	8,483.3
Pepper Black (unground)	38,063.1	152,962.7	31,372.1	147,807.7	26,939.4	95,161.0
Pepper White (unground)	3,577.9	18,472.3	4,533.3	24,693.9	4,326.4	19,275.9
Allspice (pimento)	773.1	1,469.6	869.3	1,682.3	911.2	1,522.9
Sesame Seed	36,316.0	25,746.9	36,517.9	26,541.8	33,146.3	25,702.1
Turmeric	2,069.1	2,615.2	1,931.5	1,836.2	1,639.3	2,021.9
<b>TOTAL</b> (All herbs and spices)	<b>139,646</b>	<b>385,942</b>	<b>138,246</b>	<b>443,151</b>	<b>152,459</b>	<b>359,500</b>

Source: Foreign Agricultural Trade Statistics, USDA

Table 4.4: Origin of United States Imports of Selected Spices & Herbs, 1988

Commodity	Principal Source				Principal Latin American Source			
	Country	Vol	'000's	%	Country	Vol	'000's	%
Anise	Turkey	473.7	758.6	54	Mexico	34.7	19.5	1.4
Basil (crude)	Egypt	1,441.4	1,915.9	79	Mexico	5.1	21.0	0.9
Cardamom	Guatemala	108.8	371.6	64	Costa Rica <sup>1</sup>	8.8	37.6	6.5
Coriander	Mexico	3,565.9	1,957.9	59	Argentina <sup>1</sup>	232.5	97.3	2.9
Cumin	Turkey	2,682.1	2,869.1	64	Mexico	15.0	9.8	0.2
Garlic	China	3,616.3	1,255.8	92	Mexico	7.8	4.2	0.3
Ginger (ground or candied)	Taiwan	128.0	328.1	39	Costa Rica	2.8	1.7	0.2
Ginger, Dried	Brazil	1,568.5	970.5	26	Costa Rica <sup>1</sup>	194.4	143.7	3.8
Bay (laurel leaves)	Turkey	607.8	921.4	99	Mexico	4.4	10.3	1.1
Oregano	Turkey	1,621.0	3,842.1	58	Mexico	1,212.1	1,107.1	16.6
Paprika	Spain	3,822.5	6,459.0	76	Mexico	85.2	69.0	0.8
Pepper, Black (whole)	Indonesia	11,131.25	37,337.1	39	Brazil	6,033.3	19,597.7	20.6
Pepper, White (whole)	Indonesia	4,168.5	18,594.1	97	Brazil	20.5	56.8	0.3
Allspice (pimento)	Jamaica	329.0	716.8	47	Honduras	261.8	364.2	23.9
Sesame Seed	Mexico	23,139.8	18,133.9	71	Guatemala <sup>1</sup>	4,800.9	3,881.7	15
Turmeric	India	1,309.7	1,666.1	82	Costa Rica	109.0	172.5	8.5
All Spices					Region	18,767	35,920	10.8
					S. America	11,496	27,313	8.2

Source: United States Foreign Trade Statistics, USDA

<sup>1</sup> Second largest producer in Latin America

In the ITC report, the pattern of U.S. consumption was broken down into industrial (30-35%), institutional (20%), and retail (45-50%). Trends since then have seen a decline in the relative importance of retail sales and a major growth in the industrial processing sector. This trend reflects the continuing North American pattern of growth in meals outside the home, snack foods, and ready-to-eat meals for in-home consumption. The popularity of these food categories has resulted in a corresponding increase in the demand for additives by the processing sector.

Although retail sales have declined in importance, industry sources suggest that the increasing sophistication (and ethnic background) of the U.S. consumer has resulted in a demand for a broader range of herbs and spices than previously, leading to a broader market.

### **Product Categories**

The following spices and herbs are discussed in order of their importance in the U.S. market.

**Pepper** is an essentially tropical crop that never grows further than 20° from the equator. It has spread widely throughout the world, however, from its presumed point of origin in India. India, Brazil and Indonesia each produce in excess of 20,000MT/annum and are the three principal producers, although Malaysia, Sri Lanka and Thailand are also important. The world trade centre for pepper is Singapore.

The U.S. is the world's largest importer of pepper and imports almost entirely the whole, unground form. Although black is much more popular than the white variety, the latter is in steady demand by manufacturers wishing to avoid a dark additive to their product (e.g. mayonnaise). Other forms of pepper include pepper oil and pepper oleoresin (see Essential Oils section), and whole preserved pink and green peppers. This latter is a small, speciality market estimated at 1,500MT in 1980.

As point of production tends to affect physical and chemical characteristics of the pepper, trade and price depends significantly on origin. Average spot prices for whole black pepper in New York in 1989 ranged from \$1.36/lb. for Indian Malabar black to \$1.75 for Tellicherry extra bold. White pepper tends to be marginally more expensive, fetching \$1.85/lb. for Indonesian Muntok during the same period. As noted earlier, these prices have declined considerably from several years before. In 1987 spot prices were averaging around \$2.25/lb. for black pepper and nearly \$2.70/lb. for white (see Table 4.5).

These declining prices reflect a current world surplus of production, partially a result of the very inelastic demand for pepper (purchase volumes are relatively little affected by price). The American Spice Trade Association (ASTA) points to a cyclical movement in pepper prices caused by growers planting and then removing vines as prices fluctuate. Prices are expected to remain weak for several years more until current excess production is removed. The recent entry of Caribbean and Central American growers into the pepper market is a further indicator of potential price weakness ahead.

Table 4.5 Approximate New York Spot Prices for Selected Spices & Herbs, March 1987-89

Item	1987	1988	1989	Item	1987	1988	1989
<b>ALLSPICE (PIMENTO):</b>				<b>MACE:</b>			
Guatemalan	101	88	83	East Indian	550-610	655	585
Jamaican	101	88	83	<b>MARJORAM:</b>			
Honduran	113	114	128	Egyptian	57	64	66
Mexican	100	88	80	French	89	100	100
<b>ANISE:</b>				<b>MINT LEAVES:</b>			
Chinese star	135	130	110	Peppermint	260	175	225
Egyptian	93	(1/)	(1/)	Spearmint	150	140	175
Spanish	108	155	145	<b>MUSTARD SEED:</b>			
Turkish	107	115	73	Canadian No. 1 yellow	20	20	32
<b>BASIL:</b>				Oriental	20	19	46
Egyptian	46-98	50-99	49-107	<b>NUTMEGS:</b>			
French	84	91-93	90	East Indian	318	312	295
Domestic	350	350	350	West Indian	310	338	335
<b>CAPSICUM PEPPERS:</b>				<b>ORGANUM:</b>			
Chinese	68	85	125	Greek 30 mesh	285	190	105
Indian	58	115	130	Mexican	75	95	85
Pakistan	53	60	120	Turkish 30 mesh	275	149	80
<b>CARAWAY:</b>				<b>PAPRIKA:</b>			
Dutch	54	52	47	Spanish 100 ASTA	(1/)	110	125
Egyptian	43	37	35	Spanish 110 ASTA	106	115	140
<b>CARDAMOM:</b>				Spanish 120 ASTA	114	120	145
Bleached "AA"	975	1025	1000	<b>PARSLEY:</b>			
Decorticated	280	210	215	Imported	195	180	135
Fancy greens	575	495	375	<b>PEPPER, BLACK:</b>			
Mixed greens	250	200	250	Brazilian	222	215	169
<b>CASSIA:</b>				Indonesian, Lampong	222	219	175
Chinese, Taiwan	52	54	70	Indian, Malabar	222	215	169
Indonesian Vera "AA"	130	150-185	200-250	<b>PEPPER, WHITE:</b>			
Indonesian Korintje "A"	115	106-110	155-160	Indonesian, Muntok	268	270	185
<b>CELERY SEED:</b>				<b>POPPY SEED:</b>			
Indian	43	47	47	Australian	59	72	63
<b>CINNAMON:</b>				Dutch	63	62-68	73
Ceylon No. 2	103	160	235	Turkish	46	70	46
<b>CLOVES:</b>				<b>ROSEMARY:</b>			
Brazilian	190	150	112	Portuguese/Spanish/Morocco	51	62	62
Madagascar/Zanzibar	190	190	135	French/Yugoslavian/Albania	73	85	85
<b>CORIANDER SEED:</b>				<b>SAFFRON:</b>			
Moroccan	34	39	36	Spanish	27500	47000	65000
Romanian	34	37	36	<b>SAGE:</b>			
<b>CUMIN SEED:</b>				Albanian	195	198	180
Chinese	82	104	75	Dalmation No. 1	207	215	215
Indian	35	160	140	Turkish	159	145	110
Turkish	(1/)	68	49	<b>SAVORY:</b>			
<b>DILL SEED:</b>				French	75	75	75
Indian Dewniktered	85	91	65	Yugoslavian	75	66	66
Domestic	(1/)	85	65	<b>SESAME SEED:</b>			
<b>FENNEL:</b>				Guatemalan natural	38	40	69
Egyptian	57	40-60	49-68	Central American bulied	51	48	66
Indian	95	103	120	<b>TARRAGON:</b>			
<b>FENUGREEK:</b>				Domestic	(1/)	645	700
Indian	34	40	35-38	French	515	645	700
Moroccan	34	38	38	<b>THYME:</b>			
<b>GINGER:</b>				French	145	152	180
Chinese, whole peeled	50	53	65-72	Moroccan	(1/)	(1/)	82
Chinese, sliced	52	47	60	Spanish	76	89	88-108
Indian, Cochin	65	110	85	<b>TURMERIC:</b>			
Jamaican No. 3	225	175	170	Chinese	50	40	40
<b>LAUREL (BAY) LEAVES:</b>				Indian, Alleppey	60-67	76-81	58-63
Turkish	250	83	65-85	<b>VANILLA BEANS:</b>			
				Madagascar, Bourbon	3600-3700	3500	3500
				Indonesian, Java	2100-2700	1500	1000

1/ Quotations not available.

Source: New York market area spice brokers.  
April 1989

Horticultural and Tropical Products Division, FAS/USDA

**Sesame** is not technically a spice or herb but is often included in the category for convenience. Although a native of Asia, the sesame market in the U.S.A. is dominated by Latin American countries, including Mexico, Guatemala, El Salvador and Honduras. Nicaragua is also a significant producer but has not been able to access the U.S. market during the 1980s due to the trade embargo.

Sesame is used primarily in the bakery sector, although it also has significant demand in the confectionary and ethnic food markets. Sesame is traded almost entirely as whole seed, which may be dehulled or simply cleaned. There is also some trade in sesame oil. After declining in 1988, sesame imports rose strongly again in 1989 to pass 40,000MT.

New York spot prices have generally risen over the last few years. Guatemalan natural, for example, has climbed from 38¢/lb. in 1986 to 69¢/lb. in 1988, while Central American hulled rose from 51¢/lb. to 66¢/lb. over the same period. Prices for 1989 are reported to have continued to climb. The highest average price of cleaned seed over the last 10 years was 77¢/lb. in 1983.

Disruptions in Central America and poor harvests in recent years in Mexico have contributed to these price rises, and India appears to have recommenced sesame exports in response to these opportunities. Market opportunities may continue to exist, however.

**Capsicums** (including paprika) represent a growing area of the market in North America. While domestic production is high (California produced more than 10,000MT of capsicums in 1989), the continuing trend to spicy and ethnic foods, together with increased consumer sophistication among specific varieties of capsicum, is fueling strong import growth. In the two years 1987-88, Mexican exports of capsicum to the U.S.A. tripled, and those from Costa Rica doubled.

Most capsicums have traditionally been imported in whole dried form, but ground capsicum imports quadrupled from less than 1,000MT to over 4,000MT in the late 1980s. The market for fresh and canned product is also growing strongly. Cleanliness of product and absence of any pesticide contamination are critical for capsicums, especially where the product is already ground.

Spot prices for capsicums almost doubled during the period 1987-89. Pakistan pepper, for example, went from 53¢/lb. to \$1.20/lb., and Indian from 58¢/lb. to \$1.30. Ground capsicum prices did drop in 1989, however, possibly as a result of more supply coming available.

The McCormick's representative identified the capsicum as an area of strong potential for new suppliers, although the emphasis is very much on the hotter end of the scale -- paprika demand has actually been declining. Key demand is for Anaheim and Ancho peppers, while Jalapeño peppers are already fairly well established. The Andean hot pepper variety, known as 'aji', and grown from Colombia to Chile, was particularly identified as possessing considerable sales potential. Bolivian exporters should give close attention to this product.

**Cumin**, a member of the parsley family, accounts for nearly 4,500MT of U.S. spice imports per year. While Turkey is the main supplier, the source of U.S. supplies has been traditionally unstable. Iran and China have also been principal suppliers in the past. The primary purchaser of cumin in North America are the meat and bakery industries, but it is also an important filler in curry powders and in Tex-Mex cuisine.

Spot prices have been unstable in recent years, with Chinese seed quoted at 82¢/lb. in 1987, 104¢/lb. in 1988 and 75¢/lb. in 1989. Indian seed, on the other hand, climbed from 95¢/lb. to \$1.60 and dropped back only to \$1.40/lb. in 1989.

Pesticide contamination is a major concern among industry specialists, especially from countries such as China where it is difficult to check on production methods (this may explain the relative drop in Chinese seed prices). Like hot capsicums, traders say that demand for cumin is growing rapidly and significant market opportunities may exist.

**Ginger** is a rhizome (*Zingiber officinal*) generally grown as an annual. The world market is dominated by India, although Brazil is the primary supplier to the U.S.A. in recent years. The Pacific Islands are also major sources of the product. Ginger is also produced in significant quantities by the State of Hawaii (3,700MT in 1989).

Ginger is available as candied root, sweet and ground but the most important form is dried whole root. Although there are moderate retail sales, the key users of ginger in North America are the beverage and bakery industries (ginger beer, ginger ale, cookies etc.). The S.E. Asian restaurant and ethnic trade also accounts for a significant amount of ginger. Ginger can also be used as a source of essential oils and other extracts.

Jamaican ginger is commonly regarded as the premium variety, due to its full and delicate aroma and taste and good appearance. The Jamaican product is sold primarily for retail purposes and attracts a higher price. In 1987, Jamaican ginger was attracting a price some 3-4 times that of Indian or Chinese alternatives (see Table 4.5). This differential has been reduced due to a decline in Jamaican prices and an increase in that from other countries. New York spot prices in 1989 were \$1.70/lb. for Jamaican and 60-85¢/lb. for others.

Brokers point out that domestic demand for ginger in India is increasing, leaving less available to enter the world market. In addition there is increasing consumption in the ethnic markets in North America. According to at least one dealer, purchasers are currently looking for new suppliers of the commodity.

**Turmeric** is another product, like ginger, derived from a rhizome (*Curcuma domestica*). It is used extensively as both a spice and a colorant. Although India has dominated the market, a number of Latin American countries, including Costa Rica, El Salvador and Peru, are attempting to gain market share. Although imports declined from 1986-88, there was a sharp rebound in 1989, with volumes rising once more to nearly 2,150MT.

Turmeric (along with cumin) is an essential ingredient of curry powder (approximately 24% by volume), but it is also used in a wide range of processed foods and sauces. A major source of U.S. demand is the mustard industry. It is imported generally as dried root, with little international trade in the ground powder.

Indian turmeric is seen as of highest quality, with West Indian being perceived as inferior. Its general use in processed form renders appearance relatively unimportant but a high curcumin content is essential and a low volatile oil level is desirable. New York spot prices for the better Indian Alleppey variety has remained fairly stable in recent years at around 60-65¢/lb. Chinese turmeric has traded in the 40-50¢/lb. range. Brokers tend not to be involved in turmeric

purchasers, as many users buy direct from source. Traders suggested that the conservative nature of U.S. mustard manufacturers would make it difficult for new suppliers to break into the market, particularly with the limited role of brokers as intermediaries for this product. The American Spice Traders' Association questioned whether new suppliers would be able to maintain the necessary 5% curcumin level.

**Oregano** comes in two varieties, the 'real' mediterranean plant (*origanum vulgare*) and the 'imitation' Mexican plant (*lippia graveolens*). Turkey now supplies the majority of the real oregano, and nearly 60% of total U.S. imports, while Mexico supplies some 17% of the U.S. market with its imitation. After a dip in 1988, U.S. oregano imports recovered in 1989 to some 4,400MT, yet this is still lower than in 1987 or 1988.

The Mexican plant has almost double the level of essential oils as the mediterranean plant, and is as a result more strongly flavoured. Both are used in mediterranean prepared dishes -- spaghetti sauces etc. -- and a variety of other processed foods. The price of the mediterranean varieties has fallen steeply in recent years (see Table 4.5) and is now close to that of the mexican product, which has held its own.

With a generally increasing trend in imports -- from have risen from around 1,000MT in the mid 1960s to over 4,500MT in the late 1980s -- the outlook for oregano is reasonably good. At least one broker expressed his interest in examining new sources of supply but established producers will be difficult to displace in the opinion of many industry specialists.

**Anise** imparts a licorice like flavour to foods and has been slowly growing in popularity in the U.S.A., although 1988 imports were lower than recent years. The market is relatively small, however, with total U.S. imports hovering around the 1,000MT mark, dominated by Turkey, Spain and China.

The product is used in baking, cheese, candy, sausage and pickles, among other products, as well as some liqueurs. World trade is based principally on whole, cleaned seeds and spot prices in New York have generally declined, although the better quality Spanish product has shown a substantial increase in price to \$1.45/lb. in 1989.

There is strong concern in the industry about the presence of chemical contaminants in available supplies (one reason for the increase in the price of the Spanish product) but no major growth is anticipated for anise.

**Cardamom** is a member of the ginger family and a plant native to India and Sri Lanka. Despite this, U.S. imports are dominated by Guatemala, with Costa Rica also supplying some product. It is used primarily in cakes and breads as well as ethnic foods, but its principal demand on the world market is as a flavouring for coffee in the Arab world. An essential oil can also be extracted from cardamom.

The product is usually traded as a dried white capsule containing the small black seeds. The capsule may be used whole, or ground into powder. Indian cardamom is considered of the highest quality but relatively little is used in North America. Demand for cardamom in North America has remained stable in recent years and prices have tended to decline, although the highest quality level (Bleached 'AA') has slightly strengthened its value to \$10.00/lb. Cheaper grades sell for between

\$2-4/lb.

Market opportunities are affected enormously by purchases in the Middle East, due to the U.S.'s relatively minor role in world trade for this commodity. It appears that demand in the Arab world is declining slightly. No increase in demand is foreseen for the U.S.A.

### **Import Restrictions and Requirements**

Detailed requirements exist with respect to the quality and freedom from contamination of all spices and herbs imported into the U.S.A. These are commodity specific. Specifications published by the American Spice Traders' Association, for example, detail maximum permissible levels of insects, mold, rodent droppings and other foreign matter. The Food Drug and Cosmetic Act provides the legal requirements laid down by the U.S. government for spice and herb imports.

The problem of most importance in recent years -- that of contamination by chemical substances (mostly insecticides) -- has been addressed only slowly by government and trade associations. The ASTA is currently revising its standards to take these factors into account. As a result, individual importers and brokers have established their own standards, which differ from company to company. Ideally, however, chemical residues should be undetectable with normal chemical analysis.

Similarly minimum acceptable standards of active ingredients have traditionally been set by individual importers and brokers.

Duties and tariffs for spices and herbs are also variable by commodity but are generally zero for those countries accorded 'Most Favoured Nation' trading status. In some cases, however, duties are imposed on prepared (e.g. ground) spices and herbs where they are not levied on the dried, crude form.

### **Market Recommendations**

As there is no single market for spices and herbs, there can be no single set of recommendations. Among the commodities that were suggested by traders and brokers as particularly worth investigating in more detail were hot capsicums (especially, in Bolivia, aji) and cumin, while moderate interest was expressed in ginger and sesame. Oversupply or declining demand rendered pepper, cardamom and turmeric of less potential.

A number of traders were interviewed and those that expressed interest are specially marked in the list provided in Appendix E. In all cases, however, traders emphasized the need for clean product, which requires adequate and well maintained quality control procedures, and the absence of chemical residues. It was suggested that any supplier able to gain a reputation for contaminant free supply would be able to rapidly gain market share, even at some premium over normal prices.

### 4.3.2 Japan

#### **Trade Statistics**

In 1989 Japan imported more than 80,000MT (US\$105 million) of herbs and spices, slightly more than one half of the American volume. This trade has been growing steadily over the last decade. In 1980 Japan imported 48,000MT and in 1985 almost 65,000MT, a growth rate averaging some 6% per year (see Table 4.6).

Drawing from 1989 statistics, imports are dominated by ginger. Taking all forms of ginger imports into account, the commodity accounted for more than 60% of total herb and spice imports by volume. Its importance is reduced slightly in terms of cost, however, as ginger imports contributed only US\$41.6 million, less than 40% of total import values. The principal import category was whole or cut ginger (50,000MT), 95% of which was shipped as preserved in brine or sulphur water. The remaining 5% was accounted for by bulk fresh or dried product. A further 1,300MT of ginger was traded in crushed or ground bulk form.

Two other individual commodities had a significant impact on the import statistics in 1989. Capsicums, including paprika, chilies and other varieties of pepper fruit, accounted for 10,300MT, or 13% of imports by volume (US\$18.3 million or 17% by value). Of these capsicum imports, approximately 2/3 were in whole dried form, the remainder as ground product. Pepper corns comprised the other significant category, contributing 6,200MT (7.6%) or nearly US\$18 million to Japan's herb and spice imports. As for capsicums, the majority of pepper imports were in whole dried form, with less than 5% as ground product.

No other item in this category exceeded 3,000MT or US\$2 million in 1989, although lesser commodities of note included turmeric at 2,900MT (US\$1.8 million), coriander at 2,700MT (US\$1.7 million) and cumin at 1,600MT (US\$1.7 million).

#### **Sources of Origin**

Japan's sources of supply for herbs and spices are, as might be expected, overwhelmingly Asiatic. Thailand accounts for approximately 75% of Japan's ginger supply. Taiwan and China each contribute a further 10% or so each. China also supplies nearly 70% (7,000MT) of Japan's capsicum imports.

Latin American exporters do appear as suppliers of capsicum to Japan, but the amounts are low. In 1989 Chile supplied nearly 400MT, Brazil 190MT and Mexico some 20MT. Peru also shipped 10MT to Japan in that year. Of the total Japanese pepper imports of 6,200MT, Brazil -- the only Latin American country listed -- supplied 288Kg.

China continues its dominance in commodities such as turmeric (40% of trade) while coriander is 91% supplied by Morocco and cumin by Iran and India in combination.

Table 4.6: Japanese Imports of Selected Herbs & Spices, 1980-89

Code	Commodity	1980 (MT)	1985 (MT)	1989 (MT) (000\$) <sup>1</sup>	
0904.11-100/200	Pepper, whole dried bulk or retail	4,606.1	5,689.7	5,900.5	16,220.0
0904.12-100/200	Pepper, ground or crushed, bulk or retail			299.7	1,650.3
0904.20-210	Capsicum fruits, whole dried, bulk	2,364.2	3,976.5	6,660.0	10,649.4
0904.20-220	Capsicum fruits, crushed or ground, bulk	1,072.8	1,742.0	3,617.2	7,679.4
0908.30-219	Cardamom, whole dried, bulk	16.8 <sup>2</sup>	181.1 <sup>2</sup>	162.5	1,019.0
0909.10-210	Seeds of anise or badian, whole, bulk			100.6	182.5
0909.20-210/200	Seeds of coriander, whole or ground, bulk	3,744.5 <sup>3</sup>	4,267.3 <sup>3</sup>	2,659.7	1,674.5
0909.30-210/220	Seeds of cumin, whole or ground, bulk			1,564.5	1,728.3
0910.10-100/221	Whole ginger, bulk	28,624.2	41,247.5	50,125.8	38,720.9
0910.10-229	Ginger, ground or crushed	500.6	793.2	1,292.7	2,855.6
0910.30-210/220	Turmeric, whole or ground, bulk	2,563.6	2,424.4 <sup>3</sup>	2,882.4	1,765.1
0910.40-210/220	Thyme and bay leaves, whole or ground, bulk		-	336.3	740.0
0910.50-000	Curry powder	16.8	11.6	75.6	175.0
	Other Spices	3,908.6	3,796.3	5,734.8	19,721.4
<b>TOTAL</b>		<b>47,548.2</b>	<b>64,129.6</b>	<b>81,412</b>	<b>104,781</b>

1. Yen converted to US\$ at 141/\$

2. Includes mace

3. Includes fennel, caraway and juniper

4. Includes ukon

Source: Japanese Tariff Commission. All prices CIF.

## **Consumption Trends**

Total demand for seasonings in Japan was estimated in 1987 at around 40,000MT/ annum of finished product. Significant domestic production of spices and herbs also occurs in Japan (ASEAN Market for Seasonings Study, 1987), including pepper (8,000MT), processed onions and garlic (6,500MT), capsicum (2,700MT), turmeric (1,900MT), and ginger (1,700MT).

In 1986 there emerged a sudden and very popular fashion for 'hot' foods, spurred on by intensive advertising campaigns from a number of manufacturers. Purchases of capsicum products (chili and cayenne powder) surged. This is reflected in the 80% increase in capsicum imports from 1985 to 1989. The fashion is said to have largely abated, however, by 1989 and it is likely that large stocks will remain in inventory.

An ASEAN study estimated consumption as divided between home consumption (15%), industrial consumption (25%), food industry (50%) and the institutional sector (10%). The relatively low domestic consumption percentage is said to be actually declining with growth coming principally from the food sector (ASEAN Study, 1987). The only consumer area in which growth is occurring is in pre-mixed seasonings (spices with salt and sugar) targeted at specific foods (chicken, pork, fish, etc.). The ready-to-use seasoning market is dominated by the two American brands, McCormick and Spice Islands.

The trend away from 'basic' spices has implications for exporters to Japan. The market for such simple dried and ground commodities is diminishing and the expanding sector will be processors and blenders of seasonings. Some specialist spice importers process their own spices, while others sell on to spice manufacturers. Those importers dealing most closely with the food manufacturing sector (as opposed to simple wholesaling channels) will likely show the greatest growth and demand for product in future years.

## **Import Restrictions and Requirements**

The Japanese quota system does not apply to spices and their entry into Japan is unrestricted. Duties are normally only levied on processed spices and herbs, generally at 3.5% or 5% on ground or crushed spices and 6% or 10% on those packaged for retail sale. Where tariffs do apply on unprocessed commodities, they are forgiven for developing countries.

Other costs associated with spice and herb imports include the insurance fee (1%), customs clearance and handling fees, and mycotoxin inspection fees. These fees vary from item to item.

Health regulations are defined under the Food Sanitation Law and by standards laid down by the JAS. According to a number of traders, Japanese standards for contamination and purity are stricter than those imposed by the United States. One trader claimed, for example, that sun-dried spices and herbs would not be permitted under Japanese regulations.

## **Market Recommendations**

It is difficult to present a case for potential Bolivian exports to Japan. The overwhelming majority of spices and herbs imported into Japan are obtained from S. E. Asian sources and only

those with strong local advantages (such as allspice or coriander) appear to be procured from outside the region. In any case, a number of importers reported that, where speciality herbs are required, Japanese firms often obtain them through U.S. brokers and dealers, without seeking supplies at source.

That is not to say that the market is impossible. One major Japanese trading company, for example, has entered into joint-ventures for 'middle-grade' spices from Tanzania and Ethiopia. Unfortunately, the general perception of Bolivia as a location for business is not good in Japan. Importers were worried about such factors as political instability, its land-locked status, and Bolivia's ability to produce more cheaply than Brazil or Peru. All traders interviewed (see Appendix I) stressed the supreme importance of quality in product acceptability.

Where opportunity does exist it would probably be focused upon capsicums, pepper, perhaps turmeric (although growth for this commodity is slow) and possibly cumin.

#### **4.4 Conclusions**

Several characteristics of the herb and spice market make it an attractive one for Bolivia. The product has a generally high value to weight ratio, is only marginally perishable, and requires no complex processing equipment, as the exported product is typically only dried and cleaned. (It should be noted, however, that according to at least one Japanese buyer, air dried product is not acceptable under health regulations).

The greatest opportunities worldwide exist within the market for pepper, specifically black pepper. World trade in this product in 1987 totalled nearly US\$750 million dollars (almost 150,000MT), with no single exporter holding more than a 20% share (FAO Yearbook of Trade, 1987). Pepper prices tend to be extremely cyclical, with the most recent high occurring in 1986-88, and the market now facing a severe downturn. This aspect would require care for Bolivian producers and exporters entering the system, as the commencement of exports in the low portion of a cycle might destroy producers' confidence in the crop and result in failure of the export program. The U.S.A., Germany and Japan are all large importers, but Bolivia might be best served by initially targeting the regional market in Argentina and Chile. Together these two markets are valued at nearly US\$2 million per annum, sufficient to support a new export industry in Bolivia.

Good possibilities may also exist for cumin exports. This crop is already in production in the High Valleys (and in the Mesothermic valleys of Santa Cruz), so some Bolivian producers are already acquainted with its production. Sources in Argentina and Chile even suggested that exports are under way to these countries, although they do not appear in official statistics. While the Argentine market is tiny, Chile currently imports US\$0.5 million of cumin per year, and offers a real potential for Bolivia. Cumin demand is also said to be strong in the U.S.A., with an average import value in the range of US\$4.5 million.

A third category that appears well worth exploring is that of capsicums, particularly the hotter members of the capsicum family. At least one broker in the U.S.A. suggested that the Andean variety (aji) could become a profitable speciality line in the future, while other, more established, forms of chilies are also experiencing strong growth. Opportunities for aji and other chilies might also exist in Europe and Chile.

Other possibilities include ginger and sesame for export to the United States. Unfortunately, Japan appears to offer few real possibilities for export development in the herb and spices product group, with intense competition from producers in Indonesia, Malaysia and the Indian sub-continent.

Several Chilean firms expressed interest in pursuing further the possibility of spice imports from Bolivia. A positive response was also received from a number of firms contacted in the U.S. and requests for samples were made by both U.S. and Chilean importers.

It should be noted that a problem exists worldwide with respect to quality of traded herbs and spices. Considerable dissatisfaction was noted among traders in all countries reviewed with respect to contamination levels in imported product. Almost no exporting country was seen as totally reliable in quality terms. Although physical contamination has been the traditional problem (stones, dirt, animal remains), buyers are becoming more and more worried about chemical contamination from insecticides and other sprays, thus echoing the concerns of the traders in fruit. This situation offers both opportunities and risks to Bolivia and suggests that any attempt to penetrate international markets be accompanied by an extremely strict quality control program and close attention to limitations on the use of agrochemicals.

## 5.0 ESSENTIAL OILS AND COLORANTS

### 5.1 Introduction

The last major product group investigated under the current study comprises the essential oils and colorants. While there is considerable crossover between colorants and herbs and spices (e.g. turmeric is often included in both groups), colorants were allocated to the essential oil group on the grounds of the degree of extraction and processing required.

Unlike the previous two product categories, no attempt was made to assess market potential for essential oils and colorants in regional markets. It was decided that demand levels and associated industrial processes were too limited in Argentina and Chile to support significant imports of essential oils and colorants. Instead, separate market studies were conducted in these countries for other products (see Section 6).

As for other product categories, market researchers in each target market were supplied with listings of potential essential oils and colorants but were also given freedom to explore others that were not mentioned but that might be of relevance for Bolivian producers. The list submitted to each field researcher included:

Oils & Essences	Colorants
Citronella (Cymbopogon winterania)	Annatto (achiote)
Eucalyptus (Eucalyptus globulus)	Cochineal
Garlic Oil	Marigold
Ginger Oil	
Hinojo (Foeniculum vulgare miller)	
Kut-Kutu (Aloysia sellowii)	
Lemon Grass/Citral (Cymbopogon citratus)	
Menthol (Menta arvensis)	
Manzanilla Oil (Matricaria chamomilla)	
Muña Oil (Minthostachys andina & Hedeoma mandonia)	
Romerillo Oil (Calceolaria rosmaninifolia)	
Spearmint (Mentha spicata)	
T'Ola Oil (Bacharis diacunculifolia)	
Vetiver Oil (Vetiveria zizamoides)	

As for other categories, the availability of statistical data for the lesser known varieties of oils and colorants is extremely limited, and considerable dependence was placed on comments of traders and brokers for an estimation of market potential.

## 5.2 International Markets

### 5.2.1 North America

#### **Trade Statistics**

No separate statistics are available for natural colorant imports into the United States of America. Warner-Jenkinson estimates, however, that the total value of the North American natural colorant market is between US\$150-200 million per annum. This would be comprised primarily, but not exclusively, of imported materials.

Considerably more statistics are available with respect to essential oils. In Table 5.1, import levels for the 8 more important essential oils of possible relevance to Bolivia are listed (in all, more than 40 individual essential oils are identified). Of this selected group, the most important, both in terms of volume and value, is citronella. Although Bolivian supplies are of *Cymbopogon winterania*, imports may also include *cymbopogon nardus* (the latter being more common in Latin America). Total imports into the U.S.A. in 1989 were valued at just over US\$4 million, or 716MT. This volume was an increase on previous years but value had declined from nearly \$5 million the year before.

It should be stressed that even as the most important of the oils listed, citronella accounts for a relatively minor share of the overall essential oil market (approximately 5% by volume and 3% by value). At some US\$130 million and more than 13,600MT in 1989, the entire essential oil market is quite significant. The citrus oils alone account for over 50% of all imports in this category, while imports of cassia oil, rose oil, lime oil and orange oil are all valued at more than US\$5 million per year.

Other essential oils of potential interest to Bolivia and which are valued at more than US\$2 million per year include Menthol, Eucalyptus Oil and Vetiver Oil. A number of the lesser known oils listed above are not detailed within the trade statistics available. It should be noted, however, that some US\$34 million, or 26% of all oil imports are not identified by commodity, indicating that there are considerable imports of little known oils in small quantities.

Results for the three years 1987-89 do not indicate any clear trend line for essential oil imports, either in volume or value. This is equally clear for both individual commodities and for essential oils as a group.

#### **Sources of Origin**

China is the dominant supplier to the United States of those essential oils of interest to Bolivia and, in fact, provides approximately 13% of all essential oils imported into this market (Table 5.2). Individually, China is the primary supplier of citronella, menthol, eucalyptus and spearmint oils (half of the eight oils examined here). Vetiver is the only essential oil with imports of more than US\$2 million per year not dominated by China. In 1989, some 67% of vetiver imports derived from Haiti. Given the instability of Haiti at the moment, some potential might be considered to exist to enter this market. The second most important supplier is Indonesia (15% by value), while the largest Latin American exporter to the U.S.A., Brazil, has only a 4% share of the market.

Table 5.1: Imports of Selected Essential Oil to U.S.A. - 1987-89

Product	1987		1987		1987	
	MT	\$000	MT	\$000	MT	\$000
Citronella Oil	681.8	4,534	516.8	4,918	716.4	4,105
Menthol (Mentha arvensis)	239.3	1,772	272.7	2,509	180.6	2,208
Eucalyptus Oil	378.1	1,647	312.2	1,915	325.9	2,371
Lemongrass oil (Cymbopogan citratus)	90.3	610	73.8	935	88.6	1,257
Onion & Garlic Oil	9.7	11,219	13.4	1,305	50.4	1,811
Peppermint Oil (Mentha peperita)	16.4	355	13.2	357	8.0	26.5
Spearmint Oil (Mentha spicata)	82.5	952	69.0	813	62.0	1,015
Vetiver Oil	77.5	3,612	95.8	5,951	57.6	2,736
Essential Oils NES	1534.7	31,934	1545.4	39,957	1710.9	34,369
<b>TOTAL (All essential oils)</b>	<b>12,962.0</b>	<b>116,578</b>	<b>14,143.8</b>	<b>150,325</b>	<b>13,606.1</b>	<b>132,396</b>

Source: United States Foreign Trade Statistics, USDA

Table 5.2 Sources of Origin of Selected U.S. Imports of Essential Oils, 1989

Product	Major World Supplier			Major Latin American Supplier		
	Country	Value	% of Total Value	Country	Value	% of Total Value
Citronella	China	2,922	71%	Argentina	33.2	0.8%
Menthol	China	790	36%	Brazil	507	23%
Eucalyptus	China	1,328	56%	Chile	66.6	2.8%
Lemongrass	Guatemala	1,173	93%	-	-	-
Onion & Garlic	Netherlands	579	32%	Mexico	563	31%
Peppermint	Italy	124	47%	-	-	-
Spearmint	China	883	87%	-	-	-
Vetiver	Haiti	1,831	67%	Brazil	113	4.1%
All oils <sup>1</sup>	Latin America	42,532	29%	Brazil	13,352	9.0%
	South America	23,000	16%	Mexico	10,684	7.2%

<sup>1</sup> 1988 Data

Where no country listed under "Latin America", no supplier is recorded.

Source: United State Foreign Trade Statistics, USDA

A Latin American supplier was dominant for only one listed essential oil -- lemongrass oil - a market worth US\$1.25 million in 1989. Here Guatemala held an overwhelming 93% market share. Brazil was an important supplier of menthol, holding a 23% share, second only to China.

Despite these results with respect to the eight essential oils examined here, Latin America, and South America in particular, were significant contributors to overall U.S. essential oil imports. Latin America accounted for some 29% of overall imports to the U.S.A., while South America alone was responsible for 16%. Brazil was the single most important country at 9% of the world supply to the U.S.A., with Mexico second at 7%.

Bolivia does not appear at all on the list of Latin American import sources. It is interesting to note that Brazil's strength is based primarily upon exports of orange and 'other citrus' oils. In total, Brazil's exports to the U.S. of citrus oils (orange, lemon, lime, grapefruit and other) amounted to nearly US\$10 million in 1989. Peru exported more than US\$5 million of lime oil to the U.S.A. in 1989, while Mexico exported more than US\$4.5 million of the same commodity. Argentina was the largest U.S. supplier of lemon oil in 1989, with a value of nearly US\$3 million. Finally, Paraguay, famous for its petit grain (bitter orange) oil, exported nearly U.S.\$1 million to the U.S.A. in 1989 and was the largest supplier of this commodity.

### **Consumption Trends**

Food additive specialists Warner-Jenkinson estimated that the growth in use of natural colorants in North America is currently running at some 5-6% per annum, as opposed to the growth rate of artificial colorants which are growing by only 2-3%. Warner-Jenkinson, the largest manufacturer of natural colorants in North America, estimated that company growth (based largely on the use of natural colorants) is approximately 15% per annum. Warner-Jenkinson also estimated that North America accounts for about one half of all world-wide natural colorant consumption.

Essential oils suffered badly in the decades of the 1960s and 1970s with the development of cheap and reliable synthetic flavourings and essences. In the 1960s it is estimated that 75% of the market was controlled by synthetic oils and essences, with only 25% held by natural products. This situation had reversed completely by the late 1980s and natural essences etc. are now dominant. Growth in demand appears to be strong, although much of this demand is accounted for by the fragrance sector, and is not destined for human consumption.

The continuing moves towards prohibiting synthetics and artificial substances in foodstuffs will almost certainly lead to further demand for natural additives (Europe already plans to ban synthetic additives to food by 1993 -- see below).

### **Product Categories**

**Citronella** has a fresh, lemon-like odour and its relatively low price has resulted in its wide-spread use. Unfortunately, the trend towards natural ingredients has not extended into inedible uses such as cleaners and there is a continuing replacement of citronella in this area by cheaper derivatives of turpentine. After climbing to nearly US\$10/Kg. in 1988, FOB citronella prices declined to less than US\$6/Kg. in 1989 (see Table 5.3). Comparing 1980-84 with 1985-89, the overall

position of citronella appears virtually unchanged, dropping from an average import level of 661MT/annum to 642MT/annum.

**Vetiver** oil is imported in relatively small volumes, but its high per unit value renders it a significant commodity. FOB prices peaked in 1988 at over US\$65/Kg. but declined in 1989 to US\$47.50/Kg. Originally of oriental origin, vetiver is famous for its ability to prolong the fragrance of mixtures in which it is present. There are no flavouring uses of vetiver. Imports of vetiver into the U.S.A. are almost unchanged since 1980 (60MT).

**Eucalyptus** oil comprises several hundred species, but only a handful are of commercial importance. The oil is distilled principally from the leaves of the eucalyptus tree and are often divided into medicinal and perfumery oils. Although import quantities have not increased significantly over the last decade, prices have strengthened considerably recently, rising from the US\$3-4 in the early 1980s to \$5-10 recently (see Table 5.3).

**Menthol** is a product of what is referred to in the U.S. as cornmint oil, and elsewhere as Japanese mint (*Mentha arvensis*). The tobacco industry accounts for approximately one half of all menthol consumption, with the rest being divided between cosmetics and pharmaceuticals. Trade opportunities have been opened up since October 1988, when the U.S.A. imposed retaliatory duties of 100% on Brazilian menthol (one of the world's leading suppliers) to protest alleged Brazilian violations of U.S. pharmaceutical patents. The result has been a significant increase in menthol prices in the last two years (see Table 5.3). Nevertheless, the continuing decline in the North American cigarette industry does not bode well for menthol consumption in North America.

**Lemongrass** oil should contain aldehyde citral as at least 75% of its essential oil ingredients. As lemongrass oil it is used in furniture polishes, aerosol deodorants, household detergents and other low end fragrance applications. It can be used as a flavouring but lemon oil is viewed as far more effective for little additional cost. Its derivative, citral, can also be used as an essence or as a stage in the production of several vitamins, including vitamin A and E. As for citronella, its use is suffering fierce competition from synthetics derived from cheaper substances, such as turpentine and acetylene. Prices for lemongrass oil have been very strong in recent years, climbing from an average of US\$6-8/Kg. through most of the 1980s to \$14/Kg. in 1989. Part of this increase may be accounted for by new demand for lemongrass and lemongrass oil as an ingredient in S.E. Asian cuisine in North America, particularly the popular Thai cuisine.

**Spearmint** oil is produced in large quantities domestically in the U.S.A. In 1989 this production amounted to 3,000MT -- considerably greater than the entire import volume of the commodity (62MT). In fact, the United States is the world's largest exporter of peppermint oil. Peppermint oil has a delicate flavour not obtainable from other mint oils and is used extensively for flavouring oral pharmaceuticals (e.g. toothpaste, mouthwash, cough sweets) and for chewing gums and confectionary. Smaller quantities are used in perfumery, although the oil's pronounced colour tends to exclude it from many applications. Finally, its cooling effect makes it a popular choice for lipsticks and face creams.

Despite the large U.S. domestic production, import trends have been upwards, climbing from only 12MT in 1985 to 62MT in 1989. Prices too, have increased in recent years, reaching US\$16/Kg. in 1989. This has resulted in an import market worth in excess of US\$1 million. No Latin American country currently exports spearmint oil to the U.S.A.

Table 5.3 United States: Average Unit Import Values of Specified Essential Oils, 1987-89

ESSENTIAL OILS	1987	1988	1989
	Dollars per <u>kilogram</u>	Dollars per <u>kilogram</u>	Dollars per <u>kilogram</u>
Almond oil (bitter)	9.44	8.27	-
Anise oil	11.08	12.94	13.10
Bergamot oil	39.39	41.71	72.77
Camphor oil	4.59	5.21	-
Caraway oil	33.51	23.57	27.43
Cassie oil	30.85	25.46	28.59
Cedar leaf oil	27.49	47.63	-
Cedarwood oil	2.18	3.04	5.79
Cinnamon oil	7.97	12.08	-
Citronella oil	6.65	9.52	5.73
Citrus oils, other	14.92	10.60	3.04
clove oil	3.51	3.24	3.55
Cornmint oil (Mentha arvensis)	7.41	9.20	12.22
Eucalyptus oil	4.36	6.13	7.27
Geranium oil	44.71	42.35	47.58
Grapefruit oil	5.90	13.73	9.64
Jasmine oil	-	-	276.81
Lavender oil (inc. spike)	15.39	17.91	15.08
Lemon oil	13.20	13.65	13.15
Lemongrass oil	6.76	12.67	14.19
Lignaloe (Bois de rose oil)	15.04	23.99	26.85
Lime oil	11.71	14.93	18.03
Mint oils (Other nec.)	-	-	19.07
Neroli (Orange flower oil)	449.70	781.77	-
Nutmeg oil	32.79	32.23	22.38
Onion and Garlic oil	125.96	97.08	35.96
Orange oil	0.89	1.55	1.76
Origanum oil	41.22	37.63	-
Orris oil	785.66	575.85	742.39
Palmarosa oil	23.09	27.71	-
Patchouli oil	18.09	18.19	17.35
Peppermint oil (Mentha piperita)	21.62	27.04	33.03
Petitgrain oil	16.87	19.71	23.15
Pine oil	1.06	0.88	4.45
Pineneedle oil	1.90	3.83	-
Rose oil (attar of roses)	3236.50	5509.84	1717.34
Rosemary oil	10.99	10.20	7.30
Sandalwood oil	158.23	171.64	141.88
Sassafras oil (inc. Ocotea cym.)	5.01	4.57	3.53
Spearmint oil	11.54	11.78	16.35
Thyme oil	22.86	34.30	-
Vetiver oil	46.60	62.13	47.52
Ylang Ylang (Canaga oil)	56.52	65.39	62.77
Other essential oils	20.81	25.86	20.09

Note: All values are f.o.b. country or origin.

Source: N. American IICA Study, Volume IV  
Horticultural and Tropical Products Division, FAS/USDA

**Other essential oils** were raised with a number of traders. Such products as romerillo oil, t'ola oil, kut-kutu oil, muna oil and manzanilla oil are scarcely known to the trade and any unique applications would be extremely specialized. In general, it was believed that while some of these oils were sufficiently similar to other oils (muna to pennyroyal and manzanilla to chamomile) to have to compete with them on price grounds, others (romerillo, t'ola and kut-kutu) are known only as ingredients in traditional medicines and ointments in Latin America.

This second group may present real possibilities in medical and other applications but pharmaceutical companies and manufacturers would have to explore their properties in considerable depth in order to identify useful characteristics. It was recommended that limited samples be furnished to laboratories and other analysts for evaluation but that immediate sales opportunities were likely to be virtually zero.

**Cochineal** extract and carmine are all derivatives of the female coccus cacti insect, a tropical species which feeds on certain types of cactus (including the tuna or prickly pear variety). Insects are dried and pulverized. Collection of the insects is very labour intensive and most U.S. supplies are derived from the Andean countries (Ecuador, Peru, Colombia) as well as Brazil. No statistics exist in North America for the size of the market.

Carmine is a magenta-red shade and cochineal a purple-red shade, both blend well with blue to create purple and can also be used for creating pink tones. The cost of cochineal and carmine is high, restricting their use to specialized applications, and they are not kosher. Also worrying from the point of view of industry is that shade can vary from batch to batch. No prices were available at the time of this study.

**Annatto** (also known as achiote) is derived from the seeds of the tropical tree bixa orellana. These seeds are used in cooking and are processed to produce a vegetable dye. Warner-Jenkinson purchases most of its annatto from Peru and Kenya and prepares them for use at its Canadian subsidiary, Dyco. There are no trade statistics for annatto. The main use of annatto is to colour cheeses (cheddar etc.) and margarines. The industry requires a high annatto content of 6-7% but the world average is around 2.3-2.5%. Some annatto from the Dominican Republic has an annatto content as low as 1%.

Warner-Jenkinson estimates the annatto market as stable and growing steadily. Increased growth in demand is inextricably linked with the annatto content of seed. Breeding programs in this area may be well worthwhile. No prices are immediately available.

**Marigold** is an acceptable colorant under U.S. law but its application for human consumption is very limited. The major use is as a component in chicken feed (to ensure eggs with yellow yolks and provide the right tint to meat). Because of its principal uses, it is not handled by natural additive companies and direct application to feed manufacturers would probably be necessary. No data is available specifically on marigold.

### **Import Restrictions and Requirements**

Almost no legal regulations apply to import standards for essential oils and colorants. Instead quality levels and percentages of active ingredients are generally specified by importers.

Legislation has had a major influence on synthetic colorants, however, and this indirectly affects natural colorants by reducing competition.

Under the so-called Delaney clause of the 1960 Colour Additive amendments to the Food, Drug and Cosmetics Act, any synthetic products shown to have carcinogenic properties in laboratory tests, no matter how small, can not be approved for use by the FDA. The application of this clause has resulted in the recent banning of a number of colorants including FD&C Red#2 (amaranth). The delisting process for FD&C Red#3 (already banned for some uses) is currently under way. Red#3 is considered a unique shade, with an absence of any yellow tinge. It is particularly important for the creation of pink colours. Cochineal may experience a significant increase in demand if this delisting is completed. Other synthetic colours are almost certain to be delisted in the future.

On the other hand, other U.S. legislation states that a product can only be labelled natural if the colorant used is indigenous to the product itself, thus eliminating the advantages of using natural colorants in other food products. This requirement is unique to the U.S.A. and is acting as a brake on the demand for natural colorants in many applications (it is easier and no more disadvantageous in these circumstances to use synthetic colorants).

Import duties are generally not in force for essential oils and colorants, particularly in the crude or semi-processed state. Some duties (rarely in excess of 5%) are applied to fully processed imports, however.

### **Market Recommendations**

Opportunities for Bolivia with respect to the U.S. market for essential oils and colorants appear mixed. Most of the essential oils covered in this section are used primarily in inedible applications (e.g. household products, pharmaceuticals, cosmetics) and hence are not likely to be directly affected by the trend towards natural additives in food. As a result, few traders see much hope for more than a stable market in these essential oils in the near or medium term. Some oils, such as menthol, appear likely to actually decline in importance, as their primary use (e.g. tobacco) shrinks in importance. The market for citronella also appears threatened by cheap synthetic substitutes. Despite these concerns, there may be scope for production of vetiver, eucalyptus and lemongrass oils, although competition could be strong.

No immediate export opportunities are seen for the lesser known essential oils but it is not recommended that they be abandoned. Instead, where possible, samples should be supplied to major additive, flavour and cosmetic houses for their evaluation. Any of these oils could be found to possess unexpected or unique characteristics of considerable economic value. It would be a pity to overlook such a possibility. At the same time, however, it would obviously be unwise to devote more than marginal resources to such products at this time.

For natural colorants the prospects are clearly attractive. Their use is largely in edible products and the Delaney clause appears sure to eliminate increasing numbers of artificial colorants. Markets for cochineal and carmine are considered to be particularly strong, while annatto exports will depend on the active ingredient level obtainable in Bolivian seeds. Marigold exports are less certain and probably would require discussions with feed industry sources.

A list of traders interviewed, together with notations on those expressing interest in further contacts, is provided in Appendix G. International Flavours and Fragrances has already entered into discussions with Agroquimico of Bolivia re. purchases of eucalyptus oil and menthol. Other firms expressing interest include Warner Jenkinson, the Chris Hansen Laboratories Division of Sanofi Bioingredients and the Biocon Division of Quest International.

## 5.2.2 Germany

### Trade Statistics

Trade statistics for most of the 1980s indicate that the European market for essential oils held reasonable stable at approximately 14,500MT per annum for an import value of around US\$80 million. Interestingly, the value of exports of essential oils during this period was approximately US\$120 million per annum, reflecting the key role of European flavour and fragrance houses in brokering world trade, and the added value created in Europe from plant extract processing, purification and blending.

For the specific essential oils listed with respect to Germany in Table 5.4, the trend has tended to be upward, although the growth has not been strong. In all cases, however, both the volume and value of imports are greater in 1988 than in 1984 (variable exchange rates of the ECU to the US\$ may affect import values however). The value of the key essential oil categories identified in Bolivia -- lemon grass oil, mint oils (including menthol), eucalyptus oil and citronella, was approximately US\$11 million, while imports of other exotic oils were valued at another US\$20 million. The grouping of import categories for Germany makes identification of many lesser known essential oils difficult, but it can be estimated that a German market of somewhere from US\$20-30 million exists for Bolivian oils to compete in. The total European market for these commodities could be expected to be considerably greater. European import volumes of specific oils were estimated by traders at: Lemongrass oil, 20MT/annum; eucalyptus oil, 450Mt/annum; peppermint oil, 75MT/annum; japanese or corn mint oil, 180MT/annum; menthol, 100MT/annum; citronella, 100MT/annum; vetiver 5MT/annum; manzanilla, less than 5MT/annum; garlic oil, 2MT/annum; ginger oil, 5MT/annum; anise oil, 10MT/annum; hinojo, less than 1MT/annum.

Data concerning imports of colorants into Germany and Europe in general are extremely limited. The total European annatto market is estimated by the U.K. National Research Institute at somewhere in the region of 2,000-3,000MT per annum (out of a world-wide market of approximately 7,000-8,000MT). The German portion of this trade was not quantified but was 'probably' several hundred tonnes per year. Conversations with traders in Germany, however, indicated that although this might be true, imports by individual companies were quite small.

For cochineal there are no estimates available. Nevertheless, it is agreed by traders that almost all cochineal is currently supplied to the European market by Peru. Peruvian data indicates exports from that country to Germany for 1985-87 as rising from 1.03MT in 1985 to 2.8MT and finally 7.1MT in 1987. Corresponding values were US\$48,274 FOB in 1985, US\$121,570 and finally US\$371,450 FOB in 1987. Given the use of cochineal in cosmetics, and the reputation of the U.K., Italy and France as cochineal trading centres, it is likely that these German imports represented no more than 20% of total European imports during these years.

**Table 5.4 Imports of Selected Essential Oils to W. Germany, 1984-88**

	1984		1985		1986		1987		1988	
	Vol MT	Val 000US\$								
Peppermint & Other Mint Oils	400	6,269	354	6,021	424	-	509	7,078	413	6,636
Eucalyptus oil	363	1,793	338	1,790	374	-	440	2,227	464	2,761
Citronella Oil	105	432	88	388	93	-	168	1,171	110	1,033
Other Oils <sup>1</sup>	911	14,693	798	12,582	968	-	1,017	18,290	987	19,827

<sup>1</sup> Excludes these listed above plus citrus oils, vetiver, flower oils (e.g. rose, lavender, jasmine, geranium), ylang-ylang and clove.

## **Sources of Origin**

No individual trade statistics for lemongrass oil were available. Nevertheless, traders stated that Guatemala has been the traditional source of lemon grass oil to Europe, followed by India.

The role of Latin America in peppermint and other mint oils was smaller. Brazil was the only direct supplier, accounting for only 7MT (US\$64,000), or less than 2% of all German imports in this group. The U.S.A. accounts for almost all peppermint oil imports into Germany. There were no direct Latin American imports at all of eucalyptus oil (China supplied 45% of the German market) or of citronella (China supplied 35% of the German market).

For 'other essential oils', there is a greater Latin American presence. Mexico, Guatemala (lemongrass oil), Brazil and Paraguay (petit grain) are all listed as import sources, although in percentage terms (5.5%), their contribution is not major. Bolivia is not listed as a supplier of any essential oils to the German market.

For colorants -- specifically annatto and cochineal -- Latin America is an important source, with Peru constituting the principal supplier. Peru's dominance of annatto, however, is challenged by India and also by Kenya which has performed strongly in recent years.

## **Consumption Trends**

Over the last decade the German and European markets have seen a stable, and slightly increasing, consumption of essential oils and colorants. While the use of essential oils for non-edible purposes has declined in the face of cheap synthetics, the role of edible oils and colorants has increased moderately.

This picture is sure to change substantially in the next few years as a result of two factors - the need to standardize legislation in anticipation of the unification of the European market in 1992, and the increasing health-related concerns surrounding the use of synthetics and chemical ingredients in human foodstuffs (and, to some extent, animal feeds as well).

Several key pieces of legislation have been passed that reflect these changes. Under Directive 89/107/EEC, which came into effect in June 1990, a permitted list of additives has been drawn up which restricts the quantities of many additives and prohibits outright the use of many others. Furthermore, EEC members may restrict this list even further where evidence exists for possible threat to human health. Any such restriction would then be considered by the Council as a whole and the restriction extended to the rest of Europe, if warranted. More specific labelling of additives is also required.

Under Directives 88/388/EEC and 88/389/EEC, which came into effect in 1989 and 1990, tighter controls are also placed upon the use of flavourings, particularly artificial flavourings. In particular, the use of the word 'natural' is restricted to flavourings obtained directly from materials of vegetable or animal origin and is not permitted as a term for synthetics, even if chemically identical to the natural product. Directive 389 goes on to provide for a listing and categorization of natural flavourings, synthetics and chemical derivatives for the purposes of controlling the use of 'non-natural' substances.

While such legislation does not ban outright the use of artificial or synthetic additives (colourings or flavours) it restricts their use and sets the stage for progressively tighter controls on their use. The impact is expected to be a sector-wide move towards increased dependence on 'natural' products at the expense of other groups.

### **Product Categories**

**Lemongrass oil** and its principal derivative, citral, have faced a long but gradual decline in consumption throughout Europe, including Germany, due to competition from synthetic substitutes. Total annual German consumption is estimated by brokers at approximately 20MT. It is used principally in the production of cheap soaps and other household products. Guatemala oil is considered to be of the best quality and is often purchased from Fuerst, Day and Lawson, a specialist U.K. based broker. Typical CIF prices in Germany for 1989 ranged from US\$14-15/Kg. With the low consumption, volumes traded are not great -- one of the bigger traders of lemon grass oil in Germany handles no more than 10 drums of 200Kg. each per year.

**Eucalyptus oil** consumption is greater, and is traditionally derived from China, Brazil, Australia and Portugal. Both Spain and Portugal import more than 100MT each per annum for further processing and shipment on to other European consumers. Typical CIF prices in 1989 ranged from US\$6.00-6.20/Kg. for Chinese oil to US\$9.50 for the Portuguese product. The Chinese are making significant gains in the market due to their price advantage combined with acceptable quality. Reliability of Chinese supply was reported as a problem. Minimum purity requirements are set at 70-75% eucalyptol but the trade prefers at least 80-85% for best prices. France is said to account for as much as 50% of European market volume, due to its widespread inclusion in eau-de-Cologne. Apart from this, eucalyptus oil is used primarily in pharmaceutical applications. As much as 20% of imported eucalyptus oil is subsequently re-exported from Europe.

**Mint oils**, including peppermint, Japanese or cornmint oil, menthol (a more purified form of Japanese mint oil) and spearmint, are used in a variety of flavouring and pharmaceutical applications. With the exception of spearmint, however, cheap synthetics have been developed for most of these products. Many of these synthetics are manufactured in West Germany. The importance of these synthetics may decline in the future.

The world spearmint market is dominated by the U.S.A. which probably accounts for 75% of output. India, Morocco, Argentina and Brazil are also important players. Japanese or cornmint oil is the dominant oil of this group. Total world production is placed in the region of 5,000MT per annum, with China accounting for 3,500MT. India supplies another 1,200MT to the world market. The balance of world production is made up by Brazil, Vietnam, Korea, Argentina, Thailand and India.

Chinese peppermint oil was quoted in 1989 in Germany at US\$10.50/Kg. CIF, with Brazilian at US\$19.00. United States menthol was traded at US\$17.50-22.50/Kg. CIF while Chinese menthol fetched US\$22/Kg. and Brazilian menthol US\$43/Kg. CIF. Finally, Chinese spearmint was quoted at US\$20/Kg. CIF. These prices can fluctuate considerably, however, depending upon supply, degree of concentration of active ingredient, and existing stocks held in Europe.

**Citronella**, like lemongrass oil, has been experiencing a declining market during the 1980s. It too, has suffered from competition from synthetics for its use as a fragrance in household cleaners and similar low-end market applications. Main world suppliers are China, Indonesia, Spain and Sri Lanka. Prices are low, averaging no more than US\$3.50/Kg. CIF in 1989.

**Vetiver oil** is little used in Germany, with France, the U.K. and Switzerland being of more importance due to the predominant use of vetiver in the perfume sector. Although always regarded as a high quality (and price) item, it suffered during the 1980s from perceived manipulation of the market by key suppliers, a breakdown in quality control (Indonesia, particularly, is blamed for this), and the development of substitutes. Vetiver has never really recovered from these blows in the early 1980s and quantities traded were still much lower than formerly. Haiti is regarded as a key supplier, and Haitian vetiver fetches at least US\$75/Kg. CIF. Other suppliers may sell for as little as US\$45-50/Kg.

**Anise oil** is probably traded at a rate of not more than 10MT/annum in the German market. The liquor and confectionary industries are the key users and the French are the largest buyers in Europe, purchasing primarily from China. There are two grades of anise -- regular and 'star' -- and both are used in products such as pernod as well as in confectionary, baked goods, pharmaceuticals and chewing gum. Synthetics have replaced natural anise in most industrial applications due to their substantial price advantage. Star anise (the most important type) sells for approximately US\$8-15/Kg. CIF.

**Hinojo oil**, derived from fennel, was only handled by a single German trader interviewed in this study, and even he admitted keeping it in stock only to be able to guarantee a complete range of products to his customers. This importer handled less than 1MT/annum. Derived typically from the Baltic countries, the CIF price ranges from US\$14-15/MT.

**Garlic and ginger oils** are regarded by German traders as 'exotic' items, with the U.K. being a much more important market. For garlic oil, a typical German importer handled no more than 100-200Kg/annum and paid approximately US\$75-100/Kg. CIF, although the price range was substantial, from US\$50/Kg. for Chinese garlic oil, to US\$120/Kg. for Egyptian product. Other suppliers include Mexico, India, Guatemala, Brazil and Argentina, although no single country appeared to have a clear lead in the market. The German market for ginger oil was reported to be slightly bigger, although at 5MT/annum it was estimated to be one quarter of the U.K. or Dutch markets at approximately 20MT/annum each. India is the main supplier and sells ginger oil at US\$45-55/Kg. CIF in Germany. Chinese oil fetches only US\$40/Kg. Little increase in demand was foreseen for either ginger or garlic oils.

**Manzanilla** is an important product in the pharmaceutical industry as it has antiseptic properties. Nevertheless, it is traded in only minor quantities. The market research staff interviewed three traders who handled manzanilla and none traded more than 250Kg/annum and this only at specific request from buyers. Main sources of supply are Egypt, Morocco, Hungary and Yugoslavia. Typical CIF prices ranges in 1989 were from US\$1,000-2,000/Kg.

**Other essential oils**, including muna oil, t'ola oil, romerillo oil and kut-kutu were discussed with German traders but are largely unknown in the German market. No trader expressed much interest in supplies of these products, although they were ready to receive samples on the basis of being prepared to meet market demand should it arise.

**Annatto** is used widely in the food industry in Europe in two key forms. Norbixin is a water soluble pigment and provides an orange-yellow colour to cheese, bakery products, soups, sauces, fish and confectionary. Bixin is oil soluble and is used for colouring margarine, butter, salad oils and peanut butter. Several hundred tonnes are imported into Germany each year but individual trades are claimed to be small. Typically CIF prices are in the range of US\$1 per 1% of bixin or norbixin content. Thus 50% bix and 95% bix (typical formulations) fetch US\$50/Kg. and US\$95/Kg. respectively. Peru and India are the chief suppliers but Kenya is also of significance.

**Cochineal** usually used in the form of carmine is an aqueous extract derived from a dried preparation of the beetle coccus cacti, harvested principally in Latin America. The color of carmine, a blue-red, is affected by pH and becomes progressively more reddish as pH decreases. Below pH 3, however, it becomes insoluble. It is heat stable, which is important for cooked products. It is used in bakery products, confectionary, strawberry milk shakes and other strawberry products and in pickles and relishes. Cochineal was shipped by Peru in 1987 at FOB US\$52.32/Kg. No more recent prices are readily available.

### **Import Restrictions and Requirements**

Quality standards are imposed in Germany through health and sanitary regulations but those specified by importers and brokers are considerably more detailed and stringent. Key to these standards is the proportion of active ingredient in the product and the amount of contamination from outside materials. These standards differ from one product to another.

Some essential oils are subject to import tariffs, although in all cases examined these are forgiven for countries classified under the General System of Preference (GSP) category. Bolivia is classified under the GSP. Where tariffs are levied, it is almost always with respect to the purified or refined product, with crude oils being exempted. For example, deterspenated peppermint and other mint oils are assessed a 4.6% tariff while non-deterspenated mint oils are tariff free. In any case, all GSP countries including Bolivia are exempted even for the more refined form. Other examples include deterspenated vetiver oil or lemongrass oil, which are subject to tariffs of 2.3% and 6.9% respectively.

### **Market Recommendations**

As may be judged from the consumption section above, those essential oils and colorants destined for use in edible products can expect significant increases in demand over the next few years. Those products used primarily in inedible formulations (household products, pharmaceuticals, cosmetics) however, may not share in this market growth.

Based upon existing import volumes, as well as likely trends in demand, the most immediate opportunities for Bolivian exporters would appear to lie with the mints (peppermint and japanese or cornmint and the menthol extract) eucalyptus and citronella, while both annatto and cochineal (or carmine) promise substantial growth from a relatively small base. Market opportunities in this area depend to some extent upon future events in Peru -- a key world supplier. In some cases, better market opportunities appear to exist in other European countries (particularly in France and the U.K.) than in Germany and these markets should be explored.

As for other product categories studied in this report, German firms are interested in seeing samples and exploring the development of long-term trading relations with Bolivian exporters, rather than attempting 'one-off' trades. Specific interest was expressed by one company interviewed in eucalyptus oil while two others sought new sources of a range of essential oils including lemongrass oil, manzanilla, peppermint and anise. Several companies would like to see samples of annatto.

### 5.2.3 Japan

#### **Trade Statistics**

Total Japanese imports of essential oils and natural colorants in 1989 were in excess of 12,500MT for a value of nearly US\$90 million. Of this total, colorants accounted for some 12% by volumes (1,544MT) and 17% by value (US\$14.5 million).

A reorganization of trade statistics reporting in recent years has made it harder to identify volumes and values of many Japanese imports of essential oils and colorants, with only the most important categories being reported separately. Despite this impediment, however, some conclusions can be drawn. Firstly, the vast majority of Japanese essential oil imports are accounted for by citrus oils, especially orange oil. These totalled some 9,000MT in 1989, or more than 81% of total essential oil imports. Their low per unit value, however, resulted in citrus oils representing no more than 39% by value of all imports. This was particularly true of orange oil which accounted for 75% of all oil imports by volume but only 14% by value.

No breakdown of colorants is available beyond that between those of vegetable and those of animal origin. Vegetable-based colorants are more important than animal-based ones, at 1,1140MT and 404MT respectively, and values of US\$12.2 million and US\$2.4 million.

Within the essential oils, the only commodities identified separately are japanese mint or cornmint oil, at 511MT for a value of US\$9.2 million in 1989, and peppermint, at 237MT, for a value of US\$9.7 million. Data from 1985 (see Table 5.5), when more detailed breakdowns were still available, show that other oils of interest included citronella oil (100MT), eucalyptus oil (42MT), and lemongrass oil (35MT). When separate data was kept for hinojo and star anise oils early in the previous decade, these oils were each accounting for no more than 1-2MT/annum. In total, therefore, it is unlikely that the oils of interest to Bolivian exporters could constitute a market of more than US\$25 million/annum.

#### **Sources of Origin**

Over 53% by volume (601MT), but only 19% by value (US\$2.3 million), of all vegetable colorant imports derived from Mexico. Mexican shipments to Japan are at least partially comprised of marigold (sanofil) extract. Other Latin American sources include Peru and Ecuador (18MT or US\$0.8 million), which will be largely if not entirely annatto. The only Latin American supplier of colorants of animal origin is Peru with shipments of 223Kg. in 1989, valued at US\$48,000. This will be entirely cochineal. This extremely low figure contrasts with the statements made by a major additive manufacturer and blender which indicated that it imported 30MT of Peruvian cochineal in 1988.

Table 5.5: Japanese Imports of Selected Essential Oils and Colorants, 1980-89

Code	Product	1980 vol (MT)	1985 vol (MT)	1989 vol (MT)	1989 vol 000US\$	
32.04-130	Coloring matter of vegetable origin	959.8	770.2	1,140.3	12,238.8	
32.04-200	Coloring matter of animal origin	224.7	174.4	404.8	2,414.5	
33.01-106	Citronella oil	132.5	92.7	*		
33.01-108	Eucalyptus oil	31.2	42.0	*		
33.01-109	Fennel oil (Hinojo)	1.2	*	*		
33.01-116	Star Anise oil	1.3	*	*		
33.01-121	Lemongrass oil	29.8	34.8	*		
33.01-123	Vetiver oil	9.5	11.0	14.0	718.3	
33.01-131/4	Peppermint oil	588.0	544.9	75.4	2,438.2	
				(other mints)	237.1	9,686.3
				(piperita)	511.3	9,194.6
				(arvensis)		
33.01-135	Spearmint oil	1.0	93.9			
33.01-139	Essential oils, NES	852.2	1,088.9	814.6	13,850.3	
Other essential oils		4,449.0	2,666.1	9,378.4	36,201.6	
<b>TOTAL</b>		<b>7,280.2</b>	<b>5,518.9</b>	<b>12,575.9</b>	<b>86,742.6</b>	

Essential oils NES includes bayleaf oil, cananga oil, petit-grain oil, rosemary oil, rosewood oil, ylang-ylang oil, cinnamon leaf oil, ginger grass oil, palma rosa oil, thyme oil and gyusko oil.

In 1985 and 1989 it also contains oils no longer specified separately.

Other essential oils includes all citrus oils, geranium oil, jasmine oil, lavender oil, cassia oil, cedar oil, clove oil, sandal wood oil, patchouli oil, ho oil and rose oil. These oils are listed separately in trade statistics.

\* Listed with "Essential Oils, NES"

Source: Japan Tariff Commission, All Values CIF. Yen converted at 141/US\$.

Of the identifiable essential oils, the U.S.A. is the origin for 99% of peppermint oil imports into Japan, while Japanese mint or cornmint oil imports derive largely from China (73% by volume). Vetiver oil is supplied by a number of countries, including Indonesia, France, China, and Singapore. No Latin American suppliers are listed for any of the above oils. Under the NES category (which includes citronella, hinojo, star anise and lemongrass, as well as a number of other minor oils, Paraguay, Guatemala and Brazil are listed for a total of 21MT (9%) or US\$340,000 (10%). It is safe to assume that Paraguay's exports to Japan are entirely petit-grain (bitter orange oil) while Guatemala's are lemongrass oil. Brazil's minor contribution is also probably petit-grain.

Mexico, Brazil and Paraguay also shipped 126MT to Japan in 1989 under the 'other' essential oil category, but as no definition of this group is provided it is difficult to identify their contribution.

### **Consumption Trends**

A 1985 ASEAN study describes Japan as one of the leading essential oil importers in the world, and attributes this position to the fact that of the domestic ¥11 billion market in 1984, only ¥90 million was accounted for by domestic production. It also details a growth rate in the Japanese fragrance industry of over 14% during the first half of the decade. Flavours had grown even faster, and were estimated to account for 2/3 of the overall market (fragrances the remaining 1/3).

Among categories of fragrance use listed by this study are cosmetics, toiletries, household products (including incense), industrial (paints, synthetic leathers, inks and fibres), safety maintenance (added smell to natural gas etc.), and biological fragrances (pheromones and other uses in wildlife and pest control work). Flavour categories include chewing gum, soft drinks, confectionary, bakery and sauces.

Despite this overall growth, however, the statistics suggest that the value of essential oil imports has actually declined. The total value of essential oil imports in 1989 (¥10 billion) is actually lower than in 1976 (¥11 billion), and below the average for the last 15 years. This is not reflected in the volume data, however. Between 1980 and 1989, essential oil import volumes have increased from approximately 6,000MT to 11,000MT/annum, but at increasingly low per unit values.

Prospects were also not considered to be good for colorants in the Japanese market. While the overall volume of natural colorants has actually increased by some 30% since the beginning of the decade, most brokers interviewed stated that their sales of annatto and cochineal had declined considerably over the last 10 years.

While Japanese standards are strict, there appears to be no immediate indications of legislation along the lines recently enacted in Europe or the United States of America. According to brokers interviewed, there is no strong trend away from synthetic fragrances and flavours as yet in Japanese society.

### **Product Categories**

**Lemongrass oil** did reach a temporary high of US\$14/Kg. in 1988 but have now settled back to US\$8/Kg. CIF. This is still higher than the typical price in recent years which has averaged US\$6-7/Kg.

**Menthol.** one of the mint group, was estimated by a major trader to be imported at a level of approximately 120MT in 1988. Of this 46MT (synthetic) was derived from the U.S.A. with 41MT from China and approximately 28MT from Taiwan. West Germany has been a supplier in 1989 (also synthetic). Chinese menthol fetches approximately US\$20-21/Kg. in Japan, with Indian menthol slightly cheaper at US\$19/Kg. Another trader quoted purchases of approximately 100MT of crude menthol per year at an average price of US\$15/MT (80-85% menthol). These purchases are made in both metal drums and 5 gallon plastic jugs.

**Other Products.** No specific pricing or product details were available for other essential oils apart from those mentioned above.

**Colorants** were discussed by only one firm interviewed. San-ei Chemical Industries is one of Japan's largest handlers of food additives and flavours. It purchases approximately 30MT of cochineal beetles per annum from Peru and is involved in technology transfer in annatto production in Peru and Kenya. It also purchases marigold. San-ei representatives stated that annatto consumption in Japan had declined by 50% over the last 10 years. Demand did exist, however, for cochineal and new sources were sought.

### **Import Restrictions and Requirements**

Apart from standard requirements as laid down by the JAS for such areas as specifications of packaging materials and labelling, import quotas do apply to some commodities in the essential oils and colorants category. In general these are 'demander' quotas, meaning that importers have to request import quota. As a result, exporters can not ship to Japan without a buyer or broker at the Japanese end.

In addition there are import tariffs levied on some commodities, although these are generally forgiven under preferential origin regulations, which would be expected to encompass Bolivia. Lemongrass oil, citronella oil, eucalyptus oil, hinojo, and star anise oil are all exempted from duty but vetiver oil and the mint oils are taxed (at 3.7% and 15% respectively). For countries of preferential origin this is reduced to zero for vetiver and 6% for mint oils.

### **Market Recommendations**

Japan does not appear to be a very promising market for new suppliers of essential oils and colorants. Despite the marginal increase in volumes, average import values have decline over the last decade. In addition, Japan does not appear to have caught the 'natural' trend to the same extent as in the case of Europe and North America.

Nevertheless, there were some specific cases of importers or brokers seeking new supply sources, often accompanied by requests for samples. These included lemongrass oil, crude menthol, cochineal and any new natural vivid orange and red dyes.

### **5.3 Conclusions**

A number of recent changes have had a profound impact on the international essence and colorant market. One of the most important has been increased public awareness of, and resistance to, the use of chemical and synthetic additives and other substances in foods. This trend away from

'artificial' additives and towards 'natural' substitutes has led to legislation in both North America and Europe that is likely to profoundly affect the nature of the food additive industry and to increase enormously the demand for vegetative and animal-based products.

Another important development has been the increased understanding of the potential possessed by some plants as tools in the search for unusual or unknown pharmaceutical components, in the development of process-specific enzymes (or their inhibitors) and in a multitude of other bio-engineering and genetic modification roles. Plants previously given little consideration, such as the periwinkle or the evening primrose have been found to contain substances of potentially enormous worth to the expanding 'bio-industrial' sector. This appraisal of previously unstudied plants (often of tropical origin) is likely to intensify in the future.

While pharmaceutical applications of plant extracts are not covered in this study, they are, nevertheless, of importance to the area of essential oils and colorants, through their impact on research into the properties of previously unstudied plant species and the fact that many specialized additive production firms will also engage in work on other plant extracts as well. An example of this is given in Table 5.6 where the product listing for a single German trading house is duplicated. Consisting of over 200 essential oils and aromatics, it shows clearly the tremendous growth in recent years in available natural products within this area.

There is no doubt that strong market demand exists for currently unavailable natural colours, while existing colorants will get a boost as legislation eliminates synthetic alternatives in Europe and North America. In particular traders are interested in new sources of cochineal and, to a more limited extent, annatto. Political and economic developments in Peru (a major supplier of both commodities) is likely to have a significant impact on markets. Marigold appears to offer less opportunity because it is used primarily as an animal feed colorant, and hence is not directly subject to additive legislation introduced for products destined for human consumption.

The same pattern is expected for essential oils used in food flavourings, but not, as yet at least, for those used in cosmetic and other non-edible uses. Unfortunately most of the oils considered in this section are utilized primarily in inedible applications. Despite these cautions, traders did see market opportunities for lemongrass oil, eucalyptus oil and the various mints (peppermint and Japanese or cornmint oil in particular). Even menthol is of interest to a number of traders, although concerns about the tobacco industry render this an uncertain long term area.

Contact instructions for traders seeking more information or samples with regard to specific items are given in Appendices F, H & I.

Table 5.6: Essential Oils and Aranalics Traded by a Large German Additive Specialist

## Product-List

### Essential Oils

Abies Albae Oil  
 Amyrs Oil (Sandalwood Oil W. I.)  
 Angelica Root Oil  
 Angelica Seed Oil  
 Anethol 21/22  
 Aniseed Oil rect.  
 Aniseed Oil DAB 18/19  
 Aniseed Oil Star 15/16  
 Atractylis Oil chines.  
 Balm Oil Indicum DAB 6  
 Basil Oil Comores  
 Bergamot Oil Reggio  
 Bucchu Leaves Oil BETULINA  
 Bucchu Leaves Oil CRENULATA  
 Camphor Oil White  
 Cananga Oil Java  
 Caraway Oil 1 x rect. DAB  
 Caraway Oil Polish DAB  
 Cardamom Oil Ceylon  
 Carrot Seed Oil Provence  
 Cassia Oil chin.  
 Cedarleaf Oil Canad.  
 Cedarwood Oil Texas rect. light  
 Cedarwood Oil Virginia rect. light  
 Celery Seed Oil French  
 Chamomile Oil maroc.  
 Cinnamon Bark Oil Ceylon 60/65 %  
 Cinnamon Bark Oil Ceylon 30 %  
 Cinnamon Leaf Oil Ceylon  
 Citronella Oil Vietnam 85/32  
 Citronella Oil Java 85/35  
 Citronella Oil Ceylon Estate  
 Citronella Oil South American  
 Clove Bud Oil  
 Cloveleaf Oil indon. min. 80 %  
 Cloveleaf Oil light rect. 85/90 %  
 Cloveleaf Oil Madagas. 82 % min.  
 Copaiba Balsam Oil rect.  
 Copaiba Balsam Oil  
 Coriander Oil Russian  
 Cypress Oil  
 Davana Oil  
 Dillweed Oil Bulg.  
 Dwarf-Pine Oil  
 Estragon Oil French  
 Eucalyptus Oil 80/85% Australian  
 Eucalyptus Oil 80% chines.  
 Eucalyptus Oil 70/75% span.  
 Eucalyptus Oil 80/85% span.  
 Eucalyptus Citriodora Oil bras. min. 75%  
 Fennel Oil Sweet

### Essential Oils

Fir-cone Oil  
 Garlic Oil  
 Geranium Oil african.  
 Geranium Oil Bourbon  
 Ginger Oil Ceylon  
 Ginger Oil Ind.  
 Guaiacwood Oil concret  
 Grapefruit Oil Florida  
 Grapefruit Oil Israel  
 Helichrysum Oil Balkan  
 Holeaf Oil Formosa mun. 85%  
 Juniperberry Oil Yugoslav  
 Labdanum resinoid  
 Laurel Leaf Oil Yugoslav  
 Lavandin Oil 22/24%  
 Lavandin Oil Grosso  
 Lavandin Oil 30/32%  
 Lavandin Oil Super 45/50%  
 Lavender Oil Barrême 50/52%  
 Lavender Oil Mt. Blanc 40/42%  
 Lemon Oil Messina "SILVERSEAL"  
 Lemon Oil "M. with the half moon"  
 Lemon Oil South American c.p.  
 Lemon Oil Italian c.p.  
 Lime Oil dist. West Indian  
 Lime Oil West Indian expressed  
 Litsea Cubeba Oil chin. min 75%  
 Lovage Root Oil  
 Mace Oil  
 Majoram Oil cult.  
 Mandarin Oil red Italian  
 Mandarin Oil red Spanish  
 Menthol braz.  
 Menthol chines. "POLAR BEAR"  
 Menthol liquid  
 Mint Oil  
 Mugwort Oil maroc.  
 Muscatel-Sage Oil  
 Myrtle Oil Yugoslav  
 Neroli Oil  
 Nisouli Oil Cortex  
 Nutmeg Oil Ceylon  
 Nutmeg Oil indones.  
 Oil of Cognac white  
 Oil of Cognac green  
 Oleoresins / Extracts  
 Onion Oil  
 Orange Oil braz. Pera c.p.  
 Orange Oil braz. Valencia  
 Orange Oil Florida c.p.  
 USP "PASCO" Mids.

Table 5.6: Continued

Essential Oils

Orange Oil Guinea  
 Orange Oil bitter Italian  
 Orange Oil calif. USP c.p.  
 Orange Oil span. dark c.p.  
 Orange Oil dist. water clear braz.  
 Origanum Oil span. 65/70  
 Origanum Oil Yugoslav  
 Palmarosa Oil braz.  
 Palmarosa Oil West Indian 92/94%  
 Patchouli Oil Indonesian  
 Parsley Leaf Oil  
 Parsley Seed Oil  
 Petitgrain Oil Bigarade  
 Petitgrain Oil Paraguay  
 Pepper Oil green  
 Pepper Oil black Sarawak  
 Pepper Oil black Ceylon  
 Pepper Oil black Indian  
 Peppermint Oil DAB 7/EUR III  
 Peppermint Oil american MADRAS  
 Peppermint Oil american MADRAS rect.  
 Peppermint Oil american WILLAMETTE  
 Peppermint Oil am. WILLAMETTE rect.  
 Peppermint Oil american YAKIMA  
 Peppermint Oil american YAKIMA rect.  
 Peppermint Oil braz. 45/50%  
 Peppermint Oil braz. 1 x rect.  
 Peppermint Oil braz. 2 x rect.  
 Peppermint Oil chines. 50%  
 Peppermint Oil chines. 1 x rect.  
 Peppermint Oil chines. 2 x rect.  
 Peppermint Oil japan. KOBAYASHI  
 Peppermint Oil japan. rect.  
 Peppermint Oil MITCHAM sweet  
 Peppermint Oil span. MITCHAM  
 Peppermint Oil span. MITCHAM rect.  
 Pimento Leaf Oil Jamaica  
 Pine Needle Oil sibirian  
 Pine Needle Oil chines. 15%  
 Pine Needle Oil chines. 35%  
 Pine Needle Oil East Asiatic  
 Rosemary Oil maroc.  
 Rosemary Oil span.  
 Rosewood Oil braz. min. 85%  
 Sage Oil dalmat. 30/35%  
 Sage Oil dalmat. 50%  
 Sage Oil balkan 30%  
 Sage Oil balkan 37-40%  
 Sage Oil span.  
 Sandalwood East Indian AGMARKED  
 Sassafras Oil chines. min. 90%

Essential Oils

Savory Oil balkan  
 Spearmint Oil chines. 80%  
 Spearmint Oil american native Farwe  
 Spearmint Oil american Scotch redist  
 Spikenard Oil chines.  
 Spike Lavender Oil span.  
 Swiss Pine Oil  
 Tangerine Oil Florida  
 Thyme Oil white 25/30%  
 Thyme Oil red 45/50%  
 Tolu Balsam  
 Valerian Oil chines.  
 Valerian Oil balkan  
 Vervyer Oil Bourbon  
 Vervyer Oil Haiti

Aromatic Chemicals

Alpha Pinene  
 Alpha Terpineol cryst.  
 Beta Pinene 90%  
 Bornyl Acetate liquid  
 Camphor Powder nat. japan  
 Citral pure  
 Eugenol  
 Eucalyptol 100% DAB 7  
 Fenchyl Alcohol  
 Geraniol pure  
 Heliotropine span.  
 Iso Bornyl Acetate  
 Iso Eugenol  
 Linalool pure  
 Linalyl Acetate  
 Terpineol chem. pure  
 Terpenyl Acetate  
 Triacetin  
 Vanillin

## 6.0 OTHER POTENTIAL EXPORT PRODUCTS

The initial study undertaken by the AMIS team with respect to this project (Bolivia Agroindustrial Marketing Systems Study, October 1990) identified several potential export commodities which, although they did not fit within the categories evaluated in the previous sections, nevertheless appeared worth exploring in more detail.

Due to limited resources only a very few of these promising 'other' commodities could be selected. After some consideration, it was decided to focus upon three specific items:

- Dried cassava (yuca) for use in animal feeds in Chile
- Olives and olive oil for the Argentine market
- Dried tomatoes for the U.S. market

The findings of the market research teams are described below for each of these commodities. In addition, an attempt is made at the end of this section to identify areas that could not, due to time and resource limitations, be investigated in this study, but which nevertheless appear worthy of further research, should resources permit.

### 6.1 Yucca - Chile

One of the principal established crops within the Chapare region, and indeed in several areas of Bolivia, are cassava (known in Spanish as yuca). Due to its low value to weight ratio, cassava was originally eliminated from consideration for export marketing purposes. Conversations with feed manufacturers in Bolivia and elsewhere, however, suggested that, while unsuitable for long distance transport, markets might well be established in neighbouring countries. In particular, attention was turned to Chile.

Chile possesses a number of attributes which suggest that it might constitute a potential market for dried yucca. Firstly it supports a considerable and growing livestock industry which is sufficiently commercialized to require significant inputs of concentrate and other feeds. This sector includes feed for dairy cattle, poultry, pork and aquaculture (particularly salmon). At the moment, the carbohydrate element of these feeds is met through maize of either domestic or imported origin (U.S.A. and Argentina) or, to a lesser extent, through the use of wheat bran (also partially imported).

In addition, Chile possesses the foreign exchange capability to afford rapid and full payment for all imports (a feature not shared, for example, with Argentina at the moment), and in fact runs a considerable surplus in trade with Bolivia, through its exports of fruit, wine, soft drinks and other items. There are thus already existing trade links that would encourage Chilean promotion of Bolivian carbohydrate imports.

As part of the market study, therefore, the research staff in Chile discussed the potential of cassava as a substitute element in feed rations with a number of manufacturers. In addition, they utilized a feed ration linear programming model operated by the Animal Science Department of

the University of Santiago to calculate replacement costs for cassava in standard feed rations. The results of these runs are given in Table 6.1 below.

As is clearly shown in the table, the value of cassava at wholesale prices in Chile for animal feed purposes, and at a maize price of US\$123/MT, would be between US\$75-100/MT. Cassava is more attractive as a ration component where considerable levels of carbohydrate intake are required, as in fattening and high yield dairy cattle.

The following data is based upon maize imported at US\$123/MT. The price of maize at the time of running the model was US\$132 but domestic supplies were available at the time. US\$123 was considered by feed manufacturers as an appropriate price.

**Table 6.1 Replacement Ration Value of Dehydrated Cassava**

<u>Specific Ration</u>	<u>Replacement Value (US\$/MT)</u>
Pork: Post-weaned	101
Pork: Grower Ration	85
Pork: Fattening	101
Pork: Reproduction	85
Pork: Lactation	85
Poultry: Grower Ration	76
Poultry: Fattening	76
Dairy Cows: High Lactation Rations (over 4,500l/lactation)	102

These models were run against a number of possible substitutes including maize itself, wheat bran, animal fat and calcium carbonate. No runs were possible under the model for fish production so no value can be quoted in this area.

Those feed manufacturers interviewed suggested that should Bolivia be able to deliver dehydrated cassava within the price ranges provided above (adjusted according to the current price of maize), they would be seriously interested in purchasing.

It is recommended that a brief cost of production study be undertaken in Bolivia to determine whether or not cassava can be grown, processed (chopped and dried) and shipped to Chile for this price.

## **6.2 Olives and Olive Products - Argentina**

Previous attempts to establish olive groves in the High Valley areas of Cochabamba Department had shown that olives were agro-climatically appropriate for this area. During the first

Bolivian study undertaken for this project (see above) the feasibility of olive production had been discussed. It was learnt, however, that previous olive schemes had failed due to lack of sufficient markets within Bolivia for the product.

As a result of this finding, and the presence in neighbouring Argentina of a large Italian population, it was decided to include olives and olive products on the list of potential exports with respect to that country.

Research in Argentina quickly revealed the reason that no export sales had been achieved under previous schemes in Bolivia. Although Argentina has imported both olives and olive products in the past, it is also a significant exporter of these same category of products.

In fact, no imports of olives have been made to Argentina since 1980 (20MT, valued at US\$40,000), and no imports of olive oil since 1988 (2.4MT, valued at US\$10,000). In that same year, 1988, Argentina exported some 2,000MT in this category, rendering it the eighth largest exporter in the world. In all, total 1988 production was 4,400MT.

The olive oil that has been imported into Argentina in recent years has been the top quality 'extra virgin' oil from Italy and Spain, packaged in small luxury containers and has occupied the premium end of the market.

No real opportunity is thus seen for Bolivia to enter the Argentine market in this area. Furthermore, as was pointed out by one respondent in Argentina, Bolivia would probably be unwise to consider olive or olive oil exports to any neighbouring country. Given the enormous domestic industry in Argentina and the strong need for foreign exchange in that country, Argentina would be a formidable competitor for any available markets.

### 6.3 Dried Tomatoes - U.S.A.

The market for dried tomatoes in North America is reported to have started in 1980, when the product was imported by Dean & DeLuca, a leading New York purveyor of gourmet foods. Since that time the market has expanded enormously, and dried tomatoes are now starting to appear on the produce shelves of major supermarket chains. It would appear that dried tomatoes are on the verge of moving from a speciality item to a main-stream product.

The present market can be divided into two principal groups:

**The Traditional Italian Sun-Dried Tomato:** Italy has been the source of the 'traditional' sun-dried product. The plum tomatoes are slowly dried in the open air and considerable quantities of salt are added to prevent mould and bacterial growth. The residual salty taste is characteristic of the product and has, to a certain extent, limited its use beyond Italian and other ethnic recipes.

**The New American Dried Tomato:** As U.S. growers have entered the market they have dramatically changed the process through the use of mechanically dried plum tomatoes, to which no salt has been added. The new product has an intense and sweet tomato flavour with much broader appeal among consumers.

Dried tomatoes are available in a number of forms including:

- Dried tomatoes marinated in extra-virgin olive oil with herbs
- Minced dried tomatoes as above
- Dried tomatoes, not marinated
- Dried tomato halves
- Dried tomato bits (similar to 'bacon bits')
- Dried tomato pasta sauce, tapenade and chutneys

A copy of the Sonoma brochure (the largest U.S. mark of dried tomato) is attached to illustrate these categories.

No statistics exist as yet for the dried tomato market. However, with only a few firms involved in producing or importing this commodity, it is not too difficult to provide estimates of market volume. Interviews with domestic producers and brokers suggest that the market is currently equally shared between domestic production and imports. Domestic production is probably in the range of 50,000lbs/annum of dried tomato, for a total annual market of approximately 100,000lbs. It should be noted that as 14lbs. of tomatoes are required for every 1lb. of dried product, the volume entering processing both in the U.S.A. and abroad would equate to some 1,400,000lbs. (640MT).

Wholesale prices for dried tomatoes are in the range of US\$6-7/lb., although they may be lower for the saltier sun-dried product. At these prices the current market volume is worth approximately US\$600,000-700,000/annum -- a relatively small market.

However, market growth over the last few years has been estimated at 15% or more per annum and the potential for this product is seen as considerable. This growth figure could increase considerably as supermarket coverage develops. Among the key market areas open to dried tomatoes are:

- Gourmet retail trade (usually with extra-virgin olive oil and herbs)
- Health food shops (only tomatoes grown without chemical treatments)
- Institutional trade (restaurants, hotels etc. in bulk containers)
- Industrial use (processing firms producing sauces, pizzas, soups etc.)
- Standard retail (packed dry, price important)

Although a number of firms are involved in importing sun-dried tomatoes (usually as part of a line of Italian or other ethnic imports), only two firms are estimated to account for 90% of domestic output (see Appendix G). The larger of these two firms also sells a wide range of other dried fruit and vegetable items that may be of interest to Bolivian exporters. Timber Crest Farms (marketing under the Sonoma label) sell dried apples, peaches, apricots, pears, cherries dates and figs. Of particular interest, they also import and sell dried pineapple, star fruit (carambola), papaya and mango. Other exotic fruits might be considered if sales potential exists.

For Bolivian producers, dried tomatoes offer a number of opportunities and some limitations. Maximum competitive advantage appears to exist with respect to the mechanically-dried product, which is probably going to occupy a larger and larger percentage of the overall market. However, that market is growing very rapidly and demand is still expected to be considerable for speciality lines in the sun-dried category. While the market is still a small one, this will change dramatically over the next few years -- if market analysts can be believed.

To take advantage of this market, Bolivian exporters could (a) invest in mechanical driers (solar-powered, perhaps?) and attack the main-stream market, utilizing their considerable comparative advantage in labour and land costs, or (b) they could stay with the traditional version of the sun-dried tomato and target instead the 'health food' market, by growing tomatoes without any chemical additives.

Although considerable further cost-of-production studies would have to be undertaken, this market appears an existing one for Bolivia. The product offers a high value-for-weight ratio, a rapid growth in demand, and the possibility of developing completely new markets for the product in Chile and other countries where the dried tomato has not yet been marketed.

#### **6.4 Areas Meriting Further Attention**

A number of potential export product areas were identified by the team which undertook the first AMIS study in this project (Bolivia Agroindustrial Marketing Systems Study) and from which the products investigated in this report are drawn.

Some of those product areas are investigated in detail in this study. Some product areas, however, although fitting within the parameters described in Section 2 of this report, in terms of value-to-weight ratio and other characteristics, could not be included in these studies. Generally the causes for their failure to be selected were:

- Too many candidates for a limited number of field studies. It was decided at an early stage that a useful study would have to be limited to no more than three product groups per country (generally fruits, spices and oils). As a result some good candidates had to be rejected.
- Insufficient knowledge of the product's potential in Bolivia. This restriction applied to a number of products that were suggested, including fresh-water shrimp and grape-based products (must for wine or other liquors).
- Insufficient knowledge of the product itself. This category applies specifically to medicinal and pharmaceutical plants. While our research has shown clearly that this market area is expanding rapidly, it is still an extremely specialized one. No person on the initial appraisal team possessed the necessary technical skills to identify likely plants in this category.

- Potential export commodities falling outside of the initially defined Chapare/High Valleys boundaries. Although these limits have now been relaxed considerably and joint-venture investigations are examining prospects well beyond these two areas, they were in force when commodity selections were made. Products excluded due to these restrictions include contra-seasonal fresh fruits, silk-worm raising, frozen speciality vegetables and dehydrated vegetables -- all suited better to the Mid-Level Valleys around Cochabamba or the Santa Cruz areas than to Chapare or the High Valleys.

The following brief list, therefore, presents some potential export products that USAID or the Bolivian government might wish to consider, should further market investigations be undertaken:

## **1. NATURAL INSECTICIDES AND MEDICINAL PLANTS**

This is an area of enormous interest to biological researchers, pharmaceutical companies and plant scientists. The rewards following the discovery of such a plant can be enormous. Aspartame, the widely used low-calorie sweetener, is derived from an amino acid identified in a Brazilian plant. Other plants which have developed reputations for unexpected, but useful, properties include the evening primrose and the periwinkle. Unfortunately, this area is still extremely specialized and it would be necessary to bring an expert in this commodity type to Bolivia to provide an initial list of possible plants before market research could be undertaken.

It is hoped that with its combination of ecosystems, including wet tropical, dry tropical, temperate and high altitude, Bolivia would provide a wide variety of habitat niches for such plants.

## **2. CONTRA-SEASONAL TEMPERATE FRUIT AND VEGETABLES**

Chile has shown the vast potential for contra-seasonal exports of fresh fruit to the northern hemisphere through its development of the winter trade in grapes, apples, strawberries and other products. It is the opinion of many, including those involved in the business in Chile, that considerable potential still exists for such exports -- particularly where combined with IQF facilities for processing of the product during the Northern hemisphere summer (when exports are not feasible). In addition the contra-seasonal trade in fresh vegetables is still extremely limited. Products such as asparagus are no more than a fraction of potential winter vegetable sales in Europe and North America.

Production to meet such needs could be made in various regions of Bolivia including the mesothermic valleys of Santa Cruz, the Mid-Level Valleys of Cochabamba and possibly, parts of Tarija Department. The Yungas area, east of La Paz may also be suitable.

A market study of this segment of the market would have to commence by identifying potential contra-seasonal fruits and vegetables that could be grown in Bolivia. Suggestions already made in this regard include strawberries, raspberries, blueberries, asparagus, snow peas and fancy peppers.

### **3. SPECIALITY FROZEN VEGETABLES**

Much of what was presented above for contra-seasonal exports applies also to frozen vegetables, as such products would also be potential candidates for freezing during the 'off' season (northern hemisphere summer). In addition, however, there are a number of speciality items that may possess potential specifically for freezing.

Already at least one firm is investigating the suitability of Bolivia as a supplier of IQF baby jubilee corn. These baby corn cobs are eaten whole and are said to have a growing speciality niche. Other similar products include baby brussels sprouts and baby carrots. Due to their size, these products are often labour intensive in production -- an area in which Bolivia can claim a significant advantage.

Should this area be selected for further study, contacts could be made with speciality food suppliers to the restaurant and institutional trade to prepare a specific list of such products.

### **4. SILK-WORM PRODUCTION**

Little is known about this area, except that several Korean businesses are reported as investigating the suitability of Bolivia as a production location for silk. Discussions with agronomists appeared to indicate that neither the Chapare nor the High Valleys were appropriate areas for mulberry growth and the matter was not pursued further. These same sources, however, suggested that areas in Santa Cruz and Tarija fit more closely to the agro-climatic profile sought for mulberry growth. It is suggested that this possibility be followed up as silk production is reputed to be an extremely highly labour-intensive operation and the resulting product possesses a high value-to-weight ratio.

### **5. SEED TESTING AND MULTIPLICATION**

It is understood that seed companies in the United States are interested in locating suitable Southern hemisphere locations for winter multiplication and testing of seeds. Ideal conditions are said to include temperate climate and isolated valleys where little cross contamination is likely to occur. These conditions might be ideally met by the Mesothermic valleys of Santa Cruz.

**APPENDIX TO CHAPTER 6**  
**DRIED TOMATO BROCHURE**





Dear Friends:

I love to eat, and I eat to live well! Naturally, I want food that I eat to be delicious as well as nutritious. I want the same for my family and friends. That's why I have dedicated myself to growing, drying and packaging the finest of dried fruits and nuts since 1957. Timber Crest Farms products are the best available—and for good reason.

First of all, most of our products are organically grown, which means that we:

- use organic fertilizers—green cover crops, grape pomace, leaves and prunings; no chemical fertilizers;
- allow the fruit in our orchards to mature naturally; no poisonous sprays, toxic dusts or weed killers;
- dry our fruit at the lowest possible temperatures, and place in cold storage (36° - 38°F); no fumigation;
- prepare our products for market with water washes; no chemical detergents or mold inhibitors.

In addition, Timber Crest fruits are picked at the peak of ripeness, when they are mature and at their best. We never add sugar. Even the sweetest tasting tropical fruits contain only pure fruit juices. Unlike other producers, we never use sulfur dioxide. Timber Crest Farms fruits appear naturally dark, are full-flavored and free of the acidic taste of sulfur.

For over thirty years, each orchard and vineyard has received my personal care and attention. That's one more reason why I can say with confidence that Timber Crest products are guaranteed to give you a pleasurable, healthful eating experience. That's my unconditional guarantee of satisfaction. I also guarantee that you will receive the utmost in competence and courtesy from our service staff.

If you love to eat, and are looking for superior quality products, I know you'll love Timber Crest Farms!

Enjoy!

*Rancho Waltenspiel*

## TOMATOES

The use of dried tomato products in cooking is increasing dramatically across the country, and is no longer the sole domain of chefs in nouvelle and traditional French and Italian cuisine. For those whose appetites are leaning towards more flavorful food and who want a special flair to the look of their meals, dried tomatoes are the perfect solution.

The Mediterranean diet has long incorporated dried tomatoes, adding hearty flavor and colorful accents. Because the Italians dry their tomatoes in the sun, however, they use large quantities of salt to combat insects and mold. At Timber Crest, we oven dry our Roma tomatoes which eliminates the need for salt. Flavor and health combine to delight in our dried tomato products!



*Timber  
Crest  
Farms*

4791 Dry Creek Road  
Healdsburg, CA 95448  
(707) 433-8251  
FAX (707) 433-8255

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## TOMATOES

### Dried Tomato Halves

Versatile and convenient, our Roma tomatoes dry to 1/17th of their original weight, with a wealth of concentrated flavor. Boiling in water for two minutes softens them for immediate use in any recipe calling for tomatoes.

#1217 12/3 oz. per case

#2217 1/5 lb. per case

### Dried Tomato Bits

Use these confetti-sized flakes as you would bacon bits—except you'll find many more uses! They add instant color and tomato flavor to salads, dips or hot dishes. A cook's best friend!

#1218 12/3 oz. jars per case

#2218 1/5 lb. bag per case

### Marinated Dried Tomatoes

This zesty delicacy combines Roma tomatoes in olive oil. Like marinated mushrooms and artichoke hearts, the intensely rich tomato flavor lends elegance to hors d'oeuvres, salads, spreads and gourmet dishes.

#1520 12/8 oz. per case

#2520 2/1/2 gal. per case

## TOMATOES

### Dried Tomato Pasta Sauce

The addition of almonds to our savory pasta sauce gives it a classic Italian texture. We also add parmesan cheese, soybean and olive oil, lemon juice, herbs and spices to our dried Roma tomatoes. A secret ally when unexpected guests arrive or for Cook's night off, this ready-to-use pasta sauce can provide for epicurean delights on short notice.

#2512 12/8 oz. per case

#2562 2/1/2 gal. per case

### Dried Tomato Tapenade

Introducing our newest star! This sophisticated tomato and garlic paste is a must in your kitchen's bag of tricks. From stunning hors d'oeuvres to stews and sauces the flavor boost from tomato tapenade saves you time and adds gusto without all the work!

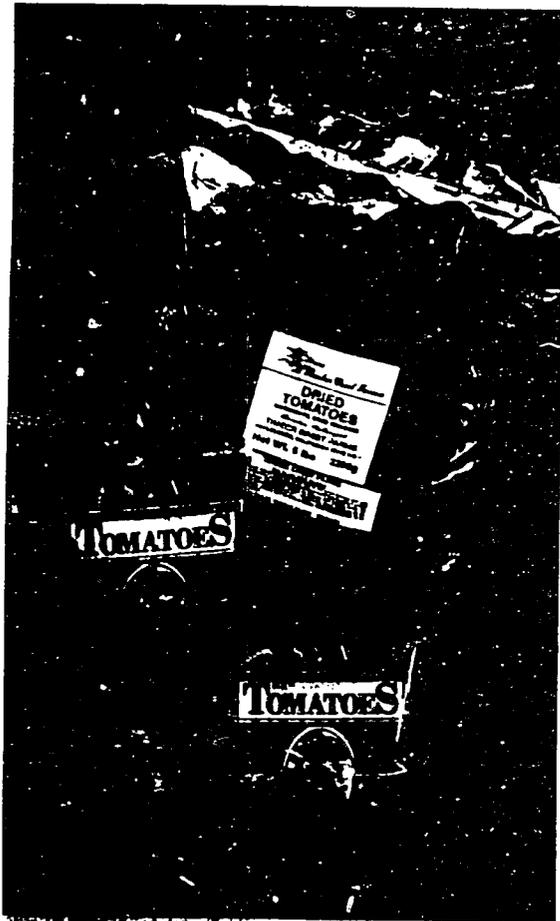
#1570 12/8 oz. per case

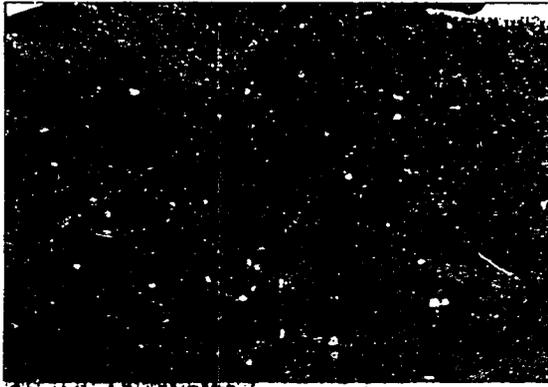
#2570 2/1/2 gal. per case

### Dried Tomato Chutney

Spice and everything nice . . . that's what our chutney is made of! Dried tomatoes, dried apples and raisins from California combine with apple cider vinegar, apple juice concentrate, onions, mustard seed, fresh ginger, curry and other spices for a delectable garnish. Chutney adds zest to sandwiches, hot or cold meats, makes a spicy addition to rice, and of course should be served with your favorite curry dish!

#1530 12/9 oz. per case

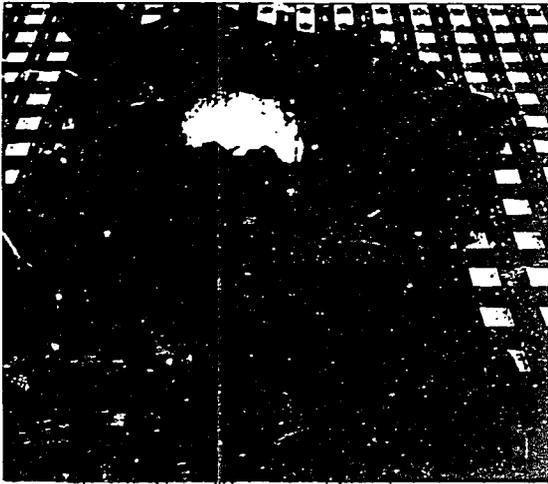




## DATES

These California dates are sweet, moist and extra plump. Their all-natural sugar provides quick energy, and can transform breads, puddings and cookies from the ordinary to extraordinary.

#1070 12/1 lb. per case  
#2070 4/5 lb. per case



## FIGS

My figs dry *on the tree* to capture all the sweetness of full maturity. Both varieties are a fine source of vitamins and minerals.

### Mission Figs

Mission figs are as sweet as thick, dark syrup.

#1090 12/12 oz. per case  
#2090 4/5 lb. per case

### White Figs

These figs have tender, golden skins and a delicate nut-like flavor.

#1080 12/12 oz. per case  
#2080 4/5 lb. per case



## CHERRIES

I harvest Black Bing cherries, and then dry them whole (with the pits still inside). The full-bodied, rich flavor makes for a satisfying snack or lunch accompaniment.

#1060 12/8 oz. per case  
#2060 4/5 lb. per case

## PINEAPPLE

Tangy and tart, pineapple is one of our best sellers. The dried pineapple rings and chips are delicious straight from the package, or may be used in recipes calling for canned pineapple-- simply soak in water or pineapple juice overnight.

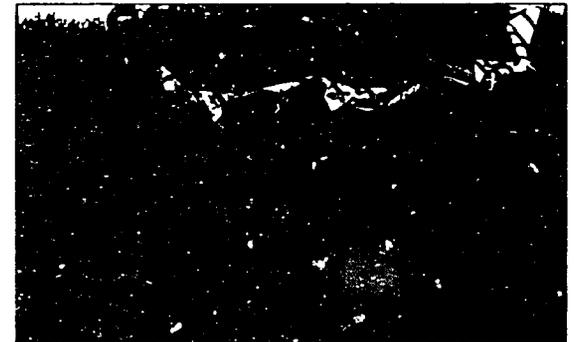
**Dried Pineapple Rings**  
#1150 12/8 oz. per case  
#2150 4/5 lb. per case  
**Dried Pineapple Chips**  
#1155 60/2 oz. per case



## STAR FRUIT

Grown in Malaysia, the Carambola melon has deep ridges that create the star-like appearance when sliced. These chewy, subtly flavored nuggets are a delight to the palate!

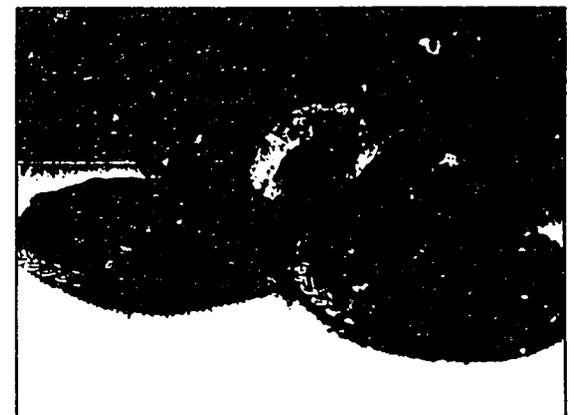
#1215 12/8 oz. per case  
#2215 4/5 lb. per case



## PAPAYA & MANGO

Mmmm! We import our fruit juice-sweetened papaya and mango from the Pacific tropics.

**Papaya**  
#1120 60/2 oz. per case  
#2120 4/5 lb. per case  
**Mango**  
#1118 60/2 oz. per case  
#2118 4/5 lb. per case



10/17



# Plump Profits With Timber Crest Farms Dried Tomatoes

TIMBER CREST FARMS DRIED TOMATOES ARE...

**PROFITABLE:** Popular dried tomatoes add menu excitement and flavor that patrons are willing to pay more for!

**VERSATILE:** Capitalize on today's diverse menu trends—dried tomatoes add sweet flavor, chewy texture, and color to ethnic dishes, home-style soups, finger foods, appetizers, salads and entrées.

**CONVENIENT:** Available in three convenient forms—dried tomato halves, marinated dried tomatoes and dried tomato bits—Timber Crest Farms dried tomatoes have a multitude of menu applications.

**INTENSELY FLAVORED:** It takes 17 pounds of fresh tomatoes to make 1 pound of dried tomatoes. No wonder restaurant patrons love their intensely sweet tomato flavor and chewy, satisfying texture!

**LOWER PRICED:** Buy American! Timber Crest Farms dried tomatoes are priced much lower than their imported counterparts.

**AVAILABLE YEAR 'ROUND:** Count on dried tomatoes for year 'round fresh tomato flavor—especially during the winter months when the quality of fresh tomatoes is *less than ideal*.

**AN ALL-NATURAL PRODUCT:** Timber Crest Farms dried tomatoes are packed without preservatives, salt, sulfur or other chemicals, unlike some imported varieties which are salted to preserve against mold and insects.

**EASY TO ORDER:** Send your order and mailing address to *Timber Crest Farms, 4791 Dry Creek Road, Healdsburg, CA 95448* or call (707)433-8251. Direct from the farm to your kitchen, your dried tomato order will be shipped within 48 hours of receipt.

Timber Crest Farms, producer of California dried tomatoes, is owned and operated by the Waltenspiel family and currently leads the nation in dried tomato production.

# BITS

## DRIED TOMATO BITS

**Packaging** 5-pound bag  
**Product Code** 2218  
**Equivalents** 1 gallon, 7 cups (23 cups)

**Storage**  
 Shelf life: 1 year Seal in airtight container. Keep in cool, dry place.

**Usage Tips**  
 No presoaking necessary. Add to dishes like seasonings.

## PERFECT POLENTA

When making polenta, mix in a generous amount of tomato bits during the last 10 minutes of cooking. Mix in some grated Parmesan cheese and pour into a shallow pan; let set and cut into triangles. Grill until crusty for an unusual and popular side dish.

**STUFFED CHICKEN**  
 With food processor make a paste of tomato bits, a little chicken broth, some sliced garlic which has been sautéed in olive oil, fresh basil, salt and pepper. Spread a thin layer under skin of chicken breasts. Grill or bake until nicely browned and tender—a special chicken dish.

## SIGNATURE SALAD DRESSING

Mix tomato bits into red wine vinegar and set aside 15 minutes. Whisk in olive oil, chopped fresh herbs, minced garlic, freshly ground pepper and a little salt.

# HALVES

## DRIED TOMATO HALVES

**Packaging** 5-pound bag  
**Product Code** 2217  
**Equivalents** 2 1/2 gallons (40 cups)

**Storage**  
 Shelf life: 1 year Seal in airtight container. Keep in cool, dry place.

**Usage Tips**  
 To chop: Use kitchen shears.  
 To plump: Cover with boiling water for two minutes; drain.  
 To marinate: Plump, drain, pack in jar, cover with olive oil.

## RED SNAPPER VERA CRUZ

Yield: 24 Servings

INGREDIENTS	WEIGHTS	MEASURES	DIRECTIONS
Timber Crest Farms dried tomato halves	10 ozs.		1. Combine ingredients in bowl of food processor. Process until smooth; reserve.
Boiling water		1 qt	
Vegetable oil		1/2 cup	2. Heat oil in large braising pan over medium heat. Add remaining ingredients. Cook and stir 10 minutes.
Onions, chopped	2 lbs.		
Carrots, sliced 1/4 inch	12 ozs.		
Green bell peppers, seeded, sliced 1/4 inch	12 ozs.		
Celery, sliced 1/4 inch	8 ozs.		
Garlic, minced	1 1/2 ozs.		
Timber Crest Farms dried tomato halves	6 ozs.		3. Mix in ingredients and reserved tomato puree. Bring to boil, cover and simmer about 30 minutes until sauce is thickened and vegetables are tender. Keep warm.
Boiling water		1 1/2 qts.	
Lime juice		1 cup	
Cilantro, chopped		1/2 cup	
Dried oregano		2 tsps.	
Ground cumin		2 tsps.	
Salt		2 tsps.	
Pepper		2 tsps.	
Red pepper flakes		1 tsp.	
Red snapper fillets, about 6 ozs. each		24	4. For each serving: Portion 1/3 cup sauce into greased ovenproof gratin dish. Top with 1 fillet and additional 1/3 cup sauce. Bake in 400° oven until fish flakes.

## SIMPLY SALADS

Reconstituted, snipped tomato halves add pronounced good flavor to many salads. Try them as an essential ingredient in chicken, turkey, tuna, potato, pasta, rice and green salads.

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## MEDITERRANEAN TOMATO SPREAD

Yield: 2 1/2 cups

INGREDIENTS	WEIGHTS	MEASURES	DIRECTIONS
Timber Crest Farms dried tomato bits	6 1/2 ozs		1. Place ingredients in bowl of food processor, process 15 seconds
Olive oil		1/4 cup	
Boiling water		1/2 cup	
Canned pitted ripe olives, drained	3 ozs		2. Add ingredients, process about 30 seconds until smooth. Set aside 30 minutes before serving. To store, cover and refrigerate up to 2 weeks. Serve at room temperature in small crocks as a signature bread spread.
Capers, drained	1 1/2 ozs		
Garlic, sliced	1 oz		
Lemon juice		2 Tbsps	
Dried basil Pepper		1 Tbsp 1/4 tsp	

**SEASONING BLENDS**  
Keep a canister of your own custom mix of tomato bits, toasted sesame seeds, dried chives, cracked black pepper and a few red pepper flakes. Try other combinations of tomatoes and your choice of herbs and spices. This is an attractive topping and flavorful seasoning for vegetables and salads.

### FULL-FLAVORED SOUPS

Add value, color and delicious flavor to minestrone, Manhattan clam chowder, chicken and vegetable soups by stirring in some tomato bits during cooking.

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### CROWD-PLEASEING QUESADILLAS

For a surprisingly zesty quesadilla filling, toss reconstituted, snipped tomato halves with shredded sharp Cheddar cheese, diced mild chiles and some minced jalapeño peppers and cilantro. Sandwich between flour tortillas and brown on both sides until cheese is melted. Serve hot, cut into wedges.

### ROBUST CHILI

During the last 15 minutes of cooking, mix a generous amount of tomato halves into well-seasoned black bean chili. Serve with warm corn tortillas and top with a dollop of sour cream, shredded Asiago cheese and sliced green onions.

## PASTA SAUCE PIQUANT

Yield: 24 Servings

INGREDIENTS	WEIGHTS	MEASURES	DIRECTIONS
Timber Crest Farms dried tomato halves	1 lb		1. Combine ingredients in bowl of food processor. Process until smooth. Reserve.
Boiling water		1 1/2 qts	
Olive oil		1/4 cup	2. Heat oil in large braising pan over medium heat. Add mushrooms, onions and garlic. Cook and stir 10 minutes.
Mushrooms, quartered	4 lbs.		
Onions, chopped	2 lbs		
Garlic, minced	2 ozs.		3. Stir in remaining ingredients and reserved tomato puree. Bring to boil. Cover and simmer, stirring occasionally, until thickened, about 30 minutes. Keep warm.
Timber Crest Farms dried tomato halves	3 ozs.		
Boiling water		2 1/2 qts	4. For each serving: Ladle 1/4 cup sauce over 6 ozs pasta. Accompany with grated Parmesan cheese.
Basil, chopped or dried basil		1/2 cup 2 1/2 Tbsps	
Sage, chopped or dried sage		1/2 cup 2 1/2 Tbsps	
Lemon juice		1/4 cup	
Salt		1 Tbsp	
Pepper		2 tsps	
Red pepper flakes		1 tsp	
Cooked pasta, drained, hot	9 lbs.		

### TOMATO RISOTTO

Add pleasing texture and intense flavor to hot creamy risotto. With kitchen shears, snip tomato halves into strips. Mix into risotto during the last 15 minutes of cooking—an appealing variation on a favorite.

# MARINATED

## MARINATED DRIED TOMATOES

**Packaging** 1/2 gallon (62 ozs.) jar  
**Product Code** 2520  
**Equivalents** 2 quarts (8 cups);  
 (2 1/2 cups oil)

### Storage

Store unopened up to one year in a cool, dry place. Once opened, cover and refrigerate.

### Usage Tips

No plumping necessary.  
 Marinating oil can be used in dishes for extra flavor

### SALSA ON THE SIDE

An intriguing fresh salsa with a Caribbean beat combines diced fresh papaya and mango, marinated tomatoes cut into strips, sliced green onions and a dash of red pepper flakes—toss with lime juice and just enough salt to balance the flavors. Serve with grilled beef, chicken or fish.

### POTATOES PROVENCE

Split and fluff baked potatoes and top with a delicious mixture inspired by the flavors of Provence—sliced marinated tomatoes, pitted Niçoise olives, chopped garlic and sliced onions sautéed in olive oil, and a sprinkling of chopped fresh oregano—a satisfying main dish.

### HEARTY SANDWICHES

A satisfying sandwich combines thick slices of grilled crusty country bread brushed with garlic-scented olive oil, slices of tender grilled eggplant and marinated tomatoes. Sandwich with a few shavings of good Parmesan cheese and leaves of fresh greens. Serve hot.

### OMELET ALL WAYS

Marinated tomatoes are a basic ingredient for savory omelet fillings. Create interesting combinations with a selection of other ingredients—grilled onions, pitted olives, capers, anchovies, roasted bell peppers, diced avocado, shredded cheese, steamed spinach or chard, sautéed mushrooms and a variety of chopped fresh herbs.

## BRUSCHETTA BITES

Yield: 24 Servings

INGREDIENTS	WEIGHTS	MEASURES	DIRECTIONS
Oil from Timber Crest Farms marinated dried tomatoes		1 1/2 cups*	1. Combine ingredients, reserve
Garlic, minced	1 oz.		
French bread slices, 1/2 inch thick, 4 inches in diameter		48	2. For each serving: Brush one side of each of 2 bread slices with oil mixture. Grill until lightly browned and well toasted, turning once. With oiled sides up, cover each with arugula. Then on each toast slice arrange 1 oz. cheese and 1/4 oz. tomatoes.
Arugula or spinach leaves		As needed	
Fresh mozzarella cheese, drained, sliced 1/4 inch thick	3 lbs.		
Drained Timber Crest Farms marinated dried tomatoes	2 lbs., 4 ozs.		3. Tuck 1 or 2 basil leaves between cheese and tomatoes on each toast slice, sprinkle lightly with pepper and halve diagonally. Plate and serve immediately
Fresh basil leaves		As needed	
Coarsely ground black pepper		As needed	

\*Add olive oil, if needed, to make 1 1/2 cups.

### VEGETABLE SEASONING

Fresh steamed vegetable side dishes are extraordinary when tossed with marinated tomatoes and a little of their oil. Season broccoli or green beans with lemon zest and cracked pepper. Season carrot or zucchini with a dash of red wine vinegar and hot pepper sauce.

*Timber Crest Farms*

4791 Dry Creek Road  
 Healdsburg, CA 95448  
 (707) 433-8251  
 FAX (707) 433-8255

## APPENDIX A

### USAID AGROINDUSTRIAL EXPORT DEVELOPMENT STUDY

#### INTERNATIONAL MARKET STUDIES

##### TERMS OR REFERENCE: JAPAN.

Deloitte & Touche has been contracted by the United States Agency for International Development to undertake a study of the requirements for developing new agroindustrial exports from Bolivia to markets in North America, Europe, Asia and neighbouring Latin American countries. As part of this study, D&T require the services of an experienced consultant to prepare a brief report on **The Market for Selected Bolivian Agroindustrial Products in Japan.**

The product categories selected for Japan are listed below. In each case, the consultants should focus upon those commodities of most importance for the U.S.A. Where little data is available, or the commodity is largely unknown to trader/brokers etc. note this fact. Where a commodity not mentioned below is found to be of importance, please note this also and provide details.

##### 1. **Processed Tropical Fruits**

This category will comprise primarily juices and pulps for incorporation into drinks, ice-creams, yogurts and other manufactured foodstuffs, but may also include crystallized or candied fruit and other preparations and preserved forms. The study should include, but not necessarily be limited to, the following fruits:

**Soursop** (*Annona muricata*) - Dark green fruits with soft spines, 15-25cm in length, often kidney shaped. White, juicy and slightly acid fruit with large black seeds scattered throughout. Delicious flavour. Used extensively for milkshakes and ice-creams. Normally sold as pulp not juice.

**Cherimoya** (*Annona cherimolia*) - Said to be the most delicious of the *Annona* family. Roundish heart-shaped green fruits, 8-15cm in diameter, covered with fingerprint sized dimples or depressions. About 18% sugars. Used in a wide variety of processed forms.

**Passion Fruit** (*Passiflora edulis* - subspecies *flavicarpa* or *edulis*) - Very well known fruit, now used extensively for adding 'tropical' flavour to juices, ice-creams, yogurts, milk-shakes etc. Fruit 7-8cm in diameter, green with yellow speckling.

**Carambola or Starfruit** (*Averrhoa carambola*) - Ovoid fruit, star-shaped in cross section, translucent yellow with crisp, juicy, aromatic flesh. Used in drinks, deserts and preserves.

**Tumbo or Taxo** (*Passiflora Mollissima*) - Higher altitude relative of the passion fruit. Fruit is yellow in colour, rather than green. Has a flavour that is slightly milder than passion fruit but quite distinctive from it. pH 3.8. Sold usually as juice, it is suitable for the same purposes as passion fruit.

**Papaya** (*Carica Papaya*) - Large greenish-yellow fruit with soft yellow-orange flesh. Extensively used for drinks, jam, ice-cream crystallized fruit and in syrup. Papain, an enzyme derived from papaya is used as a meat tenderizer and in the manufacture of cosmetics, chewing gum, degumming natural silk and in tanning.

**Naranjilla** (*Solanum quitoense*) - Small, round orange fruits, approx 5cm in diameter with fine hairs on the skin. Resemble a mandarin or tangerine but are members of the potato or aubergine family. Juice is yellow-green colour, acidic, and like passion fruit, requires sweetening before being consumed. Has very distinctive and delicious flavour and is excellent in ice creams, milkshakes, juices etc.

## 2. Flavourings and Colorants

This category will include a variety of natural extracts, including essential oils, used to provide colour or flavour to a wide variety of drinks and foodstuffs. The list includes, but is not limited to:

### ESSENTIAL OILS

Citronella	( <i>Cymbopogon winterania</i> <u>or</u> <i>nardus</i> )
Eucalyptus	( <i>Eucalyptus</i> spp.)
Hinojo	(Also known as fennel)
Kut-Kutu	( <i>Aloysia</i> spp.)
Lemongrass	( <i>Cymbopogon citratus</i> )
Manzanilla	( <i>Matricaria chamomilla</i> )
Menthol	( <i>Mentha arvensis</i> - also known as corn mint or japanese mint)
Muna	( <i>Hedeoma mandonia</i> )
Peppermint	( <i>Mentha piperita</i> )
Romerillo	( <i>Calceolaria</i> spp.)
Spearmint	( <i>Mentha spicata</i> <u>or</u> <i>cardiaca</i> )
Tola	( <i>Bacharis diacunculifolia</i> )
Vetiver	( <i>Veteveria zizanioides</i> )

### COLORANTS

Annatto	-	Yellow orange colorant, used extensively in colouring butter, cheese, chocolate and other foodstuffs
Cochineal	-	A deep red colorant (cochineal colour) extracted from beetles. Used in a variety of cosmetic and food applications
Marigold	-	Yellow colorant, extracted from the flowers, widely used in the poultry feed industry and in other foodstuffs.

### 3. Herbs and Spices

This category will include dried, cleaned and bulk packaged spices and herbs intended for inclusion in other processed foods (sauces, complete dinners etc.), for further processing into oleo-resins or for repackaging for retail sale. Identified spices and herbs include:

Allspice	Garlic
Anise	Ginger
Capsicum spp. (chilis, paprika etc.)	Oregano
Cardamom	Pepper (black, white, other)
Coriander (Culantro)	Turmeric
Cumin	

Required tasks for this assignment are as follows:

#### 1. Statistical Data Collection

The consultant will collect import data for the above commodity groups, detailing volumes, countries of origin, and value (where available), over the previous decade - if available. In any case, sufficient data should be collected to enable trends to be established. Where possible, an attempt should be made to obtain data relating to specific products within each category.

#### 2. Identification of Importers, Brokers and Direct Purchasers

The consultant will identify as many companies in each product category as possible, focusing upon those that obtain their supplies directly from international sources (i.e. excluding those which buy only from wholesalers etc.) Where feasible, the list should be divided according to type of buyer including:

- Importers
- Brokers
- Processors (utilise in other products)
- Packagers (buy in bulk for repackaging for retail sale)
- Hotel, Restaurant, Institutional (purchase in bulk for use in these areas)

A list should be prepared of the companies identified in each product category, detailing their names, addresses and telephone numbers. Where it is possible to state the specific products within each category purchased, this information should also be provided.

#### 3. Assessment of Buyer Perceptions and Attitudes

Drawing from the listing prepared in (2) above, the consultant will undertake interviews with selected companies to identify their current practices, perceptions and attitudes with regard to the relevant product category. Interviews should be conducted with a minimum of 3-4 companies in each product group - more where possible. Where feasible an attempt should be made to cover more than one type of buyer in each product category (see buyer type list above)

Interviews with these sample buyers will cover at least the following topics:-

- General description of the firm: interviewed including size, activities and market segment served (see introduction above)
- Current usage of specific products within each category, including volume purchased, origin, and use of the product, as well as price range paid currently (if willing to provide it). Where possible, please identify any other products not listed above (but in the same general categories) that are used/purchased by the company.
- Interest in identifying new sources of the identified products
- Where interest exists;
  - Specific product sought
  - Quality and related specifications, if known (i.e. type of packaging, concentration, etc.)
  - Potential volumes involved
  - CIF price range of interest
- Perceptions of future demand for products in the category under discussion (and the category in general)
- General attitude and perceptions, if any, of the firm to goods of Bolivian origin

A matrix should be prepared to accompany the descriptive text. The matrix will list all firms interviewed, including the company name address and contact number, as well as the name and title of the employee interviewed. This data would be presented against the replies to the key topic areas listed above.

#### 4. Legal Import Restrictions

The consultant should identify (either from government or from existing buyers) any legal restrictions that may apply to the import of these product categories, including licensing, quotas, tariffs, phyto-sanitary requirements etc. This task is expected to require approximately 1 day.

#### 5. Summary & Conclusions

A brief summary will be prepared, drawing from the data collected in Tasks 1-4 and including the matrix and other tables as necessary. The summary will present the opinion of the consultant on the potentials for processed Bolivian agricultural products in regional markets and will identify particular opportunities and/or constraints that should be addressed if attempting to undertake such a market entry. Specific purchase opportunities derived from interviewed firms should also be highlighted.

## APPENDIX B

### ARGENTINE MARKET: FIRMS INTERVIEWED AND USEFUL SOURCES

1. COMPANIES TRADING TROPICAL FRUITS
  1. Cibert Importadora S.A.  
Bouchard 644, 7th Floor  
Federal Capital, Buenos Aires 1106  
Tel: 311-0369/312-6903/312-9352  
Contact: Sr. Emilio Cibert/Sr. Rolando Cibert (Owners)  
Activity: Importer/ Distributor  
Interest: Canned Pineapple, Hearts of Palm, Cocoa (also see spices below)
  2. Dicotat S.A.  
Sarmiento 731, 10th Floor  
Federal Capital, Buenos Aires 1041  
Tel: 325-9517/325-8721/322-1306/322-5010  
Contact: Sr. Enrique Gonzalez (Vice-President)  
Activity: Importer/Distributor  
Interest: Canned Pineapple, Cocoa
  3. Productal S.A.  
Calle 70, # 3370  
San Martin  
Solari 681 Ciudadela  
Tel: 753-2882/657-4201  
Contact: Sr. Cecotti (Owner)  
Activity: Importer/Processor (Ice cream, candies etc.)  
Interest: Canned Pineapple
  4. Fruticor Corrientes S.A.  
Ave. Pueyrredon 860  
Federal Capital, Buenos Aires  
Tel: 55-9106/51-8799/962-8272/962-8352  
Contact: Sra. Ana Maria Fernandez (Owner)  
Activity: Importer/Processor (Yoghurts, Drinks)  
Interest; Canned Pineapple
  5. Ghelco S.A.  
Ave. Vieytes 1743  
Barracas, Buenos Aires  
Tel: 21-3313/21-1751/21-1589/21-7647/21-9579  
Contact: Sr. Horacio Bonfigli Jr. (Owner)  
Activity: Processor  
Interest: Canned Pineapple

Other fruit companies contacted but not interviewed:

Nestle S.A. de Productos Alimenticios  
C. Pellegrini 887, Federal Capital  
Tel: 393-7305/322-7375/322-7445  
Activity: Processor

Pindapoy  
Lavalle 3161, Federal Capital  
Tel: 87-6601/87-6605/87-6607/87-6609  
Activity: Processor

Loven S.A.  
Darmineto 731, 1st Floor, Federal Capital  
Tel: 322-5010/322-1306  
Activity: Processor

Sidera Americana S.A.  
E. Comesana 4141, Federal Capital  
Tel: 657-7530/657-7533/653-1424/653-7099  
Activity: Processor

Mastellone Hnos. S.A.  
Balcarce 969, Gral. Rodriguez 1748  
Tel: 629-0021/629-1171/629-1175  
Activity: Processor

Sidra La Victoria S.A.  
Castro Barros 969, Federal Capital  
Tel: 97-3437/97-7929/97-3903  
Activity: Processor

Frutas Cristino  
Del Valle Iberlucea 941, Federal Capital  
Tel: 21-0530/28-3856  
Activity: Importer, Broker

Dos Santos Pereira y Cia. S.A.  
Campana 2439/41  
Federal Capital, Buenos Aires 1106  
Tel: 567-2192/567-7717/567-9091  
Activity: Importer, Broker

Supermercado Disco S.A.  
Ave. Las Heras 3923, Federal Capital  
Tel: 805-3138/805-3140/805-3141  
Activity: Importer, Broker

2. COMPANIES TRADING SPICES AND HERBS

1. Especias Layco S.A.  
Marmol 1350  
Federal Capital, Buenos Aires  
Tel: 922-1038  
Contact: Sr. Horacio Maguire  
Activity: Packer  
Interest: Pepper, Cumin, Cloves, Nutmeg
2. Antonio Flores S.A.  
Uspallata 627, Buenos Aires  
Tel: 23-0954/26-3691  
Contact: Sr. Alberto Boglioli (Import Manager)  
Activity: Importer/Processor  
Interest: None
3. Platario S.A.  
Ave. de Mayo 560  
Federal Capital, Buenos Aires  
Tel: 311-7439/311-6352/311-8900  
Contact: Sr. Mauricio Ferres (Director)  
Activity: Importer  
Interest: None
4. Cibert Importadora S.A.  
Bouchard 644, 7th Floor  
Federal Capital, Buenos Aires 1106  
Tel: 311-0369/312-6903/312-9352  
Contact: Sr. Emilio Cibert/Sr. Rolando Cibert (Owners)  
Activity: Importer/ Distributor  
Interest: Black Pepper, Cumin (also see fruits above)
5. Alvarez Hnos. S.A.  
Luzuriaga 235, Buenos Aires  
Tel: 23-0261/23-9297/23-5690  
Contact: Sr. Antonio Alvarez (Director)  
Activity: Importer  
Interest: Pepper
6. E.H. Engelman S.A.  
L. de la Torre 3663  
Buenos Aires 1439  
Tel: 601-3669/602-8232  
Contact: Sr. Edgardo Engelman (Presidente)  
Activity: Importer  
Interest: Pepper, Cumin

Other spice companies contacted but not interviewed:

Cafe la Virginia S.A.  
Velez Sarsfield 1163  
Rosario, Santa Fe 2000  
Tel: (041) 38-0191/38-0192/38-0195  
Activity: Importer

Bedial S.A.  
Ramon Freire 305, Buenos Aires  
Tel: 551-1338/551-1538  
Activity: Importer

Capizzano S.A.  
Lavalle 913, Buenos Aires  
Tel: 322-7936/322-1269  
Activity: Importer

Ko-Ki-To S.A.  
Treinta y Tres 1840, Buenos Aires  
Tel: 92-6051/92-1038  
Activity: Packer

3. COMPANIES TRADING OLIVES AND OLIVE OIL

1. Avena Atilio Y Hijos S.A.  
San Gines 135  
Federal Capital, Buenos Aires  
Tel: 744-3234/745-1964  
Interest: None
2. Agro-Aceitunera S.A.  
Ave. Rivadavia 20962  
Castelar  
Tel: 661-4254/661-4255/624-4598  
Interest: None
3. Capizzano S.A.  
Lavalle 913  
Federal Capital, Buenos Aires  
Tel: 322-7936/322-1269  
Interest: None
4. Olivimar S.A.  
Pieres 1470  
Federal Capital, Buenos Aires  
Tel: 687-0627  
Interest: None

4. USEFUL CONTACTS

Argentine-Bolivia Chamber of Commerce

Argentine Olive Processors Federation

Federation of Argentine Exporters and Importers

Federation of Food Industries

Argentine Spice, Pepper and Related Products Federation

Federation of Argentinian Fruit Importers

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## APPENDIX C

### CHILEAN MARKET: FIRMS INTERVIEWED AND USEFUL SOURCES

#### 1. COMPANIES TRADING TROPICAL FRUITS

1. Sociedad Productora de Leche S.A. SOPROLE  
Diagonal Santa Helena 2605  
Santiago  
Tel: 555-8570/551-9732  
Contact: Alejandro Perez R. (General Manager)  
Fransisco Gana E. (Marketing Manager)  
Javier Lorca (Product Manager)  
Activity: Importer/Processor  
Interest: Pineapple chunks and concentrate, Passion Fruit concentrate,  
perhaps other exotic juices
2. Sociedad Agricola y Lechera LONCOLECHE  
Santa Lucia 212, 2nd Floor  
Santiago  
Tel: 39-4842  
Contact: Cristian Gubler (General Manager)  
Roberto Mathews (Marketing Manager)  
Activity: Importer/Processor  
Interest: Pineapple chunks and concentrate, passion fruit and other  
concentrates
3. Watts Alimentos S.A. C.I.  
Avda. Pdte. J.J. Prieto 10501  
Santiago  
Tel: 558-3625/558-0421  
Contact: Luis Araya M. (General Manager)  
Sergio Spulveda (Marketing Manager)  
Activity: Importer/Distributor  
Interest: Juice concentrates
4. Importadora Cafe do Brasil  
Wenceslao Sanchez 660  
Santiago  
Tel: 76-2235/76-2611  
Contact: Victor Signorio (General Manager)  
Camilo Signorio (Marketing Manager)  
Activity: Importer/Broker  
Interest: None

5. Velarde Hermanos  
San Martin 50  
Valparaiso  
Tel: 25-0223 (Valparaiso)  
Contact: Gonzalo Velarde (Marketing Manager)  
Activity: Importer/Broker  
Interest: Strong interest in Canned Pineapple and Pineapple Juice, and other  
Juice concentrates, including Passion Fruit (see also Spices below)

Other fruit companies contacted but not interviewed:

Commercial Chacao S.A.  
Santa Rosa 5630, Santiago  
Tel: 525-1123/525-2343  
Contact: Moises Rosenthal (General Manager)  
Activity: Importer/Distributor (Canned pineapple)

Industrial Sud Andina S.A.  
Alcalde Carlos Valdovino 560, Santiago  
Tel: 551-3038/551-4444  
Activity: Importer (Juice concentrates)

Conservera Pentzke S.A.  
San Antonio 220, Office 308, Santiago  
Tel: 33-2966/33-3544  
Contact: Alberto Pentzke (General Manager), Ricardo Trehwela (Marketing  
Manager)  
Activity: Importer/Distributor (canned pineapple)

Walter Silberstein Y Cia. Ltda.  
Patria Vieja 0186, Office 'A', Santiago  
Tel: 77-5047  
Contact: Rene Silberstein (General Manager), Juan Pablo Gatica (Marketing  
Manager)  
Activity: Importer/Broker (canned fruit)

Demaria Hnos. y Cia. Ltda.  
Avda. Brasil 2406, Valparaiso  
Tel: 21-7983 (Valparaiso)  
Contact: Osvaldo Demaria L. (General Manager), Jorge Olivari O. (Marketing  
Manager)  
Activity: Importer/Distributor (processed fruits)

2. COMPANIES TRADING SPICES AND HERBS

1. Importadora Cafe do Brasil  
Wenceslao Sanchez 060  
Santiago  
Tel: 76-2235/76-2611  
Contact: Victor Signorio (General Manager)  
Camilo Signorio (Marketing Manager)  
Activity: Importer/Broker  
Interest: Pepper, cumin (see fruit above)
  
2. Velarde Hermanos  
San Martin 50  
Valparaiso  
Tel: 25-0223 (Valparaiso)  
Contact: Gonzalo Velarde (Marketing Manager)  
Activity: Importer/Broker  
Interest: Black and white pepper, cumin, turmeric (see also fruit above)
  
3. Roncatti Y Cia. Ltda.  
Aguirre 1183, Santiago  
Tel: 73-7999  
Contact: Gustavo Roncatti (Marketing Manager)  
Activity: Importer/Packer  
Interest: Black pepper, cumin
  
4. Pesquera San Jose de Coquimbo  
Av. Americo Vespucio Sur 80, Santiago  
Tel: 228-1262  
Contact: Miguel del Rio J. (General Manager)  
Domingo Cruzat A. (Sales Manager)  
Activity: Processor  
Interest: None

Other spice companies contacted but not interviewed:

Nestle Chile S.A.  
Roger de Flor 2800, Santiago  
Tel: 231-3030  
Contact: Roland Meyes (General Manager), Jose Guridi A. (Marketing Manager)  
Activities: Processor (turmeric)

Demaria Hnos. y Cia. Ltda.  
Avda. Brasil 2406, Valparaiso  
Tel: 21-7983 (Valparaiso)  
Contact: Osvaldo Demaria L. (General Manager), Jorge Olivari O. (Marketing Manager)  
Activity: Importer/Distributor (cumin)

Cozzi y Bianchini Ltda.  
Antonia Lopez de Bello 822, Santiago  
Tel: 37-2787/37-3435  
Contact: Aldo Cozzi (Owner)  
Activity: Importer/Distributor (cumin)

Cia. Industrial S.A.  
Vicuña Mackenna 3600, Santiago  
Tel: 555-8526/239-0226  
Contact: Carlos Fell (General Manager)  
Activity: Importer/Processor (oregano)

Mercado Mayorista P y P Ltda.  
Avda. Santa Rosa 3570, Santiago  
Tel: 551-1063  
Contact: Oscar Andwandter (General Manager)  
Activity: Importer/Broker (cardamom, anise)

## APPENDIX D

### UNITED STATES MARKET

#### FIRMS INTERVIEWED AND USEFUL SOURCES - PROCESSED TROPICAL FRUITS

##### 1. TROPICAL FRUIT TRADING COMPANIES INTERVIEWED

###### 1. Orval Kent

East Rutherford, New Jersey, 07073

Tel: (201) 779-2090

Contact: Steve Loehndorf (Vice President, Technical Services - 708-459-9000)

Activity: Importer/Processor (Processed tropical and citrus fruits)

Interest:

###### 2. PPI Del Monte, Tropical Fruit Division

Tel:

Contact: Julio Pinto (Director of Technical Services)

Activity: Importer/Processor (tropical fruit)

Interest:

###### 3. SPID Canada Ltd.

Tel: (514) 466-3219

Contact: Serge Boiseau (Broker 514-466-1652)

Activity: North American Agent for French Importer/Processor

Interest: Limited interest, as they package in Guadeloupe for North American market.

###### 4. R. W. Knudsen & Sons Inc.

Chicago, California

Tel: (916) 891-1517

Contact: Pete Samuels (Marketing Director)

Activity: Processing/Importing/Distribution (wide range of fruits)

Interest:

###### 5. Frieda's Finest Produce

P.O. Box 58488

Los Angeles, California, 90058

Tel: (213) 627-2981

Contact: Karen Kaplan (President)

Activity: Importer/Distributor Tropical Exotics

Interest: Interested in a wide variety of exotic tropical fruits, primarily fresh but also extended life (e.g. Modified Atmosphere Packaging)

6. George Bradford Company

Tel: (213) 378-9992

Contact: Bob Larsen (General Manager)

Activity: Fruit flavours and concentrates

Interest: Any new potentials for fruit based compounds for flavouring. Specifically seeking new sources of soursoop for compounding. Working with Universal Flavours in developing new fruit flavour extracts.

7. Kraft General Foods

Tel: (914) 592-1166

Contact: Nripen Barua (Technical Director - Aseptics)

Activity: Processor

Interest: Fruits for combination in aseptic 'snak-paks' for retail sale under Kraft and retailer names. Also fruit for R&D work in processing technologies.

The potential list for companies handling imported fruits in the United States is enormous. To provide useful information to potential exporters to the North American market, therefore, the following lists are attached:

- List of exotic fruit importers into the U.S.A.
- List of further sources of information
- List of top U.S. supermarket chains
- List of the 18 most innovative dairy producers in the U.S.A.
- List of the top 14 hotel chains in the U.S. and Canada

## APPENDIX E

### UNITED STATES MARKET FIRMS INTERVIEWED AND USEFUL SOURCES -

#### HERBS AND SPICES

Discussions were held with several firms active in the spice sector, either as brokers or as traders and packagers. These firms are listed below, together with any comments made as to specific product interest. In addition, a complete listing is provided of membership of the American Spice Traders' Association (ASTA). ASTA is the key forum for those active in spice and herb trading, and will include in its membership all professional traders, brokers and associated firms.

#### 1. FIRMS INTERVIEWED

1. McCormick & Company Ltd.  
11350 McCormick Rd.  
Hunt Valley, Maryland 21031  
Tel: (301) 771-7301  
Contact: Susan Abbott (Sales Manager)  
Activities: Importer/Processor/Packager  
Interest: McCormick's is interested in a variety of different spices of good quality but coriander and lemongrass were specifically mentioned as particular areas of interest.
2. Quest International Ingredients  
1090 Pratt Boulevard  
Elk Grove Village, Illinois, 60007  
Tel: (312) 593-8484  
Contact: Bodo Schmidt (Marketing Manager, Canada)  
Activities: Importer/Processor  
Interest: Vanilla, capsicums
3. American Spice Traders' Association  
580 Sylvan Avenue  
P.O. Box 1267, Englewood Cliffs, NJ 07632  
Tel: (201) 568-2163  
Contact: Thomas Burns  
Activities: Represent commercial interests in spice and herb trade
4. A.A. Sayia & Company Inc.  
One Newmarket Street  
Hoboken, N.J. 07030  
Tel: (201) 659-4504  
Contact: Peter Sayia (President)  
Activities: Broker/Agent  
Interest: Range of herbs and spices. Willing to consider all that are of sufficient quality and competitive price.

## APPENDIX F

### UNITED STATES MARKET FIRMS INTERVIEWED AND USEFUL SOURCES -

#### ESSENTIAL OILS AND COLORANTS

##### 1. ESSENTIAL OIL AND COLORANT TRADING FIRMS INTERVIEWED

1. Warner-Jenkinson  
2526 Baldwin Street  
P.O.Box 14538, St.Louis, MO 63178  
Tel: (314) 658-7469  
Contact: Jerome Kinnison  
Activities: Importer/Processer  
Interest: General
  
2. Quest International Ingredients  
1090 Pratt Boulevard  
Elk Grove Village, Illinois, 60007  
Tel: (312) 593-8484  
Contact: Bodo Schmidt (Marketing Manager)  
Activities: Importer/Processer  
Interest: Interested in a wide range of oils and colorants, none specifically listed.
  
3. International Flavours and Fragrances  
600 Highway 36  
Hazlet, N.J. 07730  
Tel: (201) 264-4500  
Contact: Peter Gesell (Director of Purchasing)  
Activities: Importer/Processer  
Interests: Eucalyptus, lemongrass, menthol, possibly others.

## APPENDIX G

### UNITED STATES MARKET FIRMS INTERVIEWED AND USEFUL SOURCES -

#### DRIED TOMATOES

##### 1. DRIED TOMATO FIRMS INTERVIEWED

1. Timber Crest Farms  
4791 Dry Creek Road  
Healdsburg, California, 95448  
Tel: (707) 433-8251  
Contact: Ruth Waltenspiel (Sales Manager)  
Activities: Import/Production/Processing  
Interest: Possible interest in other dried exotics to support/expand their range
2. L'Esprit de Campagne  
P.O. Box 3130  
Winchester, Virginia, 22601  
Tel: (703) 722-4224  
Contact: Joy Lokey (Sales Manager)  
Activities: Producer/Processor  
Interest: No interest in imports as grow their own product.

##### 2. OTHER FIRMS TRADING DRIED TOMATOES

For information on other potential importers and users of dried tomatoes, refer to the list of dried fruit traders provided in Appendix D.

## APPENDIX H

### GERMAN MARKET: FIRMS INTERVIEWED AND USEFUL SOURCES

#### 1. PROCESSED TROPICAL FRUIT PRODUCTS

Klaus Bocker Gmbh  
2150 Buxtehude  
BahnhofStr.5  
Tel: 0461-4012  
Contact: Mr. M. Fischer; Mr. K. Bocker, General Manager  
Activity: Importers/Agents  
Interest: Establishing processing operation in Bolivia for mango, papaya, guava and other fruits

Pittrex Handelsgesellschaft mbH  
Wandsbecker Zollstr. 15-17  
200 Hamburg 70  
Tel: (040) 682 90 91  
Contact: Mr. C. Rabbow Jnr., Geschäftsfuher, Mr. H. Koring  
Activity: European Agents for large Argentinean exporter and general importers  
Interest: Potential seen for establishing export operation from Bolivia for a range of tropical fruits

Gustav Wulff (Import-Export) Gmbh  
Ballindamm 26  
D 2000 Hamburg 1  
Postfach 10 66 03  
Tel: (040) 3281 92-0  
Contact: Mr. D. Wulff  
Activity: Importers/Processors  
Interest: Latin American suppliers of fruit in general, both for their own operations and for clients

Hakoha (Hanseatische Kozenrat Handelsgesellschaft (Mbh)  
Sperberhorst 11  
2000 Hamburg 61  
Tel: (040) 5 55 45 51  
Contact: Gerhard S. Lengwenat  
Activity: Importers  
Interest: Cherimoya, papaya, passionfruit, mango

Hans Bleckwedel Gmbh  
Glockengiesserwal 13  
Darbovenhaus  
Hamburg 1  
Tel: 32 12 51  
Contact: Mr. M. Schmidt  
Activity: Importer/Distributor  
Interest: Interested in a wide variety of tropical & temperate fruits if price & quality is good

Hans Hartge Gmbh & Co. Kg  
Georgplatz 6  
2000 Hamburg 1  
Tel: (040) 33 30 59 31  
Contact: Mr. D. Beck  
Activity: European agent for one of the largest Brazilian suppliers of orange juice. Also handle exotics  
Interest: Would like to see samples of Bolivian products

Hartwick & Kaden  
Neuer Wall 75  
2000 Hamburg 36  
Tel: (040) 36 30 61  
Contact: Mr. P. Kaden  
Activity: Import Agents  
Interest: Depending upon price, volume & quality

Rickersten Import Gmbh & Co. Kg  
Sachsenstrasse 8  
D-200 Hamburg 1  
California House  
Tel: (404) 237 17241  
Contact: Klaus Bandelow  
Activity: Bottler and trader  
Interest: Mango, passionfruit, papaya, guava

Sievers & Ravenborg  
Rothenbaumchausse 3  
Hamburg 2000 - 13  
Tel: (040) 44 10 41  
Contact: Mr. H. Jurgen - Statmer, Managing Partner  
Activity: Importer/Distributor  
Interest: Strong interest in Bolivian supplies of mango, papaya, passionfruit & guava. Includes interest in establishing trading operations

## 2. ESSENTIAL OILS AND COLORANTS

Cornells & Bosse Gmbh  
Kaiser - Wilhelm - Str. 115  
P.O. box 301028

D 2000 Hamburg 36

Tel: (040) 351345

Contact: Mr. H. Schultz

Activity: Import Agency

Interest: Primarily interested in eucalyptus oil which they currently import from China and Portugal.

Dullberg Konzentra

Obenhauptstrasse 3

D 2000 Hamburg 63

Tel: (040) 507114 43

Contact: Mr. H. Dietrich Hoppe

Activity: Perfume Compounders/Importers

Interest: Interested in products available from Bolivia, i.e. peppermint oil, eucalyptus, lemon grass, manzanilla and anise. Lesser interest was shown in fennel, ginger oil and garlic

G. Melchers & Co. Production Gmbh

Flughafendamm 9

D 2800 Bremen 1

Tel: (421) 59 03 142

Contact: Mr. W. Klein, Assistant Sales Manager

Activity: Multinational Importer and Distributor

Interest: Limited

Otto Aldag Gmbh & Co.

Curslacke Neuer Diech 66

Postfach 80 01 20

D 2050 Hamburg 80

Tel: (040) 725 67-0

Contact: Mr. B. Rosenstein

Activity: Importers/Exporters and Distributors

Interest: Requested samples be sent as soon as possible

Paul Kaders Gmbh

Zippelhaus 5

D 2000 Hamburg

Tel: (040) 33 97 13 32

Contact: Mr. P. Protzen; Mr. C. Gerdey

Activity: Importer/Trader

Interest: Slight

3. MATRIX OF TRADE INTERVIEW RESPONSES

Company Name	MANCO	GUAVA	PASSIONFRUIT	PAPAYA	OTHERS	LEMON GRASS	EUCALYPTUS	MINI OILS	CARLIC OIL	GINGER OIL	FENNEL	ANISE	MANZANILLA	CITRONELA	WETIVER	OTHERS	FOOD COLORANTS
Klaus Bocker	X	X	X	X	X												
Pittrex	X	X	X	0	0												
Gustav Wulff	X	X	X	0	0												
Hakoha	X	X	X	X	X												
Hans Bleckwedel	X	X	X	0	0												
Hans Hartge	X	X	X	0	0												
Hartwick & Kaden	X	X	X	X	0												
Rickersten	X	X	0	X	0												
Sievers & Ravenborg	X	X	X	0	0												
Cornells & Bosse							X										
Dullberg Konzentra						X	X	X	0	0	X	X	X	X	0	0	
G. Melchers & Co.						X	X	X	0	0	0	X	0	X	0	0	
Otto Aldag							X	X									X
Paul Kaders						X	X	X	0	0	0	0	X	X	X	X	X

KEY

X = Strong interest

0 = Little interest

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## APPENDIX I

### JAPANESE MARKET - FIRMS INTERVIEWED AND USEFUL SOURCES

#### 1. PROCESSED TROPICAL FRUIT TRADERS INTERVIEWED

Global Foods  
Takagi Bldg. 2F  
3-9-8 Hachobori, Chuo-ku  
Tokyo 104, Japan  
Tel: 03-551-1877  
Contact: Juyoh Yokogami  
Activity:  
Interest:

Tokyo Maruichi Shoji Co. Ltd.  
2-16-9 Uchikanda, Chiyoda-ku  
Tokyo, Japan  
Tel: 03-256-1141  
Contact: Taisuke Kimura, Director 4th Business Department  
Activity:  
Interest:

T. Hasegawa Co. Ltd.  
4-4-14 Honcho Nihonbashi, Chuo-ku  
Tokyo, Japan  
Tel: 03 241-1151  
Contact: Yoshimasa Ono, Manager, Materials Supply Division; Merchandise Department  
Activity:  
Interest:

Ogawa & Co.  
4-1-11 Nihonbashi Honcho, Chuo-ku  
Tokyo 103  
Tel: 03-270-1541  
Contact: Mr. Yoshiyuki Itoh, Director, Purchasing Division  
Activity:  
Interest:

#### 2. HERB AND SPICE TRADERS INTERVIEWED

Asaoka Spice Co. Ltd.  
2-13-16 HigashiSakashita, Itabashi-ku  
Tokyo 174, Japan  
Tel: 03-969-5106  
Contact: Yoshio Fukuda, Executive Managing Director  
Activity:

Interest:

Yasuma Co. Ltd.  
5-23-2 Nishgotanda  
Shinagawa Tokyo 141, Japan  
Tel: (03)490-8731  
Contact: Mr. Yoshinobu Kawato, Director  
Activity:  
Interest

K. Kobayashi & Co. Ltd.  
Boeki Building Kobe  
P.O. Box 318  
Kobe Port  
651-01  
Tel: (078) 321-8431  
Contact: Hiroshi K. Kobayashi, President  
Activity:  
Interest:

Ogawa & Co.  
4-1-11 Nihonbashi Honcho, Chuo-ku  
Tokyo 103  
Tel: 03-270-1541  
Contact: Mr. Yoshiyuki Itoh, Director, Purchasing Division  
Activity:  
Interest:

3. ESSENTIAL OIL AND COLORANT TRADERS INTERVIEWED

Aoba Trading Co. Ltd.  
1-11-1 Hatchibori  
Chuo-ku Tokyo 104, Japan  
Tel: (03)555-1068  
Contact: Mr. Kin'io Hibayashi  
Activity:  
Interest:

Tanemura & Co. Ltd.  
Toranomom Jitsugyo Kaikan  
1-1-20 Toranomom, Minat-ku  
Tokyo 105, Japan  
Tel: 03-503-3911  
Contact: Michihiro Ohura, Director (International Department)  
Activity:  
Interest:

San-ei Chemical Industries  
Sanwa-cho 1-1-11  
Toyonaka, Osaka, 561  
Japan  
Tel: (06)333-0525  
Contact: Kanji Ono, Manager, Purchasing Department  
Activity:  
Interest:

Ogawa & Co.  
4-1-11 Nihonbashi Honcho, Chuo-ku  
Tokyo 103  
Tel: 03-270-1541  
Contact: Mr. Yoshiyuki Itoh, Director, Purchasing Division  
Activity:  
Interest:

4. MATRIX OF INTERVIEWEE RESPONSES

FRUITS	Current Use	Interest In new Sources	Future Demands	Attitude toward Bolivia
<p>Global Foods                      (Toyoumaria's introduction Unable to find any 3rd party information on the fruit wholesaling company.                      Juyoh Yokogami                      Director                      Teikof Bldg, 2F                      3-9-9 Hachobori, Chuo-ku                      Tokyo 104                      Tel: 03-551-1877</p>	none	little	new products	geographically difficult
<p>Tokyo Maruchi Shoji                      A trading company dealing in marine products (35%), livestock (17%), agricultural products (24%), food products (7%), and exports (16%). 1989 annual sales totalled over ¥60 billion.                      Takashi Kimura                      Director                      4th Business Department                      Tokyo Maruchi Shoji Co. Ltd.                      2-16-9 Uchikanda, Chiyoda-ku                      Tokyo                      Tel: 03-256-1141</p>	none	little	new products	geographically difficult
<p>T. Hasegawa Co.                      The second largest aromatics manufacturer in Japan deals in natural and synthetic aromatics for perfumes, food products, and industrial uses. It also deals in food additives. 1989 annual sales totalled over ¥25 billion.                      Yoshimasa Ono                      Manager/sterile Supply Div, Merch. Dep                      4-4-14 Hondoh Nishinbashi, Chuo-ku                      Tokyo Tel: 03-241-1151</p>	papaya concentrate	little	little demand	little awareness
<p>Ogawa &amp; Co.                      An aromatics manufacturer with its market divided equally between cosmetics aromatics and food product additives, recorded annual sales of over ¥15 billion in 1989.                      Mr. Yoshiyuki Itoh; Director                      Purchasing Division                      4-1-11 Nishinbashi Hondoh, Chuo-ku                      Tokyo 103 Tel: 03-270-1641</p>	Passion fruit concentrate	Interested in passion fruit	stable demand	not interested in government operations

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**Spices**

**Asaka Spice**

A spice manufacturer and importer dealing in a wide variety of seasonings and spices. Annual sales for 1988 were ¥630 million.

Yoshio Fukuda

Executive Managing Director.

2-13-16 Higashi-Saiyohita, Itabashi-ku

Tokyo 174

Tel: 03-689-5108

Current Use

all

Interest in new Sources

little

Future Demands

new products

Attitude toward Bolivia

geographically  
difficult

politically unstable

**Yasuma Co. Ltd.**

A spice manufacturer with 1988 sales over ¥4.8 billion. This company is also the office of the All Nippon Spice Association. Its sales are broken down to 80% spices, 10% dried vegetables, and 5% aromatics and other products.

Mr. Yoshitoku Kawato

Director

5-23-2 Nishigotanda

Shinjuku Tokyo 141

Tel: 03-460-8731

all

some interest

stable demand

geographically  
difficult

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**K. Kobayashi & Co. Ltd.**

Originally a peppermint manufacturer, this company imports and distributes spices, pharmaceuticals, and furs. Recently, the fur market has been rather poor and 1988 sales shrank to ¥8 billion from a 1987 ¥9.5 billion.

Mr. Kawato of Yasuma Co. Ltd./All Nippon Spice Association commented that it was a leading broker in the industry.

Hiroshi K. Kobayashi

President

Boat Building Kobe

P.O. Box 8318

Kobe Port

651-01

Tel: 078321-8431

all

Interested

stable demand

some experience  
geographically difficult

1989

Current Use

Interest in new Sources

Future Demands

Attitude toward Bolivia

Essential oils and colorants  
Aoba Trading Co., Ltd.

An import/export company of pharmaceutical raw materials, food additives, and colorants, the company had 1989 sales of ¥600 million.

Mr. Kimio Hibayashi  
1-1-1 Hatchibori  
Chuo-ku Tokyo 104  
(03)655-1088

none

some

new products

little awareness

Tanemura & Co. Ltd.

An importer and exporter of aroma materials, spice oleoresin, food additives, aroma chemicals, and agricultural products, the company recorded 1988 sales of over ¥2 billion.

Mitsuhito Ohura  
Director (International Department)  
Toranomon Jijugyo Kaikan  
1-1-20 Toranomon, Minat-ku  
Tokyo 105  
Tel: 03-603-3911

all oils

little

stable demand

geographically difficult

Sen-el Chemical Industries Ltd.

Manufacturer of natural and synthetic food colorants, additives, and essential oils, in 1989 the company recorded sales of ¥17.9 billion.

Kenji Ono, Manager purchasing department  
Hiromi Nakamura, Manager purchasing dep.  
Sarwa-cho 3-1-11  
Toyonaka, Osaka 561  
Tel: (06)333-0525

30 tons of cochinal; Peru  
marigold; Peru  
annatto dyes; Kenya Peru

some

unforecastable

some experience

K. Kobayashi & Co. Ltd.

Originally a peppermint manufacturer, this company imports and distributes spices, pharmaceuticals, and fur. Recently, the fur market has been rather poor and 1989 sales shrank to ¥8 billion from a 1987 ¥9.5 billion.

Mr. Kazuo of Yasuma Co. Ltd./Nippon Spice Association commented that it was a leading broker in the industry.  
Hirochi K. Kobayashi  
President  
Boast Building Kobe  
P.O. Box #318  
Kobe Port  
651-01  
Tel: (078)321-8431

peppermint oil

very interested

stable demand

some experience  
geographically difficult