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An Integrated Assessment of the Dry Bean Subsector in
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AN INTEGRATED ASSESSMENT OF THE DRY BEAN SUBSECTOR IN CENTRAL AMERICA

by

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ABSTRACT

AN INTEGRATED ASSESSMENT OF THE DRY BEAN SUBSECTOR IN CENTRAL AMERICA

By

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Beans are strategically important to assure food security in Central America. However, Central American countries face several challenges that must be addressed in order to promote a sustainable growth of the bean subsector, such as (i) relatively low-yields of bean production, (ii) growing necessity to import beans to meet consumers demand, (iii) high transaction costs and information asymmetry that limit the access of producers to urban markets, and (v) the growing consolidation of urban food retailers that is changing the way bean are bought and sold .

To address these challenges, interviews with key informants were conducted in Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua and secondary data were collected to document the situation in the region, and assess options for increasing the competitiveness of the subsector in the future.

Research programs in Central America need to pay special attention to improving bean yields in the region. Improving yield will also increase their competitiveness and reduce their dependence on bean imports from outside the region. Also, more research is needed to find ways of distributing improve seed varieties to small farmers, as well as information that will reduce farmer's transaction cost. Finally, researchers need to address the growing consolidation of the food retail sector and its effect on bean markets.

DEDICATION

To

my sister Carmen

Thanks for being my strength.

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CHAPTER ONE

INTRODUCTION

1.1 Background

During the early-1990s, Central American countries began to implement policy changes designated to promote social development and economic growth. Nevertheless, social and economic disparities continue to exist. Widespread poverty and inequality in income distribution remain unsolved problems, especially in the rural areas where agriculture is the major economic activity (USAID, 2002).

Since the late-1990s, the performance of the regions' agricultural sector has not been encouraging. Central America has been hit by a dramatic decline in the price of their major export commodity prices (*e.g.,* coffee, bananas, palm oil, and citrus), which has reduced the rate of economic growth in Honduras, Nicaragua, Guatemala --countries that still depend largely on the agricultural sector as a source of revenues --and to a lesser extend in Costa Rica and El Salvador (USAID, 2002).

A major factor that influences the poor performance of agriculture is the region's vulnerability to natural disasters. Adversities such as Hurricane Mitch in 1998 and the earthquakes in El Salvador in 2001 had terrible consequences that are still observable. This situation has increased food insecurity among rural poor in the region. According to the United State Agency for International Development (USAID) over 52 percent of the Central American inhabitants (approximately 14 million people) are poor and chronically food insecure.

Beans are strategically important to assure food security in the region. They are a basic component in the diet of the people of Central America, and are also the main source of vegetable protein for a large share of the population--especially the poor. Moreover, beans are an important source of income for many small farmers. Thus, it is necessary to give special attention to assessing the economic possibilities for this crop.

The bean subsector has been the target of reforms in Central America, including the gradual elimination of marketing parastatals, diminishing government support to agricultural research and extension, and progressive movement towards an integrated Central American free trade zone. (Martel *et al.*, 2000). Nevertheless, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua are still unable to compete in the international bean market due to low productivity.

In addition, there is growing concern that global integration will lead to increased availability of lower price and better quality beans in the region and that growing imports will soon replace local production, leading to the further impoverishment of rural areas. Central American countries have retained tariff protection for staple crops, including beans. However, this has not stopped the flood of bean imports into these markets. Furthermore, it remains questionable whether or not tariff protection is a good strategy to increase the competitiveness of local bean production.

1.2 Problem Statement

Central American countries face several constraints that must be relaxed in order to expand bean production. In these countries, the cost of producing beans is very high, compared to the US, Canada and Argentina, where big and efficiently-equipped farms

achieve economy of scale and thereby deliver their product to regional markets at a price that is lower than the price of domestically grown beans (CORECA, 1999b). Furthermore, in recent years relatively low-yields and frequent natural disasters (*i.e.*, hurricanes, floods, drought) have made it impossible for these countries to satisfy their local demand, which has required them to import beans to meet consumers demand.

In addition to the availability of new technology to overcome production constraints, the flow information between producers, marketers, extension workers, and researchers regarding consumers demand for specific quality characteristics plays an important role in assuring the success of bean-improvement programs. Given the characteristic of bean trade (*i.e.*, many actors are involved before the commodity reaches the final consumer), high transaction costs and information asymmetry increase the price that consumers pay and decrease small farmers' share of the price differential. (Minten *et al.*, 2000). Hence, there is a need to improve the flow of information among stakeholders in the bean subsector.

Despite a rapid expansion in the bean processing industry, producers in these countries may not be benefiting from this growth. A study carried out in Guatemala found that domestic bean canners utilize very little locally-grown beans in their value-added products, due to the high cost of locally-produced beans, compared to the low cost of importing and processing broken beans from the U.S.(Estrada-Valle, 2001).

Finally, the rise of the retail system (*e.g.*, supermarket chains) in Central America is changing the way that agricultural commodities are bought and sold. Thus, due to the consolidation and concentration of the retail system, small farmers may be increasingly unable to compete in the market in the future (Alvarado *et al.*, 2002).

1.3 Justification for Studying the Dry Bean Subsector in Central America

To date, few studies have documented the characteristics of the bean subsector in Central America. In 1999 the Inter-American Institute for Cooperation in Agriculture (IICA) and the Regional Council for Agricultural Cooperation (CORECA) prepared the document "Global Markets of Bean and its Links to the Central American Markets" (CORECA, 1999b). This study presented recent country-level information about the world bean markets and its influence on Central American markets. According to this paper, because of production problems, countries like Guatemala and Costa Rica have had to buy beans from third markets in order to supply their domestic requirements. These countries source the major portion of their bean imports from Argentina, the U.S, and Canada. The study suggested that an important factor that explains the preference for bean from outside the region is that in Central America the prices of domestically-produced small red and black bean are generally higher than the world market price. One factor that explains this situation is that production has not increased as rapidly as demand in the region. Furthermore, the study reported that in Central America, beans are almost exclusively produced by small farmers, who have limited access to production credit and extension services, apply limited amounts of cash inputs (*e.g.*, fertilizer, insecticide), and consequently achieve relatively low yields. For most producers, their major objective is to assure their household consumption requirements, and if they have a surplus, they sell it in the market. Thus, increasing productivity is essential to reduce production costs and retail prices (CORECA, 1999b).

Furthermore, Martel, Bernsten and, Weber reported that market links (*i.e.*, many farmers preferred to grow traditional varieties because they commanded a premium price

in the market) were an important constraint to the adoption of new varieties in Honduras (Martel *et al.*, 2000; Martel *et al.*, 1994). Thus, the competitiveness of the bean subsector is also highly dependent on plant breeders' ability to adjust to new demands (*e.g.*, develop varieties that meet consumer preferences).

While the CORECA study focused on the general situation of imports and exports, it lacked detailed information about regional bean markets and did not assess opportunities for Central American producers to export. Additionally, the subsector studies by Martel *et al.*, and Estrada-Valle only focused on Honduras and Guatemala respectively, rather than on Central American as an integrated region.

Given the lack of systematized, accurate, and integrated information about the bean subsector in the region (including trading opportunities in the region and the region's potential for exporting to foreign markets), there is a need to analyze constraints and opportunities for increasing the supply of and demand for beans in Central American, and strategies that can help to increase the region's level of competitiveness.

1.4 Objectives of the Study

The general objective of this study is to document the status of the bean subsector in Central America, including constraint to and opportunities for increasing its competitiveness. The basic question facing these countries is whether or not they will be able to compete in local and international bean market to deliver beans at internationally competitive prices and of the quality and market classes that are demanded by processors and consumers.

1.4.1 Specific Objectives

The specific objective of this study are:

a) To provide an overview of the structure of bean production, marketing and processing in Central America

b) To identify constraints facing bean farmers, traders, and processors, and

c) To identify policies that are needed to relax these constraints, in order to strengthen the competitiveness of the region's bean subsector, and thereby reduce rural poverty

Unless ways can be found to increase the competitiveness of regional bean subsector, countries in Central America will experience significant negative social and economic impacts, especially since these countries are facing the challenge of adjusting to new open markets (*e.g.*, Central American Free Trade Agreement; CAFTA).

1.5 Methodology

1.5.1 Central American Bean Subsector overview.

This thesis utilizes a rapid appraisal methodology to document the current status of the dry bean subsector in Central America, including the structure of the subsector, key constraints that must be relaxed to improve its performance, and policy changes needed to overcome these constraints.

The subsector approach was used because it frames "the search for opportunities to improve the performance of the system, as well as to take advantage of unexploited

and under exploited opportunities to tap new markets, generate significantly higher levels of output, and improve food system efficiency" (Holtzman, 1986).

In each of the selected countries (Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) (Figure 1.1 and 1.2), basic subsector information and data were collected from key informants in order to document supply and demand side (*i.e.*, status, trends and causes).

In order to understand the supply side, data were collected on historical annual and seasonal bean prices; area planted, yields, and production; availability of modern technologies (*e.g.* seed of improved varieties, inputs); imports and exports (*e.g.*, market classes, volumes, prices, origins, destinations, and traders' sources of market information); government policy that have had an impact on production (*e.g.*, extension, subsidized credit, input subsidies, seed production/distribution) and trade (*e.g.*, output subsidies, taxes); and other economic variables that affect local producer's competitiveness. The supply analysis documents the interrelated elements required to understand current production levels and their variability over time. For example, the level of supply during different periods affects seasonal variation in prices, and also the availability of dry bean in the region. Variation in bean stocks over the years may indicate producers reactions to government policies, technological change, prevailing institutional environment, and alternative institutional arrangements (Holtzman, 1986).

Figure 1.1 Geographical Location of Central America, The Americas, 2002.

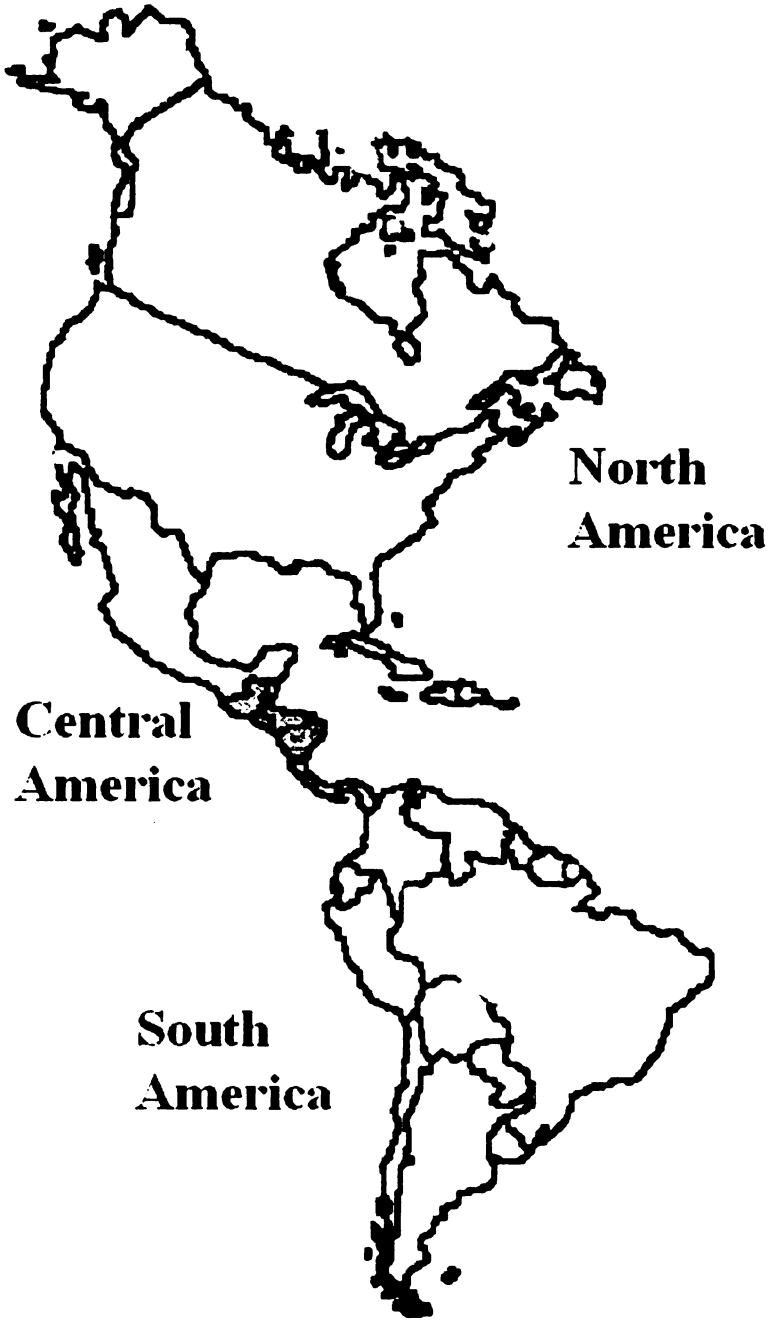


Figure 1.2 Field Research Countries, Central America, July 2002.

In order to understand the demand side, data were collected on consumers' bean preferences (*e.g.,* market classes and other quality attributes), trends in per capita consumption of beans and value-added bean products, bean sales by location (*e.g.*, open market, bagged in supermarket), and the current demand by supermarket chains (*e.g.,* types and volume of bean and bean-based value-added products sold, market classes, source of stocks) which are increasingly becoming important buyers of dry beans and value-added bean products.

The goal of this rapid appraisal was to use secondary data and information collected from key informants to describe the structure of the Central American dry bean

The goal of this rapid appraisal was to use secondary data and information collected from key informants to describe the structure of the Central American dry bean subsector, identify constraints to increasing its competitiveness, and ultimately to identify critical points of intervention to alleviate these constraints.

1.5.2 Data Collection Strategy

As a first step, bean experts in each country were interviewed in order to explain the objectives of the study and to ask for their assistance in identifying key informants. Subsequently, appointments were made with key informants from governmental agencies and private firms.

The geographic area for the rapid appraisals included five Central American countries. Central American capital cities were selected (Figure 1.2), since most of the bean production is marketed in these cities, and this is where the main government offices and processors, supermarkets, importers and exporters are located.

The key informants were selected from among members of the following six groups: 1) wholesalers in city capitals (*e.g.*, importers, exporters, retailers), 2) packaging firms, 3) processing firms, 4) supermarket managers, 5) government officials, and 6) bean scientists.

1.5.3 Research instruments

The study was implemented by interviewing key participants in the bean subsector, especially individuals involved in marketing. Five interview guides were designed prior to initiating the field work. In addition to the interview guide, firm

managers were asked to provide statistical data about their operations and government officials were asked to share statistical information collected by their agencies.

The set of research instruments included interview guides for wholesalers and retailers, importers and/or exporters, bean packers, bean processors, supermarket managers, government officials, and bean breeders and scientists.

A total of 57 interviews were conducted in Central America. Table 1.1 presents the summary of interviews by country. The personal interviews with key informants were conducted during July 2002. The interview process took one week in each country, and started in Costa Rica, followed by Nicaragua, El Salvador, Guatemala and Honduras.

Table 1.1 Summary of Key Informant Interviews, Central America, 2002

Interview	*Costa Rica*	*El Salvador*	*Guatemala*	*Honduras*	*Nicaragua*
Wholesalers, importers and/or exporters	2	3	1	2	1
Bean packers	5	2	1	4	1
Bean processors	2	2	2	1	0
Supermarket managers	2	2	2	1	1
Government officials	2	1	2	1	3
Bean breeders and researchers*	2	1	3	3	2
Total	15	11	11	12	8

*Including market researcher specialists.

1.6 Organization of the thesis

This thesis is organized into four chapters. Following the introduction, Chapter Two describes the Central American Context. Section one describes the demand characteristics, trends in per capita bean consumption, market class preferred in each country, and the importance of beans in the diet of Central American consumers. Section two presents each country's domestic supply characteristics, including major crops grown, preferred bean market classes, seasonality of bean production, and trends in area, production, and yields. Section three describes the institutions responsible for developing and releasing improved bean varieties (*e.g.*, research institutions and national research programs), multiplying and distributing improved varieties, providing extension support, and extending credit. Also, a brief description of the major international agricultural research groups currently working in Central America. Section four describes the value-added industries (*i.e.*, packaging and processing industry) in each country, including the number of bean packers and processors, and their product brands, bean supply source, contracting structure with supplier, and infrastructure utilized. Also, information describing the quality standards of the bean industry was obtained for each country. Section five presents an overview of the bean marketing channels in each country (*e.g.*, flow of beans from the farm gate to the market) and describes each stage in the marketing channel. Finally, section six describes recent trends in each country's bean exports and imports, including the volume and major source of bean imports and exports.

Chapter Three analyzes the competitiveness of the bean subsector in Central America. Section one presents a price analysis, including bean prices in each country, price seasonality, marketing margins between wholesale, central market price, and value-

added products. Section two assesses the competitiveness of Central American bean versus the main exporters to the region. Section three describes the barriers to trade in the region, including the structure of regulations in each country and the barriers to entry to the main markets. Finally, section four describes the export promotions and opportunities in each country.

Chapter Four presents the conclusion, including the summary of findings, policy implications, limitations to this research, and recommendations for future research.

CHAPTER TWO

BEANS IN CENTRAL AMERICAN CONTEXT

2.1 Demand Characteristics

2.1.1 Nutritional Value of Beans

Beans are an important source of protein and iron, as well as a good source of dietary fiber and complex carbohydrates. Thus, beans make an important contribution to human nutrition, especially for poor consumers. A single serving (1 cup=172 grams) of beans provides at least one-half the USDA-recommended daily allowance of folic acid (B vitamin, especially important for pregnant women), 25-30 percent of the daily recommended iron levels, 25 percent of the daily requirements of magnesium and copper, 15 percent of potassium and zinc, and 8.86 percent of protein (USDA, 2003).

2.1.2 Per Capita Bean Consumption

During the period 1990-1992 to 1999-2001, per capita bean consumption increased in Costa Rica, El Salvador and Nicaragua, decreasing in Guatemala and Honduras (Figure 2.1). In the 1990s and beginning of 2000s, per capita consumption in Nicaragua grew (especially since 1997) at an annual change of 7.2%, with a total change of 74.6%, representing the biggest increase in the region. Similarly, Costa Rica (0.4%) and El Salvador (2.4%) grew slightly their annual per capita consumption. In contrast, Guatemala and Honduras decreased their annual bean consumption by -6.2% and -2.8% respectively. By the beginning of the 2000s, per capita annual bean consumption was highest in Nicaragua (24.7 Kg), followed by El Salvador (13.48 Kg), Costa Rica (11.28 Kg), Honduras (9.81 Kg) and Guatemala (7.19 Kg) (Table 2.1).

Table 2.1 Trends in Per Capita Bean Consumption, Central America 1990-2001

Country	*Per capita Consumption* [a]		*Change*	
	1990-1992[b]	*1999-2001*[c]	*Annual*	*Total*
Costa Rica	10.97	11.28	0.4%	2.8%
El Salvador	11.13	13.48	2.4%	21.1%
Guatemala	12.03	7.19	-6.2%	-40.3%
Honduras	12.37	9.81	-2.8%	-20.6%
Nicaragua [b]	14.17	24.73	7.2%	74.6%
Central America	**12.10**	**14.29**	**2.1%**	**18.1%**

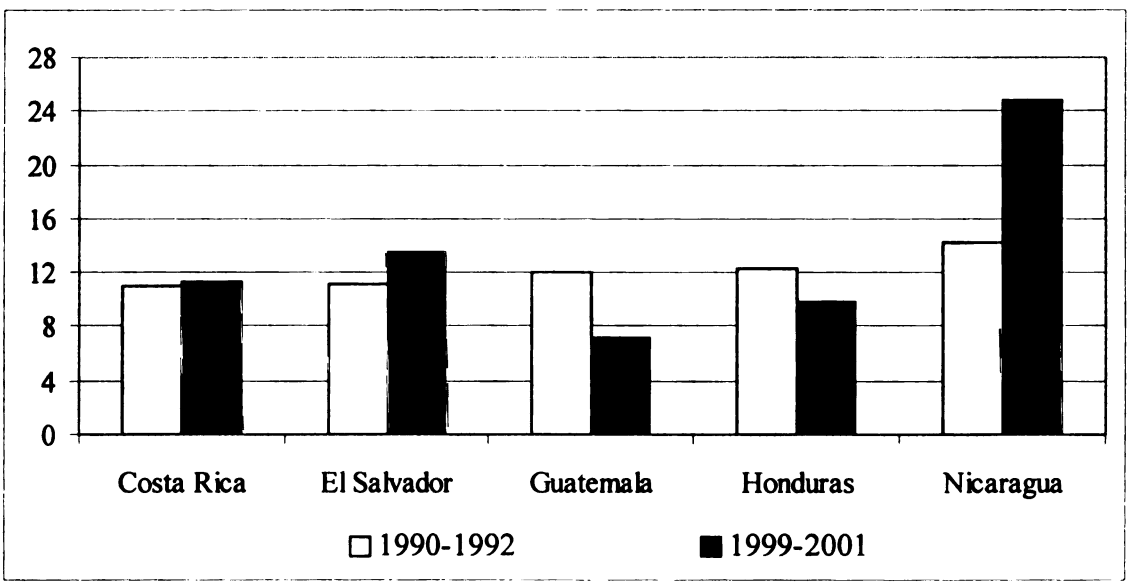
[a] Kilograms per person per year, three-year-average.

Source:

[b] Based on data obtained from (ECLAC, 2001)

[a] Based on data from and the U.S Census Bureau, International Program Center (Bureau, 2003)

Figure 2.1 Per Capita Bean Consumption, Central America 1990-1992 to 1999-2001



Source: Based on Table 2.1

2.1.3 Consumer's Preferences

Central American consumers are concerned about quality characteristics, such as freshness, cooking time (ready-to-use), nutritional characteristics, appearance of grain (*e.g.*, shiny, homogenous in size), and specific color characteristics (*e.g.*, light red). Currently throughout the region, packed beans are sold cleaned, graded, and the company guarantees freshness of the product.

The freshness of bean is associated it with beans cooking time. In Costa Rica, the minimum acceptable cooking time (specified in legal standards) is 90 minutes, when boiling beans in a normal saucepan (*i.e.*, not a pressure cooker). In other countries cooking time is not an obligatory grade standard for beans. However, according to key informants, it is increasingly recognized as an important quality factor, especially by the value-added industry.

Appearance characteristics (*e.g.*, small red, light red) are more important in countries where people eat red beans (*e.g.*, El Salvador, Honduras and Nicaragua). However, in Costa Rica, the brightness of the grain is important not only for physical appearance, but also because it is associated with shorter cooking time. According to Dr. Jim Kelly, this characteristic is believed to reduce the cooking time of beans[1] (Kelly, 2003).

Despite high and medium level income consumers willingness to pay a premium for these quality characteristics, low-income consumers give high priority to price when making their buying decisions. While Central American supermarkets sell a variety of processed bean products, in different product presentations and preparations, the price

[1] Personal communication with Dr. Kelly, Michigan State University, 2003.

differential is still a major factor that limits the consumption of these products among Central Americans.

2.1.4 Beans in the Diets of Central American Consumers

Beans are highly attached to dietary habits of both rural and urban populations in Central America. Beans are consumed cooked whole or mashed and also fried, after first making a paste to which oil is added (*i.e.*, refried beans). Color and preparations preferences differ along Central American countries (Table 2.2 and 2.3).

Major preparations vary from country-to-country. In Costa Rica, the most popular bean dish is called "*Gallo Pinto*", a combination of whole black beans and rice. Bean soup, made with black beans, some vegetables, and eggs is also consumed. In El Salvador, people consume rice and red beans, which when "wedded" together is referred to as "*casamiento*" (marriage). In addition they eat refried beans at breakfast and lunch time. In Guatemala, while consumers mainly eat refried bean, a mixed salad with black beans is also very accepted. In Honduras, the main bean preparation is whole beans. However, when beans are left over after the first day, people eat them as refried beans. Finally, in Nicaragua rice and beans mixed together is the main daily dish, which is similar to "*gallo pinto*" in Costa Rica, but made with red beans.

Table 2.2 Primary Consumer's Bean Preference, Central America

Country	*Varietal Characteristics*		
	Market Class	***Color Variation***	***Size***
Costa Rica	Black (Red [1])	Does not matter	Small, homogeneous
El Salvador	Red	Light red	Small
Guatemala	Black	Does not matter	Does not matter
Honduras	Red (Black [2])	Light red in most areas [3].	Small in certain areas. Medium size is acceptable
Nicaragua	Red	Light red	Small-medium size

[1] Preferred by Costa Rican neighboring Nicaragua, and by Nicaraguans living in urban areas.
[2] Preferred by consumers neighboring Guatemala.
[3] Dark red beans are acceptable, but are price discounted by about 10%. However, according to key informants in Nicaragua this margin can reach 40% during harvest season.
Source: Based on information provided by key informants during the field work, 2002.

2.1.5 Consumer Preference for Bean Brands and Processed Products

During the field research, data collected from major supermarket chains in Central America's capital cities indicated the they sold 67 different brands of value-added products (*i.e.*, bagged[2] and processed beans) (Appendix A). Throughout the region, numerous brands were sold in plastic bags (*i.e.*, dry beans), cans, and a flexible pack[3] presentation. In each country, the number of different brands of beans in plastic bags

[2] Beans packed in plastic bags are considered to be value-added products because they have been cleaned and graded for size and color uniformity.
[3] Flexible pack refers to a retort packaging or retort pouch packaging, a process in which the product is pasteurized at high temperatures within the package. This packaging is best described as a flexible can, and the product inside has the texture of canned food . The only flexible pack found was the brand "Naturas", an Uniliver product. According to the manager of this company, Unilever markets its brand throughout Central America.
Farm, D. R. F. 2003, Description of Packaging Terms, Available: [http://www.ducktrap.com/news_ssfaq.html] (August 29th).

ranged from 6-15, while the number of canned presentations ranged from 4-12. (Table 2.3).

Table 2.3 Number of Different Bean Brands Sold in Major Supermarket Chains, Central America, July, 2002 [a]

Country	*Plastic Bags*	*Cans*	*Flexible Pack*
Costa Rica	15	12	0[b]
El Salvador	6	8	1
Guatemala	6	7	0[b]
Honduras	9	4	0[b]
Nicaragua	8	11	0[b]

[a] This list represents products bought at major supermarkets chains during the research. However, it is not an exhaustive list of products sold in these countries.
[b] Not collected during the field work.
Source: Based on data collected during the field work, 2002.

Cooking beans takes a lot of time, which is substantially reduced by using processed products. The most common value-added preparations in the region are refried beans and whole beans with other ingredients (*e.g.*, vegetables, pork, sausage) (Table 2.4). These products are accepted because of the convenience that they provide (*i.e.*, women in urban areas have less time for cooking), as well as their flavor and nutritional quality.

However, according to supermarket managers, valued-added products such as canned beans or flexible packs do not represent an important percentage of sales. This observation is confirmed by a study carried out by the University of Costa Rica, which found that Costa Rican consumers mainly purchase canned beans as a snack food, for parties, or outdoor activities (Rodriguez Castillo, 2002). Based on supermarket manager's opinions, and informal interviews this is similar in other countries in the region.

Table 2.4 Number of Bean Products Sold in Major Supermarkets by Type of Preparation, Central America, July, 2002 [a]

Product Preparation	*Country*					*Total*
	Costa Rica	*El Salvador*	*Guatemala*	*Honduras*	*Nicaragua*	
Canned whole bean (with soup)	3	0	2	1	2	8
Canned whole bean plus other ingredients (*e.g.*, pork, sausage)	2	4	2	2	5	15
Canned Refried beans	10	8	4	1	4	27
Dehydrated	0	1	0	0	0	1
Flexible Pack	0	1	0	1	0	2
Total	***15***	***14***	***8***	***5***	***11***	***53***

[a] This list includes same brand with different products preparations.
Source: Based on data collected during the fieldwork, 2002.

It is likely that the demand for canned and flexi-pack products is limited by their relatively high cost. Compared to beans in a plastic bag, the price of canned beans had price average of US$ 2.49 per kg compared to US$1.25 per kg for bagged beans. Bagged beans price ranged from US$ 0.75 per kg to US$ 3.88 per kg, whereas canned beans ranged from US$ 0.46 per kg to US$ 6.48 per kg (Table 2.5)[4].

[4] The price range include different types of preparations (*e.g.*, beans with pork, refried beans). Hence, the big range of prices.

Table 2.5 Canned and Bagged Beans Price Range, Central America, July 2002 [a].

Canned Beans					
Country	***N*** [b]	***Mean***	***Minimum***	***Maximum***	***Std. Deviation***
Costa Rica	15	2.50	1.75	4.30	0.58
El Salvador	12	2.66	0.46	6.48	1.74
Guatemala	8	2.26	1.59	3.32	0.70
Honduras	4	2.44	0.53	5.43	2.10
Total	**39**	**2.49**	**0.46**	**6.48**	**1.21**
Bagged Beans					
Costa Rica	24	1.07	0.94	1.18	0.05
El Salvador	8	1.49	0.87	3.88	0.99
Guatemala	13	1.55	1.20	2.11	0.31
Honduras	9	1.39	0.80	2.37	0.42
Nicaragua	8	0.88	0.75	0.95	0.08
Total	**62**	**1.25**	**0.75**	**3.88**	**0.47**

[a] Price in US$/kg in July 2002.
[b] Table 2.5 presents the total number of canned and bagged beans bought, which include different sizes of products, brands and preparations. Table 2.4 presents different types of preparation, including flexible pack and dehydrated. Table 2.3 presents only the brands.
Source: Based on data collected during the field work, 2002.

2.2 Domestic Supply Characteristics

2.2.1 Dry Beans in Central America

The structure of basic grains (*i.e.*, corn, rice, and beans) production in Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua are very similar. In Central America, basic grains are primarily grown by small-scale farmers, who do not specialize and lack access to purchased inputs (*e.g.*, fertilizer, herbicide). Regionally, more than 50% of farms are smaller than 20 ha with more than 20% of farms being less than 5 ha (CIAT, 2001)

Among Central American countries the share of the area planted to basic grains varies greatly, ranging from 79% in Nicaragua, 56% in Honduras, 51% in Guatemala, 48% in El Salvador and 29% in Costa Rica (Table 2.6). However, adverse climatic

conditions in the region frequently affect the harvested area. In some years farmers loose their entire crop, which both leaves them without sufficient food to meet their family's basic needs and reduces their income.

Table 2.6 Average Total Crop, Basic Grains and Bean Area Planted, Central America, 1990-2000

Country	*Annual Crop Area* [a]	*Basic Grains* [b]		*Dry Bean*	
		Ha	*%*	*Ha*	*%*
Costa Rica	438.45	128.30	29.26	46.99	10.72
El Salvador	786.55	378.80	48.16	74.99	9.53
Guatemala	1,503.73	763.03	50.74	132.39	8.80
Honduras	945.82	527.93	55.82	91.61	9.69
Nicaragua	673.55	531.70	78.94	155.38	23.07
Total	**4,348.09**	**2,329.77**	**53.58**	**501.36**	**11.53**

[a] 1,000 ha
[b] The category 'basic grains' includes rice, corn and bean.
Source: Based on data obtained from Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002); Nicaragua: (BCN, 2003)

Throughout Central America, beans are the second most important "basic grain" for human consumption. Beans account for approximately 12% of Central America's total crop area. However, the bean area varies by country (ECLAC, 2001)-- ranging from approximately 23% of the basic grain area in Nicaragua, to 11% in Costa Rica, 10% in Honduras, and 9% in El Salvador and Guatemala (Table 2.6). Most farmers grow maize and beans to guarantee food security and these crops are also their main source of income.

As is the case for other basic grains, farmers in Central America plant dry bean primarily as a semi-subsistence crop. In general, hillside production accounts for around 80% of the area planted to beans, where farms are dispersed, often on land of limited fertility (CIAT, 2001).

2.2.2 Major Market Classes Grown

While black and small red beans are the dominant market classes grown in Central America, variations with respect to consumption pattern determine the market classes grown in each country. Nicaragua, Honduras, and El Salvador produce and consume mostly small red bean types, whereas Guatemala and Costa Rica mostly produce and consume black beans (Table 2.7). However, even in countries with a strong preferences for small red or black beans, other market classes are grown. For example, in some areas of Honduras and El Salvador close to the border with Guatemala, farmers prefer to grow black beans, and in some areas of Costa Rica farmers grow small red bean.

Table 2.7 Bean Production by Market Class, Central America, 2002

Country	***Black Beans***	***Red Beans***
Costa Rica	70%	30%
El Salvador	20%	80%
Guatemala	80%	20%
Honduras	20%	80%
Nicaragua	20%	80%

Source: www.northarvestbean.org and interviews with key informants, July, 2002.

Market class preferences serve to make some countries vulnerable to imports from outside the region, while they constitute barrier in other countries. For example, due to the availability of inexpensive black beans from the U.S. and Argentina, which are good substitutes for local black beans, imports are replacing local production in Costa Rica and Guatemala. On the other hand, because consumers in El Salvador, Honduras and Nicaragua prefer small red beans and there exist no good substitutes from outside the

region, these countries only import beans when there is a shortage of small red throughout Central America (CORECA, 1999b).

2.2.3 Seasonality of Bean Production.

The harvest season depends on the climatologic characteristic of each country . In general there are two major harvest seasons. The first season (*primera*), begins in July/August and continues through September/October. The second harvest (*postrera*) which is the most important in terms of volume produced in most countries, begins in November and continues through January. With irrigation, a third crop (apante) of beans is harvest in Guatemala, Honduras, and Nicaragua (Figure 2.2).

Figure 2.2 Seasonality of Bean Production, by Month, Central America, 2002.

Country	Month											
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Costa Rica												
El Salvador												
Guatemala												
Honduras												
Nicaragua												

First harvest
Second harvest
Third harvest

Source: Based on data from (CORECA, 1999b)

The relative importance of each season varies by country. For example, in Costa Rica, El Salvador, and Honduras, the *postrera* accounts for 90%, 80%, and 55% of annual production respectively. In contrast, in Guatemala the *primera* is the main harvest season (50%). While in Nicaragua the *apante* is the most important season (45%), the

first (23%) and second (35%) seasons account for a large share of annual production (Table 2.8).

Table 2.8 Seasonal Production of Bean, Central America, 2002

Country	*Harvest season* [a]		
	First	*Second*	*Third*
Costa Rica	10	90	0
El Salvador	15	80	5
Guatemala	50	30	20
Honduras	35	55	10
Nicaragua	20	35	45

[a] Percentage of production by season

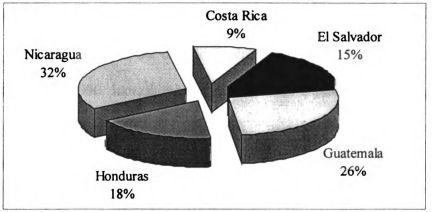
Source: Based on data from (CORECA, 1999b) and Ministry of Agriculture of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua

2.2.4 Trends in Planted Area, Yields, and Production

2.2.4.1 Trends in Bean Planted Area

During the period 1990-2001, an estimated 501,360 ha were planted to beans. Of this total, Nicaragua accounted for the largest share (32%), followed by Guatemala (26%), Honduras (18%), El Salvador (15%), and Costa Rica (9%) (Figure 2.3).

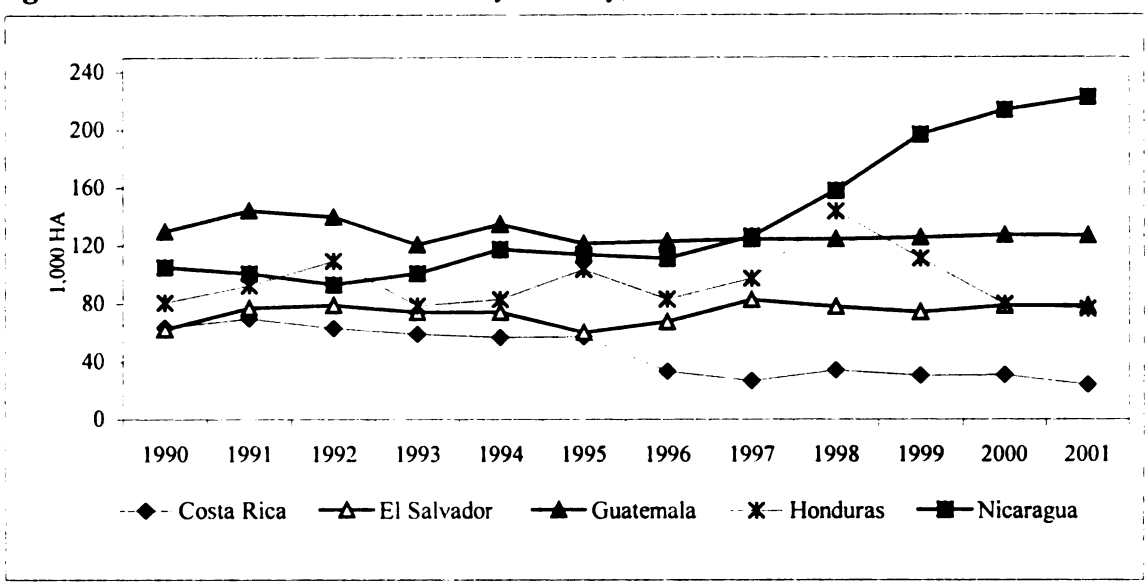
Figure 2.3 Average Share of Panted Area, Central America 1990-2001



Source: Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002) and (INE, 2002); Nicaragua: (BCN, 2003)

The trend in area planted (1990-1992 to 1999-2001) differed among these countries. While El Salvador and Guatemala showed a more constant trend in planted area, Honduras, Costa Rica and Nicaragua presented variable trends, especially after 1995 (Figure 2.4).

Figure 2.4 Trend in Planted Area by Country, Central America, 1990-2001



Source: Based on data obtained fromCosta Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002) and (INE, 2002); Nicaragua: (BCN, 2003)

In Costa Rica, the planted area has declined at a rate of -8.8% annually, which represents a -56% decline over the decade. In contrast, Nicaragua has greatly increased its planted area since 1990. Increasing at a rate of 8.7% annually, the total planted area increased by 111% over the decade (Table 2.9). Costa Rica and Nicaragua represent extreme situations in the region. First, Nicaragua is more suitable for bean production, has three harvest seasons, and also has lower labor costs. In contrast, Costa Rica mostly produces beans during one season (90% of domestic supply in the second season) and labor costs are higher than in other Central American countries.

In the case of Honduras, natural disasters--especially Hurricane Mitch in 1998 and severe drought seasons after that--were largely responsible for its decline in area planted, which averaged -2.3% annually and -19% over the decade. For El Salvador and Guatemala, trend in area planted was less dramatic. In El Salvador, area planted grew slightly, with an increase of 0.7% annually and a total change of 6%. In contrast, Guatemala experienced a negative rate of growth of -0.9% annually, for a total decline of -8% (Table 2.9).

Table 2.9 Trends in Area Planted, Central America, 1990-2001

Country	*Average* [a]		*Change* [b]	
	1990 -1992	*1999-2001*	*Annual*	*Total*
Costa Rica	65.47	28.51	-8.8%	-56%
El Salvador	72.79	77.19	0.7%	6%
Guatemala	138.03	126.76	-0.9%	-8%
Honduras	97.17	78.59	-2.3%	-19%
Nicaragua	99.83	210.93	8.7%	111%
Central America	**473.29**	**521.97**	**1.1%**	**10%**

[a] Area in 1000 HA

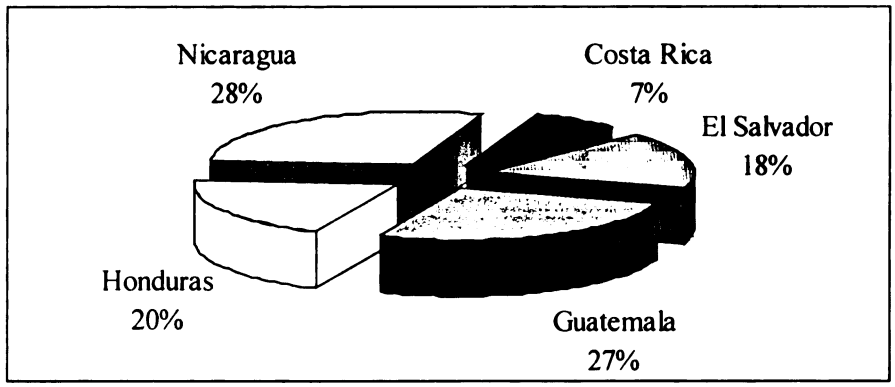
[b] To calculate annual change the 1990-92 average was considered the beginning period an the 1999-2000 average was considered the ending period. Thus, the annual rate of growth is estimated over a 9-year period.

Source: Based on data obtained from Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002) and (INE, 2002); Nicaragua: (BCN, 2003)

2.2.4.2 Trends in Bean Production

The largest bean producers in the region are Nicaragua, Nicaragua, and Honduras, which accounted for with 30%, 27% and 20% of total volume produced, respectively, in the period 1990-2001 (Figure 2.5).

Figure 2.5 Average Share of Production, Central America 1990-2001

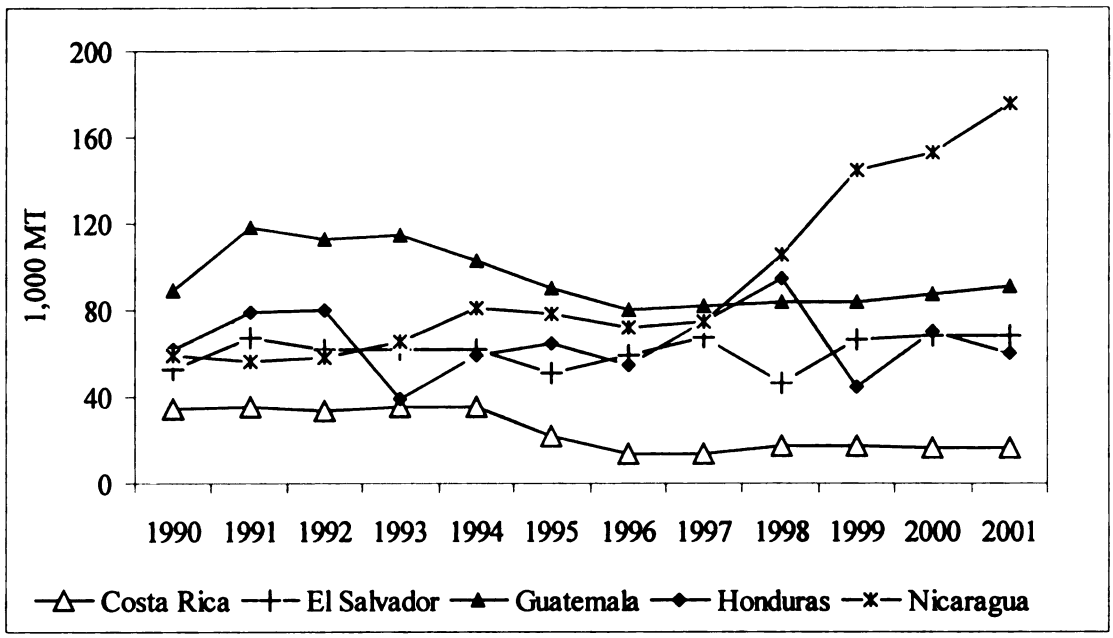


Source: Based on information from Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002); Nicaragua: (BCN, 2003)

During the 1990s, trends in bean production varied greatly among countries in the region (Figure 2.6). From 1990-1992 to 1999-2001, Nicaragua more that doubled its production of beans[5] (171%). As a result, Nicaragua's share of regional bean production increased dramatically from 17% in 1990-1992 to 41% in 1999-2001. Similarly, in El Salvador bean production increased by 11%, at an annual rate of 1.2%. In contrast, during the 1990s bean production declined in Costa Rica (-52%), Guatemala (-18%), and Honduras (-21%) (Table 2.10).

[5] While Nicaragua mainly produces small red beans, currently, it is also producing black beans for the Costa Rican market.

Figure 2.6 Trends in Bean Production, Central America, 1990-2001



Source: Based on data obtained from Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002); Nicaragua: (BCN, 2003)

Table 2.10 Trends in Bean Production, Central America, 1990-2001.

Country	*Average* [a]		*Change*	
	1990 -1992	*1999-2001*	*Annual* [b]	*Total*
Costa Rica	34.38	16.45	-7.9%	-52%
El Salvador	60.62	67.63	1.22%	11.6%
Guatemala	106.67	87.36	-2.2%	-18%
Honduras	73.65	58.05	-2.6%	-21%
Nicaragua	58.03	157.45	11.7%	171%
Central America	**333.36**	**386.94**	**1.7%**	**16%**

[a] Average production in 1000 Metric Tons

[b] To calculate annual change it was considered beginning period the average 1990-1992, the ending period the average 1999-2001, and annual rate of growth over the 9-year period.

Source: Based on data obtained from Costa Rica: (Mercanet, 2003); El Salvador: (MAG, 2001); Guatemala: (UPIE, 2002); Honduras: (Cotty *et al.*, 2002); Nicaragua: (BCN, 2003)

Bean production is highly dependent on weather conditions. In Honduras, bean production has been especially variable, due to the fact that in the 1990s Honduras was hit by numerous disasters (*e.g.* hurricanes, droughts). Consequently, according to the projections of the National Basic Grains Survey (2000), it will be difficult for Honduras to regain its high level of production in the near future (INE, 2002). On the other hand, bean production in Nicaragua showed a high increase in production, especially after 1997, presumably for the incentive to supply neighboring countries, such as Costa Rica.

2.2.4.3 Trends in Yields

Yields in Central American countries are relatively low (regional average 0.727 mt/ha) compared to the U.S., Canada, and Argentina where yields average 1.8 to 2 mt/ha. Various conditions affect productivity, including climatic conditions and poor farmers' limited use of inputs such as fertilizer and improved seed varieties.

Over the past decade, for the region as a whole, yields[6] increased at an annual rate of 0.5%, up from 694 kg/ha in 1990-92 to 727 kg/ha in 1999-2001 (Table 2.11). In 1999-2001, yields were highest in El Salvador (877 kg/ha), followed by Nicaragua (746 kg/ha), Honduras (739 kg/ha), Guatemala (689 kg/ha), and Costa Rica (583 kg/ha). During the decade, yields increased most rapidly in Nicaragua (2.8%) annually, followed by Costa Rica (1.2%) and El Salvador (0.6%). In contrast, yields declined in Guatemala (-1.2%) and Honduras (-0.3%).

[6] Yields represent the mean of national average.

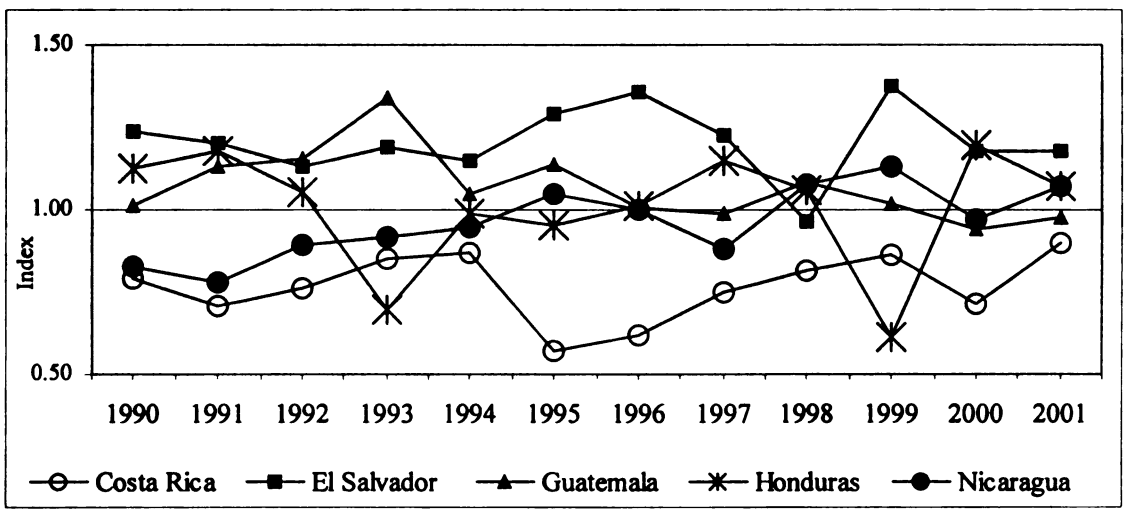
Table 2.11 Average Trend in Dry Bean Yield from 1990-1992 to 1999-2001 Central America.

Country	*Average* [a]		*Change*	
	1990 -92	*1999-2001*	*Annual* [b]	*Total*
Costa Rica	526	583	1.2%	10.8%
El Salvador	834	877	0.6%	5.1%
Guatemala	770	689	-1.2%	-10.5%
Honduras	756	739	-0.3%	-2.2%
Nicaragua	583	746	2.8%	27.9%
Central America	**694**	**727**	**0.5%**	**4.7%**

[a] yield Kg/Ha.
[b] To calculate annual change see table 2.9
Source: Calculated from tables 2.3 and 2.4

During the 1990s, yields in Central America greatly fluctuated from year-to-year (Figure 2.7). In most years, yields in El Salvador were higher than the regional average[7] while yields in Costa Rica were consistently below the region's average yield. In contrast, yields in Honduras were the most variable, compared to the region's annual average.

Figure 2.7 Yield Index, Central America, 1990-2001



[a] Yield index calculated for each year. Mean regional yield over 1990-2001=1.0
Source: Based on table 2.11

[7] Figure 2.7 presents the yield index, calculated by dividing each country's yield by the average yield in Central America for the respected years.

2.3 Research, Adoption of Improved Bean Varieties, and Government Support for Bean Production

2.3.1 Research

In Central America, bean research is conducted by government institutions and universities. Most of these institutions work closely with the Center for Tropical Agriculture (CIAT,), the Regional Cooperation Program of Dry Bean for Central America, Mexico and the Caribbean (PROFRIJOL), and the Bean/Cowpea Collaborative Research Support Project (B/C CRSP).

Since the 1980s, breeders have focused on developing varieties that are resistant to numerous production constraints, which vary by production season and agro-ecological zone (Table 2.12). For example, breeders have given priority to developing varieties resistant/tolerant to bean golden yellow mosaic and "Apion" for northern Central America (Guatemala, El Salvador, Honduras), web blight for southern Central America (Nicaragua, Costa Rica), anthracnose and angular leaf spot for the rather cool areas (Guatemalan High Plateau, and certain areas of Costa Rica), heat tolerance for production in the Pacific lowlands (*i.e.*, areas <500 m), and general problems in the region (*e.g.*, common bacterial blight and rust) (Voysest, 2001).

Table 2.12 Bean Research Breeding Objective, Central America 1980-2002

Attribute	*Ranking*
Resistant to diseases	1
Productivity (high yield)	2
Resistant to insects	3
Resistant to High Temperature	4
Early maturity	5
Quality of grain (physical appearance)	6
Resistant to drought	7

Source: Based on the investigation of (Viana, 2003)

In addition, for small red beans in recent years, breeders have focused on the development of varieties with quality characteristics that consumers demand (*e.g.*, lighted color, small size grain). As a result, two new varieties "Amadeus" and "Carrizalito", developed by Zamorano, are similar in color to the color preferred by consumers (Rosas *et al.*, 2002). However, since they were only released in 2002, their consumer's acceptance is still unknown. This greater focus on color characteristic is especially important since, according to a study funded by B/C CRSP, in the early-1990s Honduran farmers received 16% less for red bean varieties with dark color (Martel *et al.*, 1994).

Despite the importance of bean breeding research, since the early 1990 there has been a significant decline in the breeding intensity in Central America, especially with respect to the number of breeders in national programs (Johnson *et al.*, 2003).

2.3.1.1 International Center for Tropical Agriculture (CIAT,)

In the mid-1970s, scientists at the International Center for Tropical Agriculture (CIAT,) initiated an intensive breeding program to develop new varieties that provided

farmers with advantages in terms of "genetic resistance to combinations of widespread diseases, principally common bacterial blight, bean common mosaic, bean golden mosaic, anthracnose, and angular leaf spot" (CIAT, 2001). Furthermore, CIAT has given priority to developing varieties that produced high yields under drought and low soil fertility (especially low phosphorus), and with early maturity to enable farmers to more easily fit beans into their complex cropping systems.

CIAT and the national programs in Central America generally work as partners to develop improved varieties (Johnson *et al.*, 2003). During the past 10 years, regional scientists have exchanged 18,444 lines (germplasm). Of this total, 7,861 lines came from CIAT and 11,433 lines were developed by regional scientist in collaboration with the Regional Cooperation Program of Dry Bean for Central America, Mexico and the Caribbean (PROFRIJOL).

Since 1970, Central American countries have released 28 improved beans varieties in association with CIAT-PROFRIJOL (Johnson *et al.*, 2003). According to CIAT, between 1970 and 1998, these improved varieties have increased yields by approximately 268 kg/ha, representing an increase in yields by approximately 23%. However, this estimate appears to be inconsistent with secondary data on trends in national average yields during the 1990s.

2.3.1.2 Regional Cooperation Program of Dry Bean for Central America, Mexico and the Caribbean.

PROFRIJOL is a scientific network that operated for more than 20 years, until it was disbanded in 2003, with technical support from CIAT and financial support from the

Swiss Agency for Development and Cooperation (SDC). PROFRIJOL coordinated bean research in Central America and the Caribbean and some extension-related initiatives (*e.g.*, artisan seed program). In addition to working with the national research institution in each country, PROFRIJOL collaborated with universities and NGOs (Viana, 1998).

PROFRIJOL provided support to national research institutions to carry out research to develop improved varieties, evaluate the acceptability of new varieties and integrated crop management systems, and evaluate socio-economic constraints that bean framers face. During 1978-1997, almost all of the improved bean varieties released in Central America contained CIAT- PROFRIJOL breeding materials (Table 2.13).

Table 2.13 CIAT-related Lines Released in Central America, 1978-1997 [a]

Country	*Total Released*	*Released thru CIAT-PROFRIJOL network*	
		Number	*%*
Costa Rica	11	10	91
El Salvador	6	4	67
Guatemala	15	11	73
Honduras	8	8	100
Nicaragua	11	10	91

[a] The term 'CIAT-related' refers to a variety that was release by a national program, but had significant input from CIAT.
Source: (Viana, 1998).

2.3.1.3 The Bean/Cowpea Collaborative Research Support Project (CRSP)

The Bean Cowpea Collaborative Research Support Program (B/C CRSP), established in 1980 with funding from USAID, supports collaborative research between bean scientists in the U.S., and developing countries, and funds graduate training for Latin American and Caribbean bean scientists.

Over the past 20 years, the B/C CRSP has collaborated with scientists throughout Latin America and the Caribbean. In 2002, the Bean/Cowpea CRSP began a new five-year grant entitled, "A Regional Partnership to Enhance Bean/Cowpea Consumption and Production: A Value Chain Strategy". In addition to enhancing the productivity and quality of bean varieties, the B/C CRSP conducts research to stimulate economic growth by the developing new market opportunities for dry bean grain and value-added products. (CRSP, 2003)

In implementing its research, the Bean/Cowpea CRSP follows a regional approach. Currently, the B/C CRSP funds collaborative research and training in three Central American countries (Honduras, Costa Rica, and Nicaragua). However, research finding are disseminated throughout the region via regional research networks and personal contacts among scientists (Bernsten, 2002).

2.3.1.4 National Research Programs

In most Central American countries, bean research is carried out by the government (Table 2.14). However, in some countries universities have a strong research program, especially in Honduras and Costa Rica.

Table 2.14 Institutions Conducting Bean Research, Central America, 2002.

Country	*Agency / Organization Responsible*
Costa Rica	Research and Agricultural Technology Transfer Program (*PITTA Frijol*): • Ministry of Agriculture and Livestock. (MAG) • University of Costa Rica (UCR) • National University (UNA) • National Council of Production (CNP) • National Seed Office (ONS)
El Salvador	Agriculture and Forestry Research Center (CENTA)
Guatemala	Institute for Agricultural Science and Technology (ICTA)
Honduras	Agriculture Science and Technology Department (DICTA) Pan American School of Agriculture (EAP)
Nicaragua	Nicaraguan Institute for Agricultural Technology (INTA)

Source: (Viana, 1998)

In Costa Rica, the bean research is conducted under the Program of Agricultural Research and Technology Transfer-Bean. (*PITTA Frijol*), which for 24 years has coordinated research among the Ministry of Agriculture and Livestock (MAG), the University of Costa Rica (UCR), the National University (UNA), the National Council of Production (CNP), and the National Seed Office (ONS). While these institutions have different bean research foci, their main objective is to increase the productivity of bean cultivars and increase farmers' access to certified seed in order to increase their supply of bean for their own consumption and to generate income for the household (SEPSA, 2002, Zalazar, 2002 .80).

In El Salvador, the National Center for Agricultural and Forestry Technology Transfer (CENTA) is in charge of the scientific development in agriculture, forestry and livestock . CENTA is responsible for implementing the National Basic Grain Program, in

which the main objective is to develop and facilitate the adoption of improved crop varieties, including beans. (CENTA, 2003b)

In Guatemala, since the 1970s agricultural research has bean conducted mainly by the Institute of Science and Agricultural Technology (ICTA), a semi-autonomous central governmental-financed agency with close links to the U.S. Agency for International Development (USAID,), International Maize and Wheat Improvement Center (CIMMYT), CIAT, PROFRIJOL, and other research and development organizations. With respect to beans, ICTA focuses on breeding and releasing disease-resistant varieties, as well as developing higher-yielding bean varieties (Estrada-Valle, 2001).

In Honduras, currently bean breeding is primarily conducted by the *Programa de Investigacion en Frijol* in the Department of Agronomy at the *Escuela Agricola Pan-Americana* (Zamorano), while the National Bean Program (DICTA) has a regulatory mandate, and conducts some breeding activities. Zamorano has focused its breeding efforts on identifying sources of resistance to BGYMV, a major production constraint in Honduran valleys, and developing varieties with improved heat-tolerance, drought tolerance and desired color characteristics (*e.g.*, light red) (Mather *et al.*, 2002)

In Nicaragua, the Nicaraguan Institute for Agricultural Technology (INTA) is responsible for the development of foundation seed. INTA evaluates its promising lines, promotes and disseminates its new releases among producers, and works with cooperatives of seed producers to multiply and distribute its improved varieties to farmers (Piccione *et al.*, 2002).

During the period 1990-2002, regional research institutions have released 22 improved varieties (Table 2.15). In the specific case of red bean varieties, some of the varieties have the same line, but with different name in each country. For example, breeders at Zamorano (Honduras) released the line EAP 9510-77, with the name "*Amadeus-77*", the same line in El Salvador is known as "*CENTA San Andres*", and in Nicaragua as "*INTA rojo*". Similarly, the line MD 30-75--also released by Zamorano in Honduras--in Honduras is called "*Tio Canela 75*", in el Salvador "*CENTA Costeno*", and in Nicaragua as "*INTA Canela*".

Table 2.15 Improved Varieties Released in Central America, 1990-2002

Country	*Name*	*Market Class*	*Line*	*Year of release*
Costa Rica	Chirripo Rojo	Red	Dor 489	1996
	Bribri	Red	MD 2324	1996
	Guaymi	Black	MUS 106	1995
	Maleku	Red	RAB 572	1995
El Salvador	CENTA San Andres	Red	EAP 9510-77	2002
	CENTA 2000	Red	MD 30-75	2000
	Rojo Salvadoreno 1	Red	Dor 482	1997
	CENTA Costeno	Red	Dor 585	1993
	Dor 582	Red	Dor 582	1993
	CENTA Cuscatleco	Red	Dor 364	1990
Guatemala	ICTA Ligero	Black	---	1998
	ICTA Santa Gertrudis	Black	Dor 446	1996
	ICTA Chapina	Black	JU-90-4	1996
	ICTA Hunapu	Black	CH 89-2	1996
	ICTA Altense	Black	CH 89-10	1996
	ICTA Texel	Black	CH 89-30	1991
Honduras	Carrizalito	Red	EAP 9510-1	2002
	Amadeus-77	Red	EAP 9510-77	2002
	Tio Canela 75	Red	MD 30-75	1997
	DICTA 113	Red	DICTA 113	1996
	DICTA 122	Red	DICTA 122	1996
	Don Silvio	Red	Dor 482	1993
	Dorado	Red	Dor 364	1990
Nicaragua	INTA Rojo	Red	EAP 9510-77	2002
	INTA Cardenas	Black	Dor 500	2002
	INTA Nueva Guinea	Black	Dor 390	2002
	INTA Canela	Red	MD 30-75	2001
	Dor 364	Red	Dor 364	1996
	Compania	Red	RAB 463	1996
	INTA Esteli	Red	CM 12214-25	1990
	Esteli 90A	Red	CNIGB 1-90	1990
	Esteli 90B	Red	CNIGB 2-90	1990
	Esteli 150	Red	CNIGB 3-90	1990

Source: Based on PROFRIJOL database and personal communication with bean breeders in each country.

2.3.2 Varietal Adoption

National bean research programs in Central America have produced a broad range of technology and improved germplasm. Despite these successes, bean yields remain relatively low[8] due to a variety of factors including low soil fertility, hillsides cultivation, diseases, and erratic weather conditions (*e.g.*, frequent hurricanes, drought).

In addition, in most countries, farmer adoption of available technology is constrained by limited access to extension, credit and weak seed multiplication and distribution systems. For example, according to key informants, only 6% and 5% of the bean area is planted to certified seed in Nicaragua and Guatemala, respectively. However a much larger percent of farmers plant recycled (*i.e.*, grain from the previous harvest) seed of improved varieties. For example, in El Salvador, according to a 1996 study by the Ministry of Agriculture, CENTA, and PROFRIJOL, approximately 20% of the bean area was planted to recycled seed of improved varieties and in Honduras 45% of the bean area in the main production areas was planted to recycled seed of improved varieties in 2000 (Mather *et al.*, 2002)

2.3.3 Government Assistance

2.3.3.1 Seed Multiplication and Distribution

The distribution of improved seed varieties to small farmers remains a persistent problem in Central America. This situation is critical, since farmers-adoption of improved varieties that are resistant to biotic and abiotic stresses is key to increasing productivity. While other purchased inputs (*e.g.*, fertilizers, insecticides) are available in

[8] See Table 2.11

rural stores, and in some instances traders provide these inputs to farmers on "credit", private companies seldom sell improved bean seed.

In Central America, seed multiplication and distribution is usually done by a government institution in cooperation with universities and/or NGOs. For example, in Costa Rica, basic seed is produced at UCR's experimental station "Fabio Baudrit Moreno". Then, UCR distributes this seed to members of a farmers association (ASOPRO), which produces certified seed under the supervision of UCR. Once the seed is certified, it is distributed by ASOPRO's members to other members (Araya Villalobos, 2003 .45). On the other hand, the only institution that sells certified seed directly to farmers is the National Council of Production (CNP).

In El Salvador, scientists at the Basic Seed Unit--a technical office under CENTA--are responsible for producing foundation seed of improved varieties and certified seed. CENTA certifies the quality of the seed it produces and distributes it to private seed distributors and farmers. In addition, CENTA assists farmer groups to multiply improved varieties.

In Guatemala, ICTA produces foundation seed, which is multiplied by ICTA and five small registered seed producers. In addition, the government has tried to promote artisan seed production. Also, seed is distributed by NGOs, such as the "*Fundacion para la Innovacion Tecnologica, Agropecuaria y Forestal*" (FUNDIT).

In Honduras, Zamorano produces foundation seed, which is multiplied by Zamorano, DICTA, and NGOs. In addition, Hondugenet (a private company) uses certified seed to produce commercial seed. Improved bean seed is disseminated through a variety of channels. Zamorano sells certified seed and Hondugenet sells commercial seed

directly to farmers--primarily large commercial farmers. In addition, various NGOs buy certified seed from Zamorano and distribute it to participants in their projects or use it to support the development of farmer seed banks. While DICTA supports an artisan seed program, this program is relatively small in scale. Finally, government development projects purchase seed from Zamorano for distribution to project participants. (Mather *et al.*, 2002)

In Nicaragua, INTA produces foundation seed in a effort to promote technological change in areas that have a favorable environment for bean production. In 2000, the Ministry of Agriculture, Livestock and Forestry (MAGFOR) launched the program *"Libra x Libra"* for basic grains, which covered 124 municipalities classified as "zone of low climatic risks". Under this program 72,499 bean farmers received seed coupons which enabled them to plant a total of 376 mt of certified bean seed. It is expected that this program will enable small producers to significantly increase their yields. In regions not covered by the program, INTA currently assists 6 cooperatives of producers to multiply and sell certified seeds. However, the commercialization of bean seed remains problematic, due to the limited financial capabilities of small seed producers, the limited financial capacity of small farmers to buy certified seed, the lack of knowledge regarding the benefits of improved varieties, and the resistance to change from the use of traditional varieties with low yielding[9].

[9] Personal communication with Aurelio Llano, principal bean breeder, INTA, 2002.

2.3.3.2 Extension Support to Bean Farmers

In some Central American countries, the government is promoting decentralized extension services which they believe will be closer to the client, and will relax governmental budgetary constraints (Bonnal, 2003). For example, Costa Rica, Guatemala, and Honduras have replaced the traditional extension service with a joint program between the main governmental research institution and private institutions (*e.g.*, universities, NGO). On the other hand, El Salvador and Nicaragua have maintained the traditional centralized extension programs.

In Costa Rica, research institutions under "*PITTA Frijol*"[10] are also in charge of providing extension support to bean producers. For example, UCR's experimental station "Fabio Baudrit Moreno" works with producer associations to multiply improve varieties. In addition, UCR also provides some marketing and management support to farmers. This initiative has helped several farmer associations to establish agreements with retailers to supply them with the volume and quality of beans that they demand (Araya-Villalobos *et al.*, 2003).

In Guatemala, the Ministry of Agriculture (MAGA) supports extension through the Networks for Sustainable Development (RADEAS). MAGA provides funding to RADEAS, which distribute these resources among its member organizations who contract with local firms for technical assistance. This new way of providing extension support has facilitated the production and distribution of improved seed varieties, especially to small farmers. (Estrada-Valle, 2001)

[10] See Table 2.8

In Honduras, NGOs, using primarily international resources, provide small farmers training and other services. Several of these NGOs. have been leaders in developing innovative, farmer participatory, research and extension methodologies and low-cost agricultural technologies. Currently, an estimated of 70 NGOs support agricultural programs that reach about 15 percent of the country's producers (Adriance, 1997).

In El Salvador, CENTA is the main institution in charged of assisting small producers, especially farmers dedicated to basic grains (CENTA, 2003a). CENTA provides technical assistance in areas such as crop, water and post-harvest management, processing and diversification of agricultural production, and environmental conservationism. While its main office is located close to San Salvador, CENTA has 25 field offices located in different rural areas. Also, CENTA is the only public institution that support small bean producers. However, its coverage is limited (Pleitez, 2002).

In Nicaragua, INTA is the main public institution responsible for providing extension services. (Piccione *et al.*, 2002). However, in the late nineties, less then 15% of farm households made use of extension services, and only one-half of these farmers were served by INTA. In many instances, there exists no effective linkages among scientists at Universities, INTA and NGOs which provide extension and training (Piccione *et al.*, 2002).

According to Bonnal, in several countries in Latin America, with more and better coordinated funding, private institutions have proved to effectively complement government extension programs by serving farmers and making important contributions to technology transfer and dissemination (Bonnal, 2003).

2.3.3.3 Access to Credit for Bean Production.

Throughout the region, small bean producers have difficulties obtaining agricultural credit from "formal" financial institutions. Several characteristics make beans unattractive for financing due to price volatility (which is greatly influenced by year-to-year variability in production) and the risk associated with production (which is considerably affected by hurricanes, droughts, etc). Another constraint is high transaction costs for lenders and producers, due to the geographic dispersion of producers and the small amount of money lent to each farmer.

Also, the requirements to get a loan are often difficult for a small producer to meet. For example, formal lenders often require farmers to provide a land title to secure a loan. However, in Central America a high proportion of small farmers do not own their lands (Falck *et al.*, 1999). For example, according to Estrada-Valle (2001) in Guatemala around 61% of farms are cultivated by farmers who do not have land titles. Therefore, dry bean production is most frequently financed by intermediaries. Farmers who have received loans must sell their products to these traders, who give the farmers a discounted price for their beans.

Finally, while commercial or public development banks do not serve the financial needs of small farmers, a growing number of programs and projects provide credit to small farmers. Generally, these programs also provide technical assistance and managerial training. However, their coverage is limited, given that they focus on certain production activities and in certain regions. (Clemens *et al.*, 1997)

2.4 Bean Packaging and Processing in Central America

Activities that add value to beans in Central America include: a) cleaning and packaging dry beans in plastic bags and b) transforming dry beans into canned, flexible beans, powder, or frozen bean products. During fieldwork, staff of several bean packaging/processing firms were interviewed in each country (Table 2.16). While this study does not cover the whole bean packaging/processing industry in Central America, data collected from the selected firms provides an overview of the current status of the value-added industry in the region.

Key informant reported that throughout the region, the major packaging firms are usually local business, without international links. In contrast, firms that process beans (canned and flexible pack) have links to multinational firms in the U.S. and Europe.

Table 2.16 Number of Value-added Firms Interviewed, Central America, 2002.

Activity	*Costa Rica*	*El Salvador*	*Guatemala*	*Honduras*	*Nicaragua*	*Total*
Bean Bagging	6	2	2	6	2	18
Bean Processing [a]	2	2	2	1	0	7

[a] This category includes canned and flexible packed beans
Source: Field Research, July, 2002

2.4.1 Bean Packaging Industry

Although most consumers in Central America still buy unpackaged dry bean at traditional markets, in urban areas consumers are increasingly demanding quality characteristics that have created an incentive for the bean packaging industry to expand. According to key informant in Costa Rica, there are approximately 17 packaging

companies located around the capital city, San Jose. Four of these firms have the biggest market share. In El Salvador, four firms--which are located in the proximities of San Salvador--dominated the market in terms of volume purchase (two of these firms currently export to the U.S.[11]). In Guatemala, there are approximately 30 packaging firms located in Guatemala City. In Honduras, there are approximately six bean packers, with four large firms located in Tegucigalpa[12]. Nicaragua has approximately six packaging firms that bag beans, all of which are located in Managua (Table 2.16).

Most packers in Central America have been working in the bean business for a long time. However, prior to the early 1990s these firms only bulked beans in large bags. Most of these firms started to add value (*e.g.* grade, clean) in the 1990s, so this activity can be considered relatively new.

According to interviews with vendors in central markets in the capitals of Guatemala and Honduras and key informants in Nicaragua and El Salvador, these firms have a long history of importing beans. However, in the early 1990s they expanded their importing/exporting from outside the region. Typically, these firms pack beans and other products, especially basic grains.

2.4.1.1 Brands

Packaging firms typically market two different types of brands. When a company packs and sell their own brands it is known as a commercial brand. However, when a firm packs for another firm, which sells the product under its label, it is called a private label. Packaging for a retailer is growing rapidly, particularly in Costa Rica, Guatemala

[11] Managers of these two companies where interviewed in July 2002
[12] San Pedro Sula, Honduras other big urban area, was not visited.

and Nicaragua, where some stores only sell their private labels. In Honduras, a buying manager for one of the stores of the supermarket chain "*La Colonia*" in Tegucigalpa, reported that it has successfully implemented a private label.

Some companies packs more than one brand, which differ with respect to quality. This practice is especially common in the case of small red beans, where light red varieties are always considered to be first class and are more expensive. In the case of black bean, brands are differentiated by whether or not the beans are shiny, or whether the grain is homogenous in size. Nevertheless, according to supermarket managers, consumers are very price sensitive. Hence, price is the most important consideration for consumers.

During the fieldwork phase of this study, supermarkets owned by major chains in each country were visited to document the brands that they sold. Table 2.17 presents the numbers of private and commercial brands sold by the major supermarkets chain in the capital of these countries. While this is not an exhaustive list, these data indicate the number of brands sold in each country, given that bagged beans are sold almost exclusively by specialized stores (*e.g.*, supermarkets, auto-service shops)..

Table 2.17 Number of Private and Commercial Labels of Bagged Beans Sold in Major Supermarket Chains in City Capitals, Central America, July, 2002

Country	*Supermarket Chains*	*Label*		
		Private	*Commercial*	*Total*
Costa Rica	2	7	8	15
El Salvador	3	0	6	6
Guatemala	4	3	3	6
Honduras	2	0	9	9
Nicaragua	3	4	4	8
Total	***14***	***14***	***30***	***44***

Source: Field research, July, 2002.

The fact that private labels are growing rapidly may imply that concentration in this sector is growing, with big companies with contracts to bag beans for major supermarkets chain becoming dominant in the packaging sector. This is highly likely, considering the growing consolidation of supermarkets in Central America and the decreasing market share of sales by other types of stores (*e.g.*, pulperias, central markets) (Reardon *et al.*, 2002 and Alvarado, 2002 .23)

2.4.1.2 Supply Source

The harvest season in each country determines when the packers source their supply from local producers and when they import beans. Each country and each region has its own harvest season. Thus, the local supply varies over the year in each Central American country[13]. As a result, prices are lowest at harvest and highest just prior to the

[13] See Chapter 2 for a chart that shows each countries harvest season and the percentage of production in each season

beginning of the next harvest. Hence, packers typically import beans during the months when local prices are at their highest level.

In all countries, the packers interviewed reported that local intermediary, trader or transporters were their primary suppliers. Packers also reported buying directly from large bean framers or from producer associations. For example, in Costa Rica, a producer association called "*Centro Agricola Cantonales*"[14] is the main supplier for *Hortifruti SA*, a company in charge of distribution for the supermarket chain "Central American Retail Holdings Company" (CARHCO). This producer association, with 100 to 350 member farmers who grow in different production regions, collects the harvested crop in each region of the country and transports it to the city capital where the beans are cleaned, graded, packed and distributed to the supermarket chain. Similarly, in Nicaragua 200 producers have formed an association which supplies a large packer, *Union de Negocios SA* (AGRONEXA).

Many bean packers in Central America also source bean from regional intermediaries. Companies that import beans from outside the region (*e.g.*, the U.S., Argentina, Canada) rely on a network of contacts to facilitate these transactions. For example, packers that are part of international chains have a division that looks for the desired quality characteristics and imports directly from big farmers or exporters in the country of origin. Usually these packers have access to the logistic required to insure that the imported beans will meet the firms' quality standards.

All Central American countries also have a commodity exchange. In order to participate, there are several legal requirements that sellers must meet (*e.g.*, firms must be

[14] For example, Hortifruti Costa Rica buys from the Centro Agricola Cantonal of the Huertar Norte region.

registered, pay taxes, agreed with standards). Although an increasing volume of beans are sold through these exchanges, these transactions account for only a small share of the bean marketed in Central America. However, commodity markets have contributed to establishing grade standards for bean transactions, which have been adopted by many bean traders in Central America.

Packers reported that it is very difficult to buy directly from small farmers. Small producers cannot provide a sufficient volume, which is a crucial requirement of these firms. Also, often small farmers cannot meet packer's quality standards (*e.g.*, content of foreign organic matter, insects, humidity). In the case of small red beans, packers also require homogeneity in color, a standards that small farmers have difficulty meeting. Finally, packers reported that lack of organization among producers is also a barrier to trading directly with them.

While packers reported that price is the main criteria they use to decide from where to import beans, they also consider whether importers offer the quality characteristics demanded (*e.g.*, color, humidity, cooking time). Sometimes, packers learn about sources of imports from exporters from countries like the U.S., who visit the packers to promote their product. In addition, some packers identify potential importing source by visiting a country (*e.g.*, Argentina).

Few packers reported receiving any assistance from their government or a NGO to gain access to international markets. However, several commercial and governmental

internet sites provide information about companies that want to export and import beans[15].

2.4.1.3 Contracts

In Central America contracting is not a common way to conduct business, especially among bean traders. Contracts only work when the supplier is a legally established firm that can be held legally responsible for failing to meet the term of the transaction. While some farmer cooperatives and associations have arrangements to supply beans, their structure is not sufficiently well developed to contract with packers (*e.g.*, weak management, free rider problem).

Most packers reported that they transact business using "informal arrangements" (verbal communication) to negotiate the volume and quality of beans to be purchased, while the price is finalized at delivery, after the buyer has examined the product. Although these transactions occur without "formal" contracts, traders have a strong incentive to meet these informal standards since the penalty for not complying with the requirement is loosing a client in a very competitive market.

2.4.1.4 Infrastructure

Most of the bean packers in Central America are very small businesses. Typically, these firms are located in the capital city's central market, often in small rooms, and

[15] Costa Rica: http://www.mercanet.cnp.go.cr/. El Salvador: http://www.agronegocios.gob.sv/. Guatemala: http://www.agexpront.com/espa/directory.htm . Honduras: http://www.hondurasinfo.hn/esp/main/home.asp Nicaragua: http://www.cetrex.com.ni/

almost working in the street[16]. However, big packers reported having two storage facilities, one where they grade and pack beans, and another in the main production area.

Packers store beans for up to four months, after which the quality deteriorates (*e.g.,* cooking time increases). Also, long term storage is unprofitable for these firms, since it would tie up their working capital. Regarding distribution, typically, packers have their own vehicles, but large packers also contract with other companies to distribute their products.

2.4.2 Bean Processors

Some Central American bean processors have processed food products for more than 30 years. However, most of these companies introduced their bean processing line in the 1990s. Also in the 1990s, the biggest firms entered into alliances with multinational processors from the U.S. and Europe to produce and market their products in Central America.

There are approximately 10 large canning companies in Central America[17]. Of this total 7 are located in Guatemala and 3 are in Costa Rica. Guatemalan brands are the most widely sold brands in Central American countries. *Alimentos Kern de Guatemala,* with its brand "Ducal", commands an estimated 80% market share in Guatemala (1999) (Table 2.18). This company, a multinational jointly owned by Riviana Foods, Inc. of Houston, Texas and Guatemalans also exports its products to the U.S. *Mahler*, a Guatemalan company, has a 7% market share, and *Agro-Industrias Lo-Zano*, has a 5.1%

[16] This was confirmed in Honduras and Guatemala by visiting several firms. In El Salvador and Nicaragua, this was confirmed by key informant interviews. In Costa Rica packaging firms are more developed.
[17] These firms are considered large because of their relative prescense of their products in supermarket shelves and because there were exporting their products at the time of the field research.

market share. However, key informants from supermarkets pointed out that a fourth company, Del Monte (U.S. owned), is rapidly gaining market shares in Central America (PRONACOM, 1999). In Costa Rica, there approximately two big processing firms (Calderon, 2001b; Calderon, 2001a). *Alimer SA,* a family-own company which is currently expanding their market share in Costa Rica and exporting to other Central American and Caribbean countries, and "*Del Tropico*", a firm part of Unilever Central America. While in El Salvador *Industrias Lya* and *Idustrias Garmol*, two family-own companies visited reported canning beans, they were not selling beans in main supermarkets in San Salvador. In Honduras and Nicaragua there were not reported any canning firm.

Table 2.18 Canning Industry Market Share, Guatemala, 1999.

Firm	*Brand*	*Share in the Local Market (%)*	*Production for the Local Market (%)*	*Total Production MT*
Alimentos Kern de Guatemala	Ducal	80.7	86.22	5,625
Malher Sucesores y Cia. SA	Malher	7	7.48	1,200
Agro Industrias LoZano	Lo-Zano	5.1	5.45	278
Alimentos Maravilla SA	Del Monte	0.8	0.85	44

Source: (PRONACOM, 1999)

In the case of the flexible pack[18], only one company --*Unilever Central America* with the brand "Naturas"-- produces this product. While other products, such as powder or frozen beans are sold in some Central American countries, they were not studied during the field phase of this research because they are not widely consumed.

[18] See footnote 3 for definition of flexible pack.

The region's main processing firms have international links with European (*e.g.*, United Kingdom and the Netherlands) and U.S. multinational firms (Table 2.19). Two processors, *Empaques Agroindustriales* and *Empresas Integradas*, can beans for the supermarket chain CARHCO, which is a jointly owned by Guatemalans, Costa Ricans and the Royal Ahold, Inc., based in the Netherlands. In addition, *Conservas del Valle* and *Alimentos Naturas,* are both owned by Unilever, Inc. Finally, *Alimentos Maravilla* and *Alimentos Kern de Guatemala* have links with U.S. companies.

Table 2.19 Bean Processors Located in Central America by Country of Origin and International Links, Central America, 2002

Name of Processor	*Country of Origin*	*Brand Name*	*International Link*	
			Company	*Country*
Conservas del Valle	Costa Rica	Cinta Azul	Unilever	UK/Netherlands
Alimentos Maravilla	Guatemala	Del Monte	Del Monte Foods Inc.	U.S.
Empaques Agroindustriales	Guatemala/ Costa Rica	Sabemas	CARHCO	Guatemala/Costa Rica/Netherlands
Empresas Integradas	Guatemala	Suli	CARHCO	Guatemala/Costa Rica/Netherlands
Alimentos Kern de Guatemala	Guatemala	Ducal	Riviana Foods Inc.	U.S.
Alimentos Natura	Honduras	Naturas	Unilever	UK/Netherlands

Source: Data collected from main supermarkets during the field research. July 2002

2.4.2.1 Brands

While most bean-processing firms have their own commercial brand, some of these firms have introduced canning for other companies as a new activity. For example, in Guatemala two companies currently can for CARHCO and for exports to the U.S. market. Also, in Costa Rica and El Salvador, two processors can private labels.

2.4.2.2 Supply Source

Processors' main suppliers depend on the market class of bean. For black beans, processors' main source is the U.S.--due to price and transaction cost considerations. For example, processors interviewed in Guatemala and Costa Rica agreed that it is easy to engage in business with U.S. shippers. First, processors place their order, the U.S. shipper delivers the product in 20 cubic feet containers, and guarantees the quality characteristics demanded. However, when processors source locally, they buy from an intermediary.

For small red beans, processors also consider quality characteristics. Although the product is to be processed, interviewees reported that there are still certain characteristics that need to be satisfied (*e.g.,* cooking time, humidity, dirty, price, and color). Also, processors always prefer red beans that are homogeneous in color.

According to processors, the main supply problems in Central America are insufficient production and that the supply is highly variable over the year, which is aggravated for the fact that production is still artisan (*i.e.,* difficult to engage in contracted business). In addition, inadequate storage facilities conditions at the farm and intermediary levels affects the freshness of beans. Consequently, cooking time is longer, which increases processing costs. Also, the lack of a good grading systems complicates bean trade. Finally, the uncertainty with respect to prices when dealing with regional or local intermediaries make importing beans more attractive to processing firms.

2.4.2.3 Contracts

Processors utilize contracts when purchasing beans from U.S. suppliers and some producer organizations in the region. However, contract are not used when purchasing

from local producers. According to some processors, trading firms must be willing to establish both quality characteristics and prices when the contract is negotiated. However, many producers are unwilling to agree to a price prior to delivery.

In some instances, companies have tried to provide inputs and credit to growers in order to secure a reliable supply of beans. However, these efforts have been unsuccessful. According to key informants in Guatemala and Honduras, firms need to contract beans at a fixed price, but producers are not legally required to sell their production to the contracting firm (even though it has provided inputs). Thus, if offered a better price, producers sell to intermediaries. However, it may be a good deal to know bean prices in advance, information with respect to price offered by processing firms was not obtained.

2.4.2.4 Infrastructure

Most of the processing firms interviewed, reported having two facilities, one where they clean, grade and process beans and another building for storage. In addition, some big firms have a bulk storage facility (for dry bean grain) in the main production region of the country.

Regarding productivity of processing firms, it is relatively high. However, managers in Costa Rica and El Salvador reported that they were behind in capacity utilized, compared to Guatemala, where the industry is concentrated, and processing firms operate at 30% to 70% of their total capacity (PRONACOM, 1999).

Most big processing firms have a specific division that is responsible for finding the right product, locally, regionally or from outside Central America. Also, their

marketing department is in charge of distributing their processed beans throughout the region.

2.4.3 Quality Standards in the Dry Bean Industry.

Grade standards provide the structure necessary for transactions, by defining commodities and differentiating goods, providing means of transferring information, and specifying the terms of a transaction. Two factors establish the existence of standards, first the necessity of sorting and classifying goods, and second, the need to communicate information about the characteristics of a specific product (Sterns *et al.*, 2002).

Since the ratification of the Central American General Treaty of Integration (1970s), Central America and Panama have tried to agree on a grade standard for basic grains. However, since these norms were initially established as rules for commercial operations between national marketing institutions, only parastatals were obligated to follow them. Subsequently, the Central American Office of Economic Integration (SIECA) wrote the "Central American Unified Classification Norms for Basic Grains" (*Normas Uniformes Centroamericanas de Clasificación Comercial de los Granos Básicos*), standards which were approved by the Coordination Committee for Marketing and Prices (CCMEP) in April 1988. However, these norms were developed without information from the demand side (consumers) (Lizarazo, 1997).

With the creation of commodity markets (private organizations) in Central America, the focus shifted to establishing norms that could facilitate business between brokers. The objective was to create a common quality standards for all Central American countries. The private sector's most important achievement has been that brokers now

acknowledge a systematized body of rules that defines what are considered to be defects, and carries out analyses using the same methods, analytical proportions, assays methodologies, and laboratory equipment. Thus, at least at the commodity market level, there exist standards which are similar to the U.S. dry bean standards, and those prepared by the Center for Technical Research of Grain and Seed, Zamorano, with FAO technical support (Lizarazo, 2003).

However, Costa Rica is the only Central American country where the grade standard for beans is legally enforceable. In 1999, Decree Number 29557 established the minimum quality standards for all transactions related to dry beans (Table 2.20). The most important quality characteristic is cooking time. Since supermarkets usually sell beans that are only grade 1, packers tend to only buy this grade of beans. Other characteristics that bean traders must meet include characteristics related to humidity, color contrasting, and broken and half beans (Table 2.21).

Table 2.20 Beans Grade Standards, Costa Rica, 2002.

Maximum Tolerance		
Characteristic	***Grade***	
	1	***2***
Humidity (%)	15 (±1)	15 (±1)
Cooking time (Minutes)	90 (+5%)	120 (+5%)
Impurity [a]	0.5	2
Contrasting grain [a]	1	3
Damaged grain (total) [a]	1	3
Broken grain [a]	0.5	0.75
Half grain [a]	0.5	3
Insect infested [a]	not acceptable	not acceptable
Other grains [a]	0	0.5

[a] Maximum tolerance as a percent of mass.
Source: Decree 29557 – Costa Rica.

Table 2.21 Beans Grade Standards, Central America, 2002 [a]

Maximum Tolerance			
Grade 1			
Characteristics	***El Salvador***	***Guatemala***	***Nicaragua***
Humidity (%)	13 - 14	12 -14	13 - 14
Impurity (%)	0.5	1	1
Broken and half grain (%)	0.5	1	1
Damaged grain (%)	1		4
Grain damaged by insects (%)	1		
Cooking time (MIN)	90		90

[a] The information with respect to quality characteristics in Honduras was not available during the field research.
Source: BOLPROE El Salvador, BAGSA Nicaragua, BOLPROMER Guatemala

In other Central American countries, although the standards which were set up either by the commodity exchange market or by private firms are not legally enforceable, they are used by major firms. For example, in Nicaragua, the firm Hortifruti Nicaragua SA has adopted the IICA standards for its basic grains transaction. In El Salvador, the commodity market (*Bolsa de Productos Agropecuarios*. BOLPROE) gives brokers the grade specification for dry beans that are demanded for an specific transaction (IICA, 1994). While grade standards vary from country-to-country, with respect to the maximum for impurities (Table 2.21), all countries agree on 'maximum cooking time' and the maximum percentage of humidity (14%).

In the case of the processing industry (*e.g.*, canning), the standards, which they have adopted for buying their products, are similar with respect to the whole grain standards (Table 2.22). In fact, the Guatemalan dry bean grades and standards are followed throughout Central America's processing sector, since Guatemala is the country with the main processing firms in the region.

Table 2.22 Bean Processing Industry Quality Standards, Guatemala, 1999 [a].

Characteristics	*Tolerance*
Aspect	
Size	Uniform in the range of 9-12 mm.
Appearance	Whole grain, clean, free of humidity, color black uniform
Analysis	
Color.	Black
Odor.	Characteristic
Taste	Characteristic
Impurity	Free of Impurities
Humidity %	12% to 14 %.
Size	9 mm – 12 mm.
Cooking Time	Max. 1.5 Hrs.
Classification %	90% Min. of good dry bean
Primary package	Plastic Bag with approximate weigh of 100 pounds

[a] Black bean quality standards established by the dry bean processing industry for purchasing local bean.

Source: Based on (PRONACOM, 1999)

2.5 Domestic Bean Marketing Channels

2.5.1 Bean Marketing Participants

Bean marketing channels are similar among Central American countries (Figure 2.8). Marketing begins with the producers--usually small-scale farmers who sell their surplus after each harvest. Farmers sell their production either in the rural retail system (*e.g.*, "ferias", open market, rural stores), or to intermediaries. Once beans arrive at urban markets, they are marketed through the food retailer system, which can be classified into four groups (Reardon *et al.*, 2002):

1) small full-service stores (corner store, "pulperias");

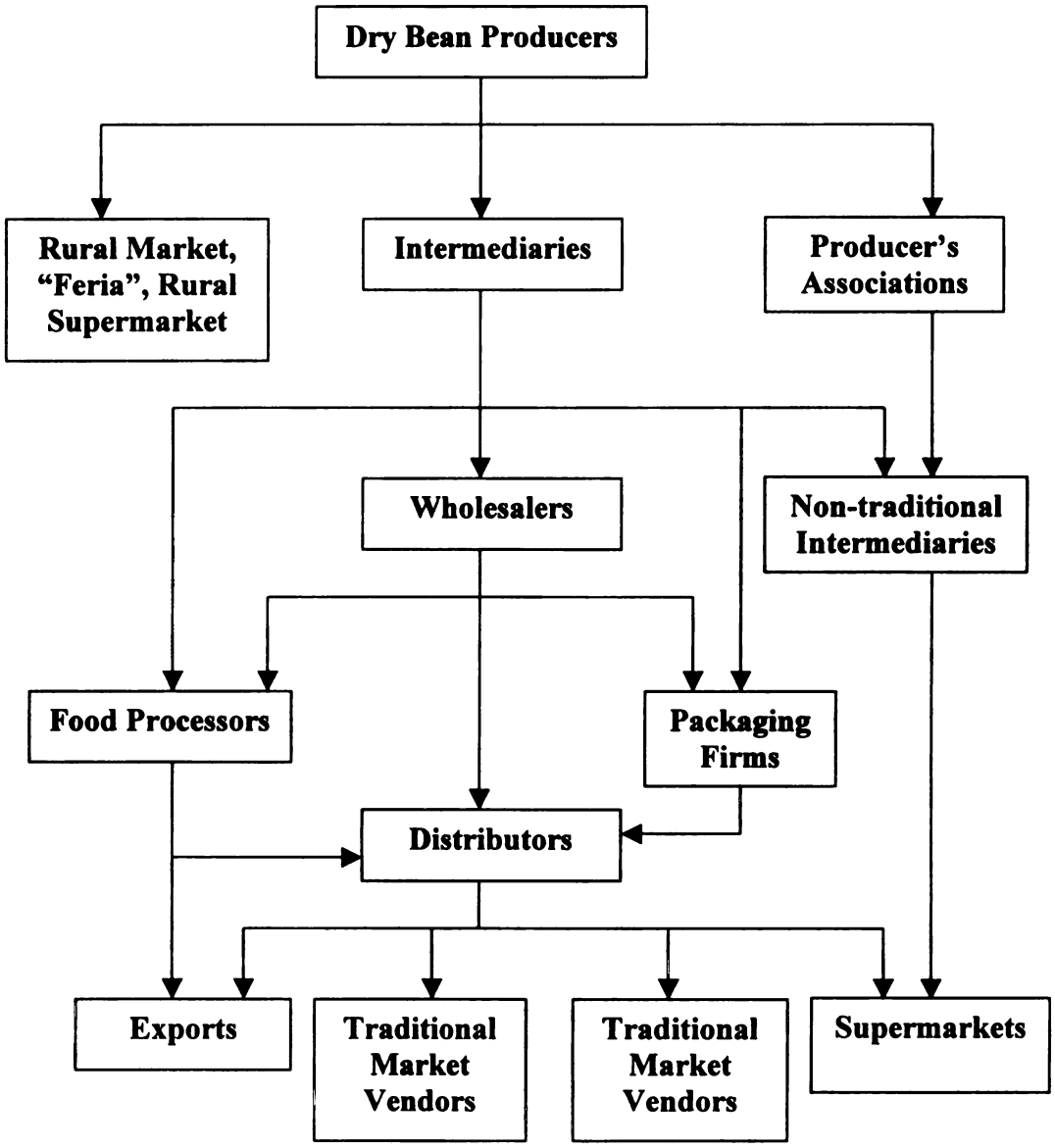
2) traditional markets (central markets);

3) small self-service stores (smaller than supermarkets); and

4) Supermarkets, either independent stores or chains.

In the past, consumers largely purchased beans from traditional markets or small full-service stores. However, small self-service stores and supermarkets are becoming an increasingly important players in the bean market.

Figure 2.7 Dry Bean Marketing Channel, Central America.



Source: Field research, July 2002[19]

[19] This diagram is based on previous works by Estrada-Valle for Guatemala, Martel for Honduras, information presented at the Conference on Regional Commercialization of Agricultural Products in El Salvador, and confirmed by field work carried for this study.
Espinoza, N. 1999, 'Informe del Taller. Conclusion Etapa I', in *Estudio Regional sobre Comercializacion de Productos Agricolas en America Central*, Proyecto Lempira Sur. GCP/021/NET/ HON, San Salvador, El Salvador.).

2.5.1 Intermediaries

Intermediaries can be classify into three groups: a) the traditional intermediary, who buys beans from producers and then sell them to wholesalers or processors, b) the non-traditional intermediary (Alvarado *et al.*, 2002), characterized by their commitment to satisfy the demand of supermarkets chains or other big retailers, and who are linked to supermarket chains, and c) the broker, who works directly with the commodity exchange market.

Traditional intermediaries play a key role in marketing beans. First, they are the main supply source for processors and packers. According to key informants, the intermediary enters isolated areas to gather production, and has facilities to storage production. Some intermediaries have their own retail store where they provide producers with inputs (*e.g.*, seed, herbicides). In some situations, they provide financial assistance to producers when they are not able to get credit from the banking system, and cash advance for bean production in these countries. However, intermediaries are not always reliable in term of quality delivered (*e.g.*, clean, homogenous product). Generally, the traditional intermediary does not require the farmer to grade or clean the product. This is an advantage to the trader, since it allows him to pay the farmer a lower price. However, intermediaries grade beans before selling to processors and packers, which allow them to obtain better prices.

The non-traditional intermediary is represented by the procurement office of either supermarket chains or big processing firms. These units, typically a division of

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Espinoza, N. 1999, 'Informe del Taller. Conclusion Etapa I', in *Estudio Regional sobre Comercializacion de Productos Agricolas en America Central*, Proyecto Lempira Sur. GCP/021/NET/ HON, San Salvador, El Salvador.).

either a national or international chain, work closely with retailers to assure a sufficient, high quality, and constant supply of beans during the year. In addition, these units are in charge of importing beans for the chain. In most cases, they establish a quality standard for the product that coincides with the standard of the retail chain.

The growing consolidation of the retail system in Central America has driven the success of these non-traditional intermediaries. Several studies with respect to the retail sector in Latin America (Reardon *et al.*, 2002) and Costa Rica (Alvarado *et al,* 2002), suggest that this new way of marketing bean may dominate the market in the near future. While the consolidation of supermarket chains has been mostly observed in urban areas, in rural Central America, where 20 to 35% of food sales are controlled by supermarkets (Vorley *et al.*, 2002), these supermarkets are mainly independent stores owned by traditional intermediaries.

2.5.2 Wholesalers

Wholesalers buy production from traditional intermediaries and distribute beans to smaller stores, or other distributors in the central market. Traditional wholesaler sell beans by kilo or pound, sometimes without prior cleaning or grading. However, some wholesalers add value to beans by cleaning, grading and bagging the product to get better prices from their buyers.

Among the wholesalers, the non-traditional intermediaries are playing an increasingly important role, since non-traditional intermediaries are the wholesalers for supermarkets and other retail stores. On behalf of the supermarket, they procure beans directly from farmers, farmers associations (*e.g.*, *Centro Agricola Cantonales* in Costa

Rica) or other intermediaries, and distribute beans to supermarkets or other smaller retailers.

Major supermarket managers in Central American capitals confirmed that with respect to bean and basic grains, the tendency is to engage in business with non-traditional intermediaries. During the field phase of this research, supermarket managers estimated that supermarkets obtained about one-half of packed beans from traditional wholesalers, and one-half from the procurement office of the supermarket.

2.5.3 Bean Packers

In urban areas, bean packers purchase beans from intermediaries and clean, grade, pack, and redistribute to supermarkets, market vendors, small stores (*e.g.*, pulperias) and sometimes to hotel and restaurants. Increasingly, packers are bagging beans for supermarkets chains, which tend to sell their own private label.

According to manager of packaging firm interviewed, the growing consolidation of retailers has affected them in several ways. First, supermarkets are becoming important buyers in the food system. This characteristic gives them power to decide payment terms (*e.g.*, it takes between 30 to 45 days for a packer to get paid by a supermarket). Second, since packers do not contract with retailers, if the supermarket does not sell their product, they have the right to remove bean products from the shelf and charge the cost to the packer. Third, the cost of entry to sell beans in supermarkets is high. Supermarkets require vendors to pay a fee to secure shelf space, expect them to promote their bean products, and supermarket's payment for product supplied are often delayed. During the research, it was found that some packers interviewed were unable to sell in supermarkets,

so their only alternative was to sell bean to small stores (pulperias), to hotels and restaurants or in other cities besides the capital city.

On the other hand, there are advantages to selling to supermarkets. The volume traded is high and the cash flow is faster (*i.e.* the product moves faster in the supermarket shelf). Moreover, companies that pack for supermarkets usually sell a large volume for which they are paid a percentage commission and gain access to shelf space in the supermarket. Data collected on bean sold in major supermarkets in Central America indicated that approximately 30% of packed beans were sold as private brands and 70% were sold as commercial brands.

2.5.4 Bean Processors

In Central America, approximately 15 firms process bean into different products (*e.g.,* refried beans, powder). Of this number, 10 firms are the main processing firms and are located in Guatemala (7), followed by Costa Rica (2), and Honduras (1). The biggest processors are multinationals, which produce mainly canned beans and usually sell their products through supermarkets in Central America, although some firms export to the U.S. (Table 2.23).

While the introduction of supermarkets' private label for canned beans has affected the processing industry, since Central American consumers have a relatively strong brand preference, the relative impact of new competition has been less critical for brands already positioned and with widespread acceptance in the market (*e.g.* Naturas, or Del Monte which are highly demanded brands). Moreover, in order to maintain their

share in the market, established firms have introduced new products (*e.g.* beans with sausage, beans with vegetables) that are accepted by consumers in Central America.

Table 2.23 Bean Processors, by Country of Origin and International Link, Central America, July 2002 [a]

Processor	*Product Presentation*	*International Link*
Costa Rica		
Alimer	can	No International link
Conservas del Valle SA	can	Unilever UK/Netherlands
Industrias Sanso SA	can	No International link
El Salvador		
Grupo Coscafe	powder	No International link
Garmol	can	No International link
Industrias LYA SA	can	No International link
Guatemala		
Agroindustrias Lozano SA	can	No International link
Alisa de Guatemala	can	No International link
Alimentos Maravilla	can	Del Monte USA
Empaques Agroindustriales	can	CARHCO
Malher Sucerores y CIA	can	No International link
Empacadora Toledo	can	No International link
Empresas Integradas	can	CARHCO
Alimentos Kern de Guatemala	can	Ducal USA
Honduras		
Alimentos Natura	flexible pack	Unilever UK/Netherlands

[a] The list represent products that are produced in Central America and are sold in main supermarkets in each city capital. While it is not an exhaustive list, it includes the main locally-produced value-added products sold in these countries. In addition, supermarkets sell imported brands.

Source: Key informant interviews, July, 2002.

In contrast, the prospect for increasing sales via exports is less promising. Processors interviewed in Central America said that it is difficult to export to the U.S., Canada and Europe. Since there are already a large number of brands in the market in these countries, these branded products impose high barriers to entry for products from Central America. On the other hand, in certain places like New Jersey, Southern

California, Miami, Chicago where there is a large concentration of Hispanics and the preference for beans from Central America is strong, there exists a market niche to sell processed bean products (Batres-Marquez *et al.*, 2001)

According to processors interviewed, the main obstacle to increasing sales in the Central American market is the consumers' preferences. Central Americans do not usually buy canned or processed bean and these products are more expensive that bagged beans[20]. However, changes in demographic (*e.g.*, working women have less time for cooking), increased income, and economies of scale of big processing firms (*i.e.*, reduction of prices) will (in the long run) increase the demand for processed bean products.

2.5.5 Supermarkets

In Central America, consumers have traditionally bought dry beans at central markets and at "pulperias". However, since the mid-1990s the supermarkets' share in the food retail system has grown rapidly, as supermarkets have focused on consolidating their supply chain and they developing ways to use information about consumers (*e.g.* quality characteristics of beans) to identify strategies for marketing bean products and to increase their market power.

Reardon *et al.* reported that supermarkets' share of the retail food sales ranges from 75% in Costa Rica, 37% in El Salvador, 35% in Guatemala, 42% in Honduras, and 15-20% in Nicaragua (Reardon *et al.*, 2002). While this study did not specifically analyze bean sales, it is likely that with the raise of supermarkets in Central America, the way

[20] Chapter 3, Table 3.2 and 3.3

consumers buy beans, and how supermarkets procure their supplies is changing and will continue to change in the future.

In order to increase sales to middle and lower income consumers, supermarkets recognize the necessity to reduce the cost of some basic foods for these consumers, who account for the majority of the region's population. In order to do so, supermarkets have introduced their own "private labels". This strategy has not only helped supermarkets to increase the number of consumers buying their product, but has also differentiated supermarkets from their closer competitors and introduced a new way to interact with their suppliers (Alvarado *et al.*, 2002).

According to Alvarado, the advantage of having a private label is to reduce marketing and advertising costs, which can lower the price of beans, and increase sales. According to the data collected from the major supermarkets in each capital city, the price of private labels are 5% to 12% cheaper than commercial brands. Given that beans are a staple and thus, a very price sensitive product, this represents a big differential.

Furthermore, when many value-added firms (*e.g.*, packers and processors) saw a decline in the sales of their own brands, they become "*maquiladoras*"[21] of the supermarkets--since the volume that big retailers sell in their stores is an incentive to engage in business with these chains. For example, in Honduras, one bean packer commented that before contracting to pack for a major supermarket chain, his firm would sell around 4.6 mt per month, but this volume increased to 104 mt a month in four years.

[21] *Maquiladora* comes from the Spanish word *maquilar* meaning to perform a task for another company.

2.5.2 Future Evolution of the Bean Market Channel

In Central America, intermediaries and wholesalers are still major players in the marketing channel for beans, and many consumers still purchase beans in the central market and small store. However, the rapidly growth and concentration in the retail system are influencing how beans are sold and where consumers buy beans.

In 1999, Gereffi defined the commodity chain framework as the range of activities that involves the design, production and marketing of a product. It distinguishes two distinct types of economic networks: "producer-driven" and "buyer-driven" commodity chains (Gereffi, 1999). In 2002, Sheldon *et al.* adapted that theory to the food marketing channel.

Producer-driven chains are those in which large, usually trans-national, manufacturers play the central roles in coordinating production networks. The buyer-driven chains are those in which large retailers increasingly play a leading part in the marketing chain. An important characteristic of the buyer-driven chain is the retailer's understanding of consumer's demand, in terms of quality and prices. The management of these firms is also distinguished by the control that retailers have at the point of marketing and their coordination with suppliers up-stream to source commodities (Gereffi, 1999). This framework principally identifies the existence of a vertically-relationship among actors in the marketing channel, which implies that traditional access to commodity markets will increasingly be more contractual and thus, less accessible to small-scale suppliers. Also, the commodity chain framework suggests that changes in relative prices will not necessarily solve the access problem for small bean producers.

Basically, the commodity chain framework provides insights to what should be expected to occur in the medium or short run whit respect to some marketing channels, and especially the food marketing channel. In the future, food traders and producers will need to develop both formal and informal contacts with firms in the vertical chain in order to gain access to the retail stage of the food chain. Moreover, they will need to identify the quality requirements for meeting the demands of retail buyers (Sheldon *et al.*, 2003).

2.6 Regional Trend in Dry Beans Imports and Exports

2.6.1 Dry Bean Imports

2.6.1.1 Volume of Bean Imports

In recent years, the region has become increasingly dependent on bean imports to meet consumer demands. During 1994-1996 to 1999-2001 period, the region's annual rate of growth in imports averaged 18% per annun, with a total increase of 127% (Table 2.24). In terms of volume, the region's imports increased from an annual average of 22,293 mt to 50,586 mt. However, the import trend varied greatly from country-to-country. During the period, Guatemala's bean imports increased at an annual rate of 28%, followed by Costa Rica (24%), Nicaragua (16%), El Salvador (15%) and Honduras (9%).

Table 2.24 Trends in Dry Bean Imports, Central America 1994-2001.

Country	*Annual Average* [a] [b]		*Change*		*Supply Equivalent* [c]
	1994 -1996	*1999-2001*	*Annual*	*Total*	
Costa Rica	8,786	25,372	24%	189%	61.4%
El Salvador	7,284	14,928	15%	105%	18.8%
Guatemala	1,428	4,849	28%	240%	5.5%
Honduras	1,918	2,966	9%	55%	5.9%
Nicaragua	2,877	5,953	16%	107%	4.0%
Central America	**22,293**	**50,586**	**18%**	**127%**	**11.7%**

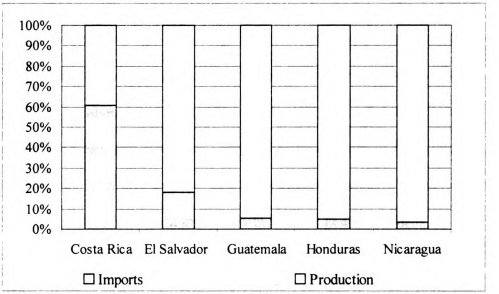
[a] Metric tons.
[b] The data that Central American countries provide to SEC do not include trade generated by assembler activities (*i.e.*, bean imports in sacks rather than containers) because such data were not reported by Guatemala, Honduras and Nicaragua.
[c] Imports as a proportion of total bean supply in the period 1999-2001.
Source: Based on information from (SIECA, 2003)

Similarly, bean imports as a share of national supplied varied among countries. In the period 1999-2001, in Costa Rica bean imports represented 61.4% of internal bean supply[22], followed by El Salvador (18.8%), Guatemala (5.5%), Honduras (5.9%) and Nicaragua (4%) (Figure 2.9).

In the same period, Costa Rica accounted for almost one-half (48%) of the region's total annual imports, followed by El Salvador (27%), Nicaragua (11%), Guatemala (9%), and Honduras (5%) (Figure 2.10). Key informants reported that natural limitations (*e.g.*, poor soil quality for growing beans in Costa Rica, shortage of land in El Salvador) contributed to making Costa Rica and El Salvador net importers. In contrast, while Honduras and Nicaragua are the main bean producers in the region, due to weather conditions (*e.g.*, hurricane Mitch in 1998, and severe drought in 2000) shortage in production has forced them to periodically import.

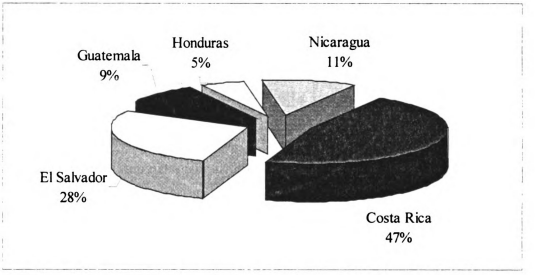
[22] The internal bean supply for the period 1999-2001was calculated using the total production plus imports minus exports.

Figure 2.9 Average Share of Imports in Bean Supply, Central America, 1999-2001.



Source: Based on information from (SIECA, 2003)

Figure 2.10 Share of Annual Bean Imports, Central America, 1999-2001.



Source: Based on information from (SIECA, 2003)

2.6.1.2 Source of Bean Imports

The source of bean imports primarily depends on the availability of the desired market class and the price. In 2001, Costa Rica sourced beans from Argentina (39%), Nicaragua (22%), Guatemala (19%),and the U.S. (13%); El Salvador sourced mainly from Nicaragua (62%), and Honduras (32%); Guatemala sourced from the U.S. (59%) and Canada (39%); Honduras sourced 99% of its imports primarily from Nicaragua; and Nicaragua sourced 94% of its bean imports from the U.S. (Table 2.25).

Table 2.25 Source of Beans by Country of Origin, Central America, 2001 [a]

Country of Origin	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
Costa Rica	N/A	1.9%	--	<1%	--
Guatemala	18.8%	4.6%	N/A	--	--
Honduras	1.5%	31.5%	--	N/A	--
Nicaragua	22.2%	61.6%	--	98.8%	N/A
Argentina	38.8%	--	2.3%	--	2.6%
Canada	5.9%	--	38.8%	<1%	3.8%
United States	12.9%	<1%	58.9%	<1%	93.6%

[a] Percentage of total import volume for year 2001.
Source: Based on data from (SIECA, 2003)

Most Central American countries tend to source from within the region. However, the availability of cheaper beans from countries like Argentina and the U.S., has influenced importers growing preference to source from these countries. Typically, trading with the U.S., Argentina, and Canada begins in April, when the region's harvest stock reaches its lowest level, and when local prices are highest, and continues until approximately December each year[23].

[23] Argentina's main harvest season is April-July, while the harvest season in the U.S. and Canada is during September-October.

In order to reduce the rate of growth in imports from outside the region, Central American countries have imposed import tariffs on beans (*i.e.*, average 30% in the region) sourced from outside the region. However, key informants reported that this measure has not accomplished its objective of reducing imports and promoting production in the region. According to importers interviewed, beans are mainly imported when there are shortages in production in the region. Thus, the tariff affects mainly consumers, who have to pay more for bean grain and value-added products.

2.6.2 Dry Bean Exports

2.6.2.1 Volume of Dry Bean Exports

Despite annual deficit in the bean supply, Central American countries export within the region and to niche markets in developed countries (CORECA, 1999b). During the period 1994-1996, the region exported 6,293 mt annually. Over the period 1994-96 to 1999-2001 Central America's bean exports decreased at an average annual rate of -0.5%, representing a total change of -3% (6,138 mt). However, trends in exports varied greatly by country. During the same period, Honduras and Guatemala showed the greatest increased in bean exports at an annual rate of 54% and 52%, respectively. In contrast, Costa Rica decreased its annual export by -46%, representing a total change of -2,038% (Table 2.26). By the end of the decade, the region's main exporters were Nicaragua (42%) and Honduras (35%). However, Guatemala (11%), El Salvador (10%), and Costa Rica (2%)[24] also exported limited quantities of beans (Figure 2.11).

[24] According to key informants, Costa Rica re-exports its excess supply from imports to countries in the region.

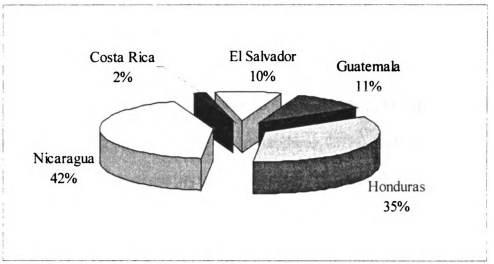
Table 2.26 Dry Bean Exports, Central America, 1994-2001

Country	Average[a]		Change		Share of Supply
	1994 -1996	1999-2001	Annual	Total	
Costa Rica	10,389	486	-46%	-2038%	1.18%
El Salvador	1,971	2,953	8%	33%	3.71%
Guatemala	395	3,239	52%	88%	3.64%
Honduras	1,264	10,914	54%	88%	21.78%
Nicaragua	17,445	13,099	-6%	-33%	8.72%
Central America	**6,293**	**6,138**	**-0.5%**	**-3%**	**1.42%**

[a] in Metric Tons.

Source: Based on data from (SIECA, 2003)

Figure 2.11 Average Share of Bean Exports, Central America, 1999-2001



Source: Based on data from (SIECA, 2003)

Key informants reported that many times exports and imports to neighboring countries are often not reported. Hence, these data are not included in official statistics database. This information was confirmed during the field work by visiting Guatemala's central market, where traders were selling beans from southern Mexico (*e.g.*, Chiapas). Also in Honduras, key informants reported that some producers (*e.g.*, the department of Lempira) sell production directly to El Salvador without going through customs. This

problem of non-recorded trade may explain the apparent inconsistency between production and import/export data. For example, Honduras and Nicaragua export data do not coincide with production patterns. During the period when Honduras recorded a growing export trend, production decreased by -21%[25]. On the other hand, in Nicaragua, data indicated an increasing trends in production, but a decreasing export trend (Table 2.26).

2.6.2.2 Destination of Bean Exports

In 2001, the main export destination were countries within the region. In 2001, Costa Rica exported mainly to El Salvador (67%) and the U.S (33%); Guatemala to Costa Rica (74%) and El Salvador (26%); Honduras exported mainly to El Salvador (97%); and Nicaragua exported to El Salvador (48%), Honduras (27%) and Costa Rica (23%). However, El Salvador's main market was the U.S (87%) (Table 2.27).

Table 2.27 Destination of Beans by Country, Central America, 2001 [a]

Country of Destination	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
Costa Rica	N/A	--	74.0%	1.4%	23.4%
El Salvador	67.5%	N/A	25.9%	96.6%	48.2%
Guatemala	--	10.5%	N/A	0.2%	--
Honduras	--	2.3%	--	N/A	27.4%
Nicaragua	--	0.5%	--	1.6%	N/A
United States	32.5%	86.6%	<1%	<1%	<1%
Canada	--	<1%	--	--	<1%

[a] Percentage of total export volume for year 2001.
Source: Based on data from (SIECA, 2003)

According to exporters interviewed, exports opportunities have increased in recent years due to the growing number of ethnic food restaurants in developed countries

[25] See Table 2.10

(*e.g.* Canada, the U.S. and Europe). For example, in the U.S., exporter's main target is the Salvadorian population, well known for having a strong preference for the small red bean grown in Central America (Batres-Marquez *et al.*, 2001). Key informants in El Salvador, Honduras and Nicaragua reported that small red beans are typically exported from Nicaragua and Honduras to El Salvador where they are packed and then shipped to the U.S. Also, in Honduras, an exporter reported having a contract to provided five containers (approximately 105 mt) a month to an American company. However, at the time of the interview the company was already struggling to fulfill the contract. According to key informants, exports remain low --equal only to 1.46% (Table 2.26) of the average annual regional production in the period 1999-2001 due to insufficient production.

CHAPTER III

COMPETITIVENESS OF BEAN SUBSECTOR IN CENTRAL AMERICA

3.1 Price Analysis

3.1.1 Variation of Bean Prices in Central America.

The objective of analyzing price variation over the year (*i.e.*, seasonality) and in a period of time (*i.e.*, trend) is to identify regularities in price behavior (Tomek *et al.*, 1990). Price variations observed in the region are the result of changes associated with seasonal and irregular factors (*e.g.*, natural disasters). While seasonal changes are common in bean prices, price trends are the result of factors that may be related to the competitiveness of agricultural products.

3.1.2 Bean Prices

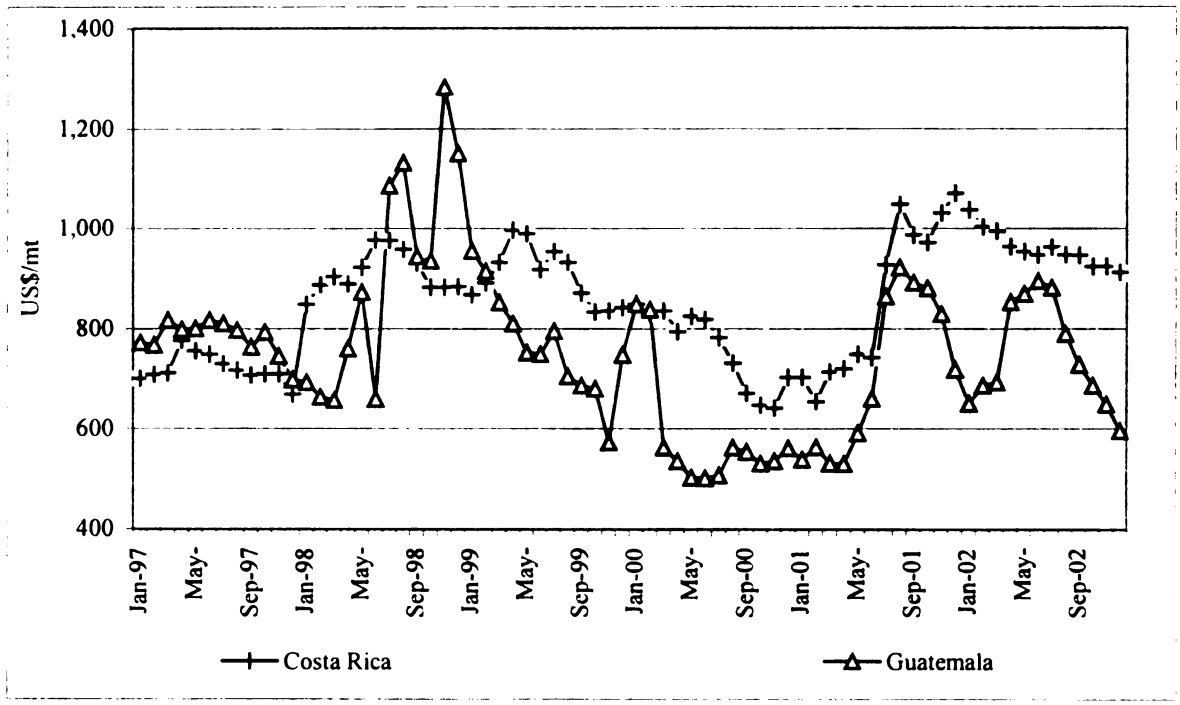
In order to describe the trend of bean prices, nominal wholesale prices in U.S. dollars were compared[26]. In Costa Rica and Guatemala, the relevant prices are the wholesale prices of black beans, and in Nicaragua, Honduras and El Salvador the relevant prices are the small red bean wholesale prices. This analysis did not require deflating prices, since the prices were converted to a unique currency (*i.e.*, the U.S. dollar) and the objective of the analysis is to compare competitiveness among these countries.

During the six-year period (1997-2002), wholesale prices have varied by country and market class. While bean prices in Guatemala were highly unstable, they tended to greatly decrease after 1999, showing an increase in 2001, and finally, reaching their

[26] For example, for each country the local wholesale price in July 1997 was converted to a U.S dollars price for July 1997.

lowest point again by the end of 2002. In contrast, Costa Rica showed a more linear trend in 1997, with a great increase in 1998, followed by a decreasing tendency until the first-half of 2001, and increasing rapidly by the end of 2001 (Figure 3.1). Interestingly, although Costa Rica imports a substantial share (60.7%) of total bean supply, wholesale prices have been higher than any other international competitor.

Figure 3.1 Black Bean Nominal Wholesale Prices, Costa Rica and Guatemala, 1997-2002

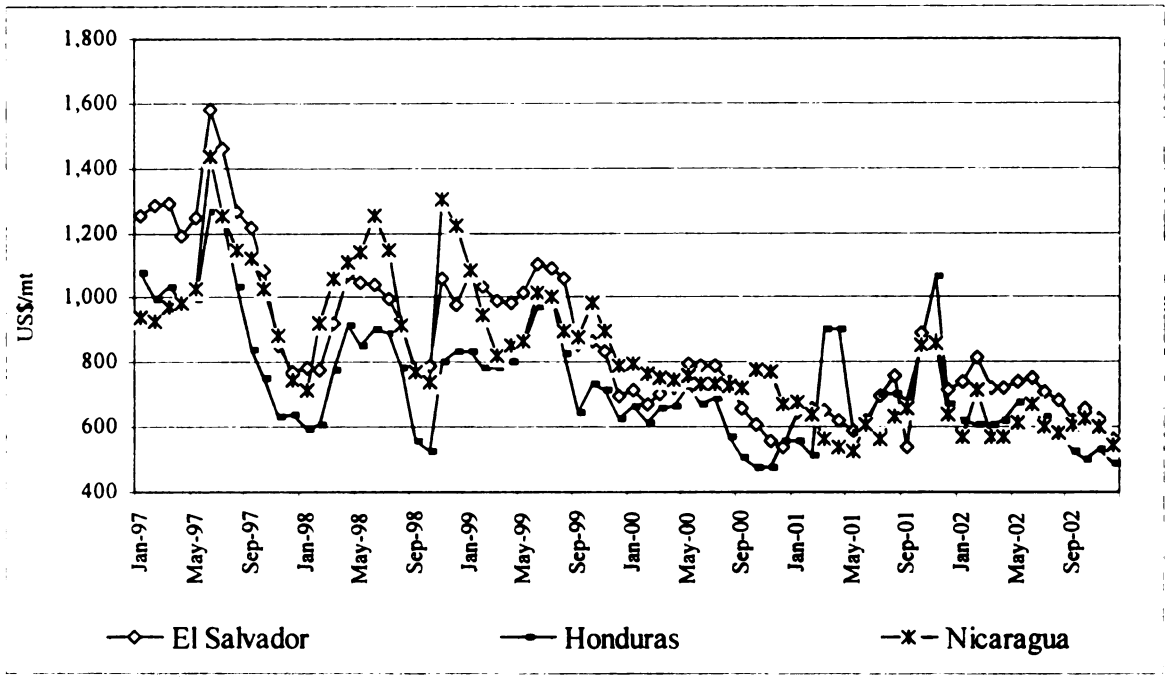


Source: Base on data from CORECA (CORECA, 2003)

In Honduras, Nicaragua, and El Salvador, red bean prices have varied greatly over the period 1997-2002. Although prices have been highly volatile, wholesale prices have tended to decline over the past five years. Much of the variation was due to natural conditions (*e.g.*, hurricane Mitch in 1998 and a severe drought in 2000) which caused a shortage in bean production and an increase of regional bean prices. Furthermore,

following these crises donations and bean imports from outside the region poured into these countries, causing a excess in supply and a decrease in prices. (Figure 3.2).

Figure 3.2 Red Bean Nominal Wholesale Prices, El Salvador, Honduras, and Nicaragua, 1997-2002



Source: Base on data from CORECA(CORECA, 2003)

3.1.3 Price Seasonality.

The price of agricultural products are affected by seasonality in production (*e.g.*, climatic seasonality, due to weather factors and the biological growth process of plants) and seasonality in demand (*e.g.*, factors such as holidays) (Tomek *et al.*, 1990). However, seasonality in demand is not a factor that causes price variation in the region because beans are consumed on a daily basis in Central America.

In each country, seasonality in production influenced the seasonal highs and lows[27]. During the period 1997-2002, in Costa Rica and Guatemala, the price reached its lowest in March, and highest in July. In contrast, in El Salvador, the seasonal low occurred in September and the seasonal high in June. In Honduras and Nicaragua, the seasonal low occurred in December, while the seasonal high was in June.

During the same period, the average seasonal low price ranged from US$/mt 826.22 in Costa Rica to US$ 626.22 mt in Honduras, and the average seasonal high ranged from US$ 980.92 mt in El Salvador, to US$ 824.28 mt in Guatemala. The variation between seasonal high and low was greatest in El Salvador (28%), followed by Honduras (27%), Nicaragua (19%), Guatemala (17%), and Costa Rica (7%) (Table 3.1).

Table 3.1 Beans Price Seasonality, Central America, 1997-2002

Country	*Market Class*	*Seasonal Low*		*Seasonal High*		*Percent Variation*
		Month	*Price* [a]	*Month*	*Price* [a]	
Costa Rica	Black	March	826.22	July	890.18	7%
Guatemala	Black	March	685.69	July	824.28	17%
El Salvador	Red	December	710.50	June	980.92	28%
Honduras	Red	September	626.22	July	860.89	27%
Nicaragua	Red	December	767.16	June	952.65	19%

[a] Price in US$/mt

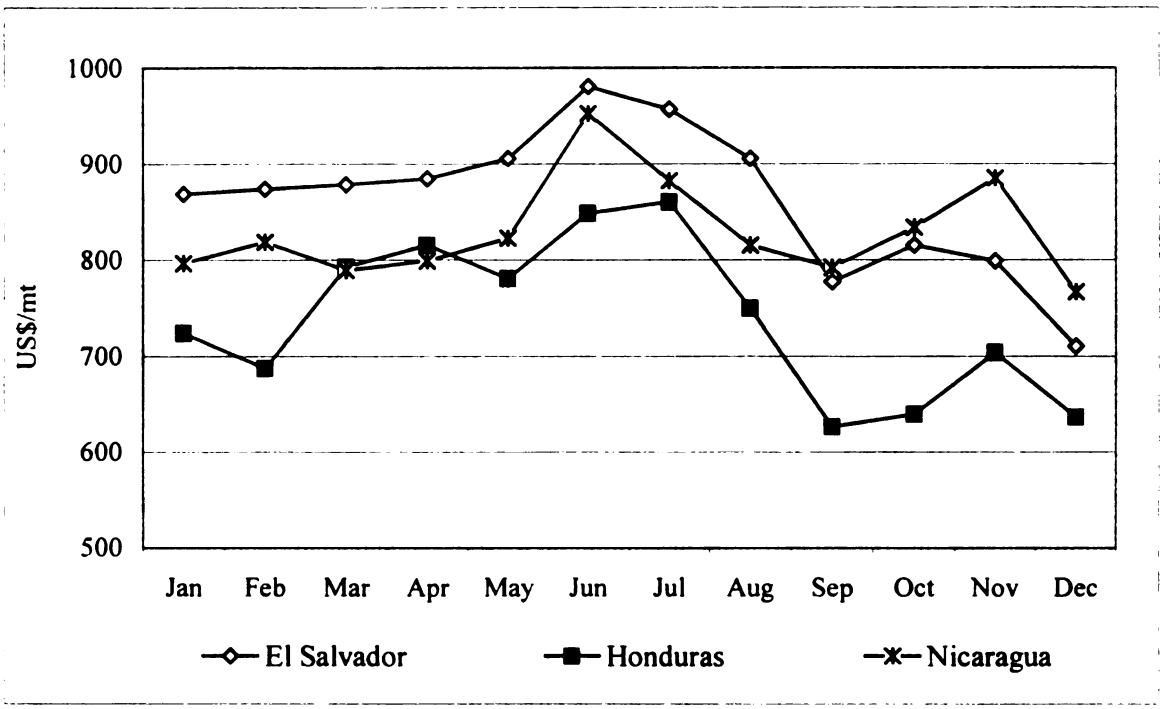
Source: Base on data from CORECA (CORECA, 2003)

The observed seasonal price pattern was due to the fact that around 80% of the regional production is concentrated between January to August (CORECA, 1999a). This seasonality creates a series of problems, mainly because of the lack of storage facilities and the cost associated with storage, which induces farmers to sell their production soon after harvest. Thus, due to the excess supply of beans in the second half of each year, prices decline quickly. As expected, red bean prices in El Salvador, Honduras and

[27] See Chapter 2 for a discussion of the seasonality in production.

Nicaragua, begin to decline after mid-year, and increase after September. The price variation is especially noticeable for red beans, presumably due to the absence of good substitutes from outside the region (Figure 3.3).

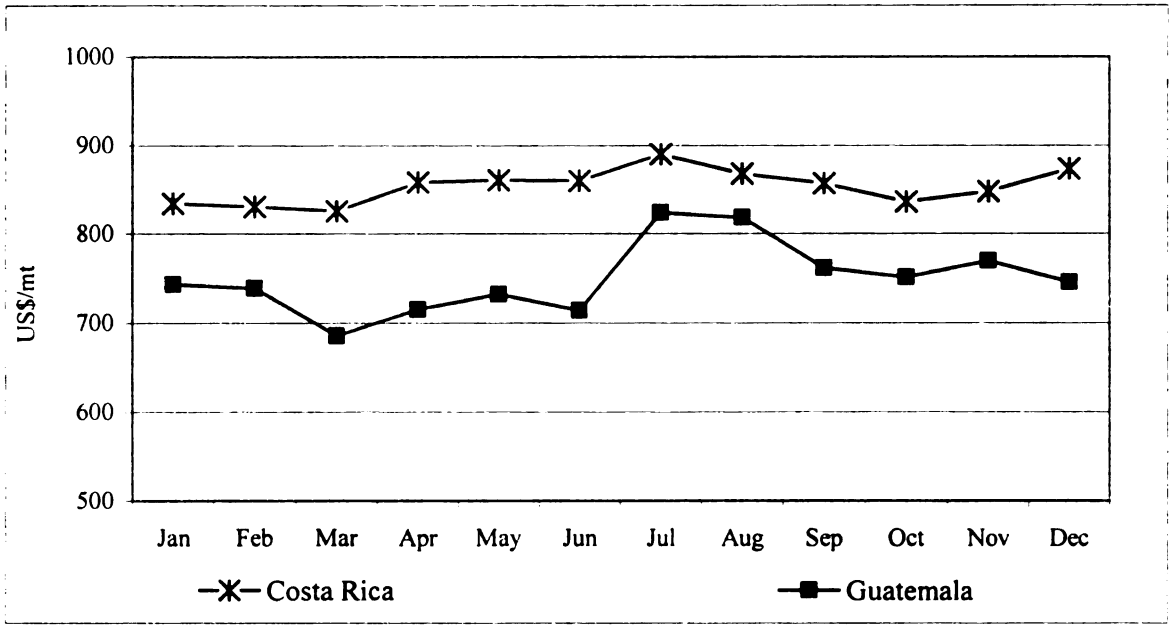
Figure 3.3 Red Beans Seasonal Price Variation, El Salvador, Honduras and Nicaragua. 1997-2002.



Source: Base on data from CORECA (CORECA, 2003)

In contrast, in Costa Rica, where the demand is mainly for black beans, good substitutes from outside the region are available, and imports account for 61.4% of total bean consumption, the price variation is less dramatic during the year. However, in Guatemala, which has the same demand characteristic as Costa Rica, but imports significantly lees quantity of beans, prices decrease from January to June, and increased from July through August, and decline from September through March (Figure 3.4).

Figure 3.4 Black Beans Seasonal Price Variation, Costa Rica and Guatemala, 1997-2002



Source: Base on data from CORECA (CORECA, 2003)

3.2.4 Marketing Margins

The marketing chain is a sequence of stages involved in transferring a product from the farm to the consumer (Shepherd, 1993). Various factors influence marketing margins. Sometimes an increase in marketing costs is believed to be due to an increase in profits by traders. However, total margins greatly depend on the length of the marketing chain and the extent to which the product is stored or processed. Also, if there is no profits in the marketing channel for an specific product, the tendency would be for the trader to abandon the product (Shepherd, 1993).

For the present analysis, marketing margins were estimated by comparing the wholesale price to the central market and retail price of bagged beans sold in major supermarkets in July, 2002. The data showed that red bean wholesale prices ranged from US$ 0.60 Kg in Nicaragua to US$ 0.94 Kg in Costa Rica. The central market price (*i.e.*,

the price of raw beans with no value added) ranged from US$ 0.72 Kg in Honduras to US$ 1.11 Kg in Guatemala. Retail prices, which mainly reflects value-added products (*e.g.*, bagged beans) ranged from US$ 0.88 Kg in Nicaragua to US$ 1.68 Kg in Guatemala (Table 3.2).

Black bean prices[28] ranged from US$ 0.96 Kg at the wholesale level, to US$ 1.07 Kg at the retail level in Costa Rica. In Guatemala, the price ranged from US$ 0.88 at the wholesale level to US$ 1.31 Kg at the retail level (Table 3.3).

Table 3.2 Red Beans Marketing Margins, Central America, July, 2002

Country	Wholesale [a]	Central Market [a]		Retail [b,c]		Index %
	Price US$/Kg	Price US$/Kg	Index %	Price US$/Kg	Index %	
Costa Rica	0.94	0.99	5.3%	1.07	8.8%	13.8%
El Salvador	0.71	0.83	16.9%	1.18	42.1%	66.1%
Guatemala	0.87	1.11	27.5%	1.68	51.3%	93.1%
Honduras	0.63	0.72	14.2%	1.39	93.0%	120.6%
Nicaragua	0.60	0.74	23.3%	0.88	18.9%	46.6%

Source:
[a] Based on prices from CORECA' Price Information System (CORECA, 2003).
[b] Retail bean data form field research.
[c] Prices of bagged beans in major supermarkets in city capitals

Table 3.3 Black Beans Marketing Margins, Central America, July, 2002

Country	Wholesale [a]	Central Market [a]		Retail [b,c]		Index %
	Price US$/Kg	Price US$/Kg	Index %	Price US$/Kg	Index %	
Costa Rica	0.96	1.08	12.5%	1.07	-0.9%	11.4%
Guatemala	0.88	1.08	22.7%	1.31	21.2%	48.8%

Source:
[a] Based on prices from CORECA' Price Information System (CORECA, 2003).
[b] Retail bean data form field research.
[c] Prices of bagged beans in major supermarkets in city capitals

[28] Black beans prices were only available for Costa Rica and Guatemala only

With the exception of Nicaragua, the greatest price difference (percentage) was observed between the wholesale and the retail price (*i.e.*, value-added price). In Costa Rica, where beans are sold mainly in supermarkets and the concentration of supermarkets is higher than in any other Central American country, the markup for red beans was 8.8% and supermarkets sold black beans at a lower price than the central market (-0.9%). In Guatemala, the markup for red beans was 51.3%, and 21.2% for black beans. (Tables 3.2 and 3.4).

In the case of El Salvador, Honduras and Nicaragua, the lack of clear standards, especially with respect to color of bean and size, and the fact that the food retail system is not as develop as in other Central American countries, may be reflected in prices[29]. The biggest difference in price was observed in Honduras, where the difference between the central market price and the retail sector price was 93%, and between central market and retail 120.6%. This situation may reflect the fact that the marketing channel is not well coordinated, and that the retail sector is not as well developed in Honduras than in the rest of Central America. An exceptional case is presented in Nicaragua--with a small retail sector and but rapidly growing--the index between wholesale price and central market price, and between the wholesale price and the retail price were 23.3% and 46.6% respectively. In contrast, in El Salvador the index between wholesale prices and central market (16.9%), and between wholesale price and retail prices (66.1%) were considerably lower than in the Honduras. However, higher than Nicaragua. (Table 3.2).

[29] The retail price represents the average of the red bean and light red bean. However, according to the CORECA database, the red bean price is for 'light red and small size beans".

3.2 International Prices

The international prices most relevant for assessing the competitiveness of black and red beans in Central America are Argentinean and U.S. prices. While there are good substitute for black beans outside the region, no country outside the region produces a good substitutes for small red bean (CORECA, 1999a). Although consumer preference reduce the demand for imported red beans, these countries still import since local production is insufficient to satisfy local demand.

Central American countries apply different tariff on bean imports from outside the region, ranging from 20% to 30%. In order to analyze the impact of this tariff, prices of bean from the U.S. and Argentina were compared with the bean price in the region's major producing countries--Guatemala for black beans, and Honduras and Nicaragua for red beans.

For black bean in Guatemala, over the period 1997-2002, competitiveness was assessed by comparing the monthly wholesale price of locally-produced beans to the U.S. dealer price (*i.e.*, F.O.B price), including transport costs to Central America, and excluding and including tariff.

Transport costs were estimated using 2002 data provided by the Cooperative Elevator Co. Pigeon, Michigan (Table 3.4). While the cooperative was only able to provide estimated costs for export to Costa Rica, these data are used as a proxy for export costs to Guatemala since ocean transport does not vary greatly between Central American destinations. Transport costs (including insurance) total US$ 79.60 mt (Table 3.4). These costs were added to the monthly U.S. bean price to estimate the cost of exporting black

beans to Guatemala City. In addition, a 30% tariff is added to these costs to estimate the total cost of beans imported from Michigan.

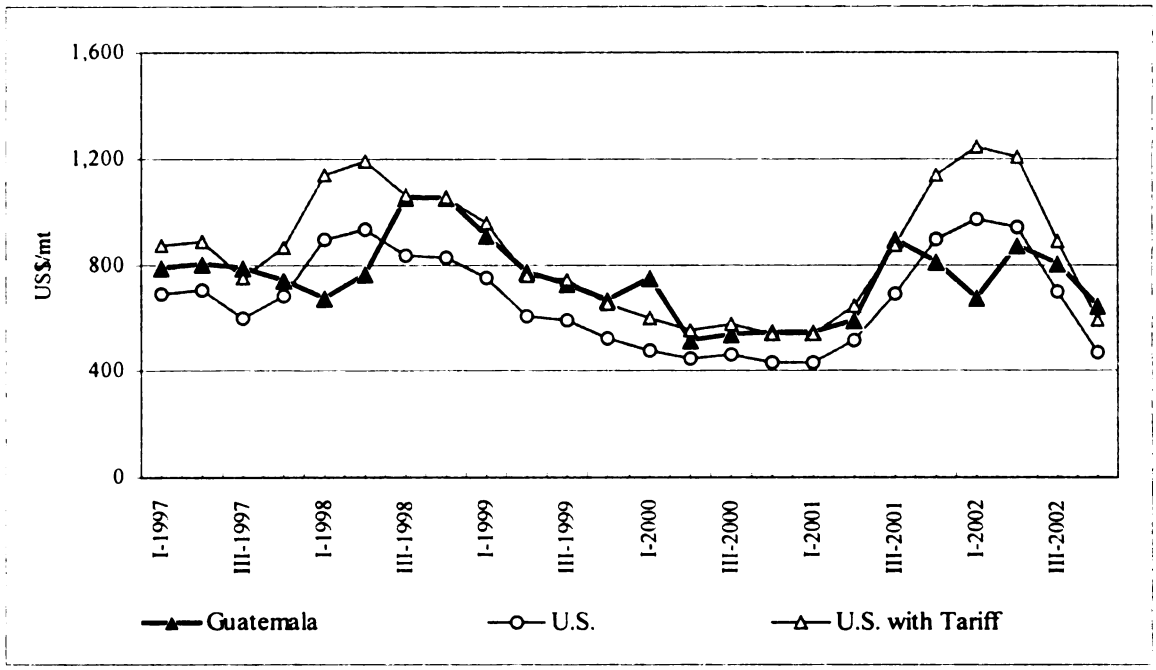
Table 3.4 Estimated Cost of Importing Black Beans from Michigan to Guatemala, July to September 2002

Description of Costs	With Tariff (US$/mt)
Bean Cost	619.06
Freight, insurance and other costs	79.60
Tariff	185.70
Total Cost	**884.36**

Source: Based on data from (Letrimex, 2003); (Air Parcel Express, 2003) and (Eisengruber, 2003)

During the period 1997-2002, The competitiveness of Guatemalan prices varied compared to U.S prices (Figure 3.5). When including the tariff, from the third quarter of 1998 to the third quarter of 2001, U.S prices where similar to Guatemalan prices. However, after the third quarter of 2001, U.S prices where significantly higher (with tariffs). In contrast, when excluding the tariff, during the six-year period, U.S prices were significantly lower than Guatemalan prices.

Figure 3.5 Average Quarterly Black Bean Dealer Prices in Guatemala and the U.S. with and without Tariffs, 1997-2002



Source: Based on data from CORECA (CORECA, 2003) and USDA (USDA, 2003)

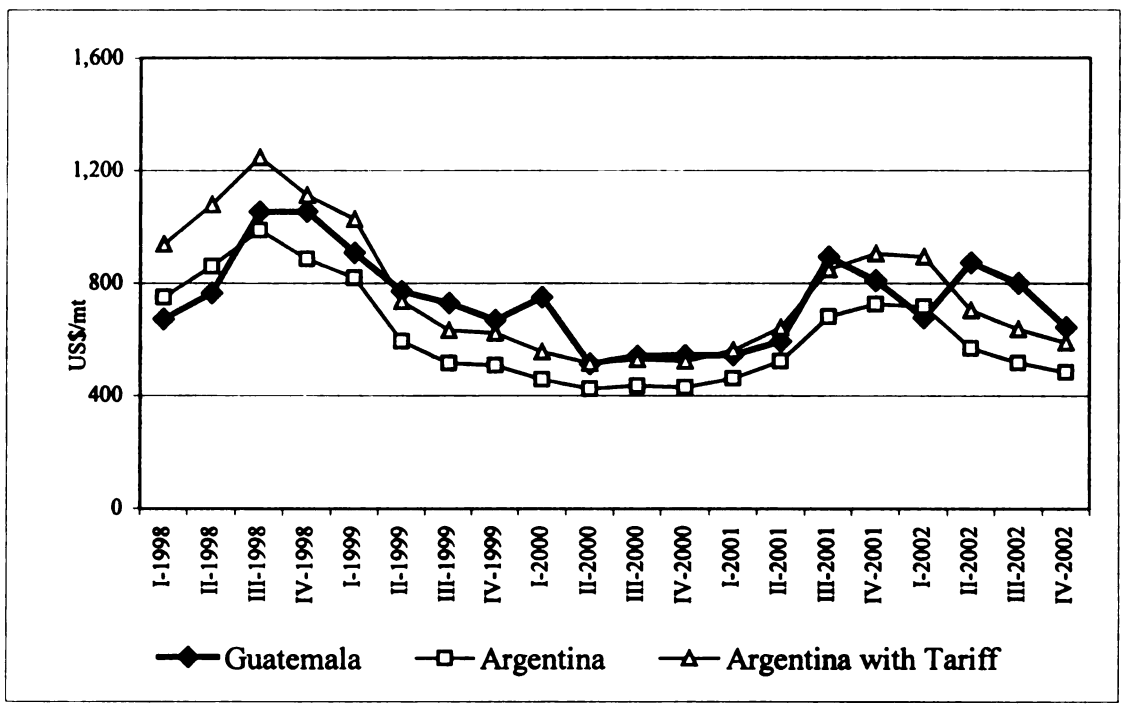
A more appropriate price to assessing the competitiveness of Guatemalan beans are the Argentinean price. In the third quarter of 2002, Central American importers could source Argentinean black beans at a substantially lower price than Michigan beans. Argentinean beans (F.O.B) were priced at US$ 393.33 mt (Table 3.5), compared to US$ 800.25 mt for Guatemalan beans, and US$ 619.06 mt for Michigan beans. In recent years, the Argentinean bean price has been greatly affected by the devaluation of the peso against the dollar. Thus, current competitiveness of beans from Argentina is partly due to the volatility of the peso, rather than farm productivity (Figure 3.6)

Table 3.5 Estimated Cost of Importing Black Beans from Argentina to Guatemala, July to September, 2002

Description of Costs	With Tariff (US$/mt)
Bean Cost	393.33
Freight, insurance and other costs	124.25
Tariff	118.00
Total Cost	**635.58**

Source: Base on information provided by Alcomex S.A, Argentina (Louzano, 2003)

Figure 3.6 Average Quarterly Black Bean Dealer Prices in Guatemala and Argentina, with and without Tariffs, 1997-2002



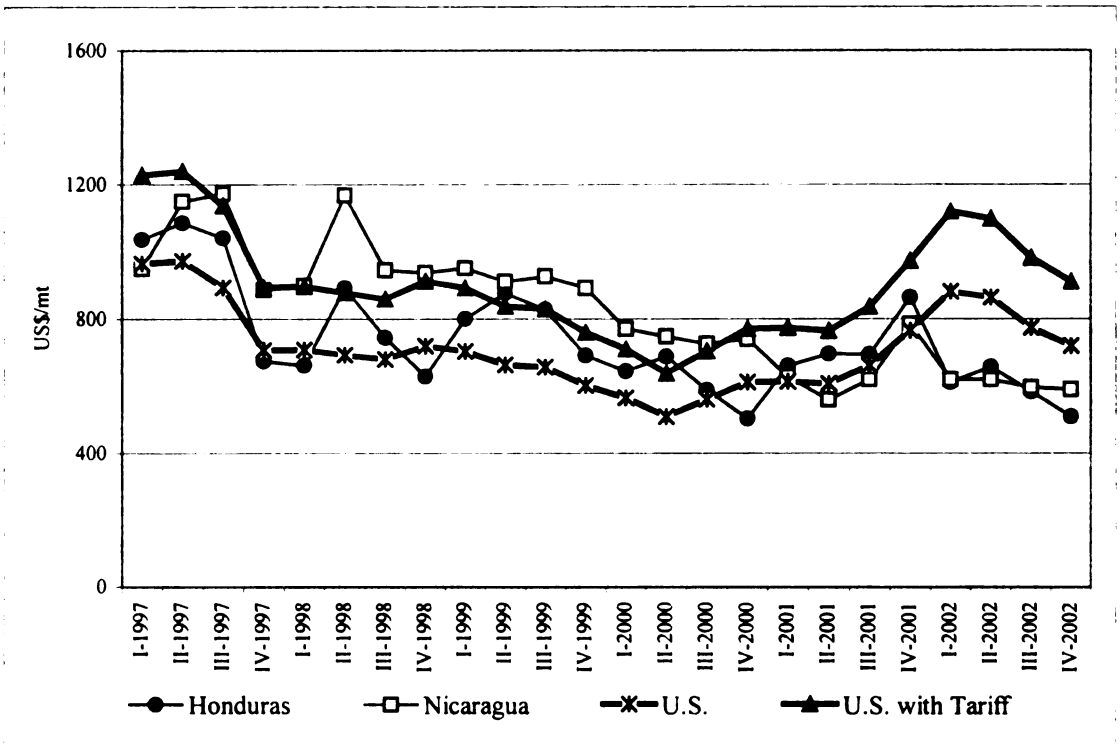
Source: Base on data from CORECA(CORECA, 2003) and Ministry of Agriculture, Argentina (Secretaria de Agricultura, 2003)

For red beans in Honduras and Nicaragua, competitiveness was assessed by comparing the monthly wholesale price of locally-produced beans to the U.S price of small red beans[30]. During the period 1997-2002, bean prices were compared excluding and including tariff. Transportation costs and tariff rate were assumed to be the same as in the black bean analysis, which were used as a proxy for export costs to Nicaragua and Honduras.

For Nicaragua, since the second quarter of 1997 until approximately the third quarter of 2000, Nicaraguan prices were higher than U.S. prices with the tariff. However, after 2000 prices in Nicaragua declined to substantially below the U.S. prices. For Honduras, relative prices were variable between the second quarter of 1998 until the first quarter of 2000. However, after 2000, bean prices in Honduras were lower, compared to the U.S. prices with tariffs (Figure 3.6). Without the tariffs Honduran bean prices were mostly below U.S. prices during the period 1997 to 2002.

[30] While U.S. red beans are not perfect substitutes for Central American small red beans, this is the market class which is most similar to Central America small reds.

Figure 3.7 Average Quarterly Small Red Bean Dealer Prices in Honduras, Nicaragua and Argentina, with and without Tariffs, 1997-2002



Source: Base on data from CORECA (CORECA, 2003) and USDA (USDA, 2003)

The fact that Central American countries have maintained tariff on bean imports from outside the region have made them somewhat competitive at the regional level. However, Central American countries greatly depends on bean imports, which in seasons of shortage in production affects prices that consumers have to pay for bean products.

3.3 Trading in Central America

3.3.1 Trade Framework in Central America

Both international and regional agreements regulate agricultural trade in Central America. Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua have been

members of the World Trade Organization (WTO,) since 1995. With respect to the agricultural sector, two WTO treaties apply to regional and inter-regional trading: a) *The General Agreement on Agriculture*, and b) *the Sanitary and Phytosanitary Standards* (WTO, 1998).

The *General Agreement on Agriculture* (GAA) establishes tariff rates. However, these provisions differ among Central American countries, mainly due to differences in their agricultural structures. Therefore, the ideal of tariff uniformity has not been achieved. *Sanitary and Phytosanitary Standards* (SPS) establish the terms and definitions of the general SPS that are applied in agricultural trade. However, Central American countries have mainly utilized the SPS to establish non-tariff barrier to trade (Gonzalez-Velazquez *et al.*, 2000).

At the regional level, the 1993 Guatemala Protocol (which modified the 1960 General Integration Treaty) created the *Central American Free Trade Agreement* (CAFTA), organism that regulates trading among these countries. This protocol establishes that every member has to assure free interregional trade, institute a common external tariff and coordinate external negotiations. The technical and administrative institution that regulates trading is the Central American Regional Integration Office (SIECA) (Gonzalez-Velazquez *et al.*, 2000).

With the establishment of the Central American Office for Economic Integration (SIECA), Central American countries have sought to create a unique set of regulations to facilitate trading procedures (*e.g.*, import/export licenses). However, as mentioned previously, each country has its own agricultural legislation which establishes country-specific requirements for import and export. In some countries, the existence of two

different laws on the same matter creates confusion, inconveniences, and additional costs to exporters and importers, especially when country-specific regulations impose additional steps to get permissions to import/export or to obtain licenses (Gonzalez-Velazquez *et al.*, 2000).

Central American countries have also negotiated unilateral Free Trade Agreements (FTA). These FTAs (*e.g.*, FTA Mexico-Nicaragua, FTA El Salvador-USA) have been useful in facilitating integration with countries outside of the region. However, they have not promoted real integration of the region as a commercial block. The main problem remains that each country sought to use FTA to attract foreign investment and modernize trade system, without improving domestic conditions to achieve the desired objective[31].

3.3.2 Tariff Policy in Central America

Central America has an common external tariff known as the *Central American Tariff System* (SAC). However, each country applies SAC according to how it believes SAC will affect certain products. Tariffs usually range from 1 to 15 percent, levied on the Cost, Insurance, and Freight (CIF) value. Under the SAC, current duties are generally up to 5 percent for raw materials, 5 to 10 percent for intermediate goods, and up to 15 percent for finished goods (Underwood, 2003). However, agricultural products remain highly protected from imports from outside the region. Included in this group are beans, on which a 20% to 40% tariff is levied.

[31] For example, Nicaragua opened a quota with Mexico to provide 4,000 mt of beans from April to August. Due to the fact that Nicaragua has not been able to fulfill its commitment, Mexico may close this quota. In Guatemala, the promotion of foreign direct investment has opened firms dedicated to processing bean. However, these firms do not buy local beans.

During the period 1995-99[32], most of Central American countries imposed highly variable external tariffs on beans. For example, Costa Rica has applied an exception mechanism to cover the deficit in its supply of bean. In May 1999, when stocks were especially low, it applied the special agricultural safeguard (*Salvaguardia Especial Agricola*) (SEG) for imports of black bean, which reduced the tariff to 10%. Costa Rica typically maintains a 30% tariff during the shortage of production, which is increase to 45% during the harvest season. In Honduras, the tariff ranged from 20% in 1995, to 5% in 1996, and 10% from 1997 to 1999. During 1999, the tariff was reduced to 1% for three weeks, due to the situation after Hurricane Mitch. While Guatemala maintained a tariff of 20% during 1995, 1996, and 1997, the tariff was reduced temporarily to 0% in 1998 and 1999, due to an emergency situation in the region. In contrast, El Salvador and Nicaragua were the only countries whose bean tariff remained stable (20%) during the period 1995-1999 (CORECA, 1999a). After 1999, most of the countries in the region have maintained the same structure of tariff (20% to 30%), for imports from outside the region and 0% for imports between the five countries (SIECA, 2003). However, in May 2001 Nicaragua revised its tariffs and taxes imposed on imports, increasing tariffs on finished goods from 10 percent to 15 percent, and modifying the regular import duty (DAI) on selected agricultural and consumer products, including beans.

In addition to imposing varying tariffs from year-to-year, countries differ with respect to how tariffs are estimated. Costa Rica, El Salvador, Guatemala, and Honduras assess tariffs and taxes on the F.O.B value, whereas, in Nicaragua, tariffs and taxes are based upon a "reference price" determined by customs at the time of entry inspection. In

[32] By year 1995 all five countries had joined the WTO.

practice, the reference price is usually higher than the invoiced price (F.O.B) (Underwood, 2003).

3.3.3 Non-tariff Barriers

According to the WTO, non-tariff barriers (NTB) are technical regulations and standards, import licensing, rules for the valuation of goods at customs, preshipment inspection, checks of imports, rules of origin, and all measures that can create unnecessary obstacles to trading (WTO, 1998) In Central America, NTB are primarily administrative steps rather than technical regulations that the custom office requires importers to follow in order to obtain import permits. Because the process to obtain the permit is slow in many of these countries, these NTB are considered real barriers to regional trading.

Prior to shipment, these restrictions require certain documents or stamps from government offices that are in charge of human, animal and plant health. Meeting these requirements generally takes more than 3 days for processing, which increases exporting firm's costs, and thus, increases the final price for consumers. In many cases, sanitary and phytosanitary standards (SPS) are applied as NTB to protect national production from external competition (Gonzalez-Velazquez *et al.*, 2000).

3.3.4 Requirements for Exporting to Central American Countries

Firms wishing to export/import food products must meet a variety of requirements, which constitute transaction cost to trading. In order to import food

products (processed and raw products) into Central American countries, two types of documents are required:

a) Phytosanitary and Zoosanitary certificate, for vegetable and animal products,

b) Import license for the food industry

3.3.4.1 Sanitary and Phytosanitary Certificate

This document must be obtained from authorities in the exporting country (Table 3.6). In some countries, obtaining this certificate takes around 10 minutes[33] and it costs approximately $30 per shipment[34].

Table 3.6 National Sanitary Information Offices in Central America

Country	*Office*
Costa Rica	Ministry of Agriculture and Livestock • Center for Sanitary and Phytosanitary Information
El Salvador	Ministry of Agriculture and Livestock • Vegetable Sanitary Office
Guatemala	Ministry of Agriculture, Livestock and Food. • Office of Policy and Strategic Information, UPIE
Honduras	Agriculture Secretary • Office of Planning and Evaluation, UPEG
Nicaragua	Ministry of Foment, Industry and Commerce • Office of Technology, Normalization and Measurement

Source: (WTO, 1998)

3.3.4.2 Import License for the Food Industry

In order to import food products, the importing company must be registered as a food company and register what products it intends to import. In addition, the firm has to

[33] In some instances it can take up to 4 hours to get the SPS certificate.
[34] Price in year 2000

register in the country in which the product originates. In 2000, the cost of registration ranged from zero to $500 per document, and it was obtained in about 4 hours to 15 days. According to Gonzales-Velazques, in some extreme cases food companies have had to deal with more bureaucracy that made the process of obtaining an import license ranges from 15 minutes to 7 month (Gonzalez-Velazquez *et al.*, 2000).

3.3.4.3 Other Transactions Costs

All items for human consumption must be labeled in Spanish (Underwood, 2003). Pre-shipment inspections are not required for merchandise exports to any of the Central American countries. However, at the arriving port custom officers randomly inspect bean containers, for which importers are charged. Additional costs that exporters/importers incur (*e.g.*, trading certificates, labeling norms, packaging, patents, laboratory analysis, sample of the product, literature, hotel, food and work hours of the agents) all increases the cost of trading. Key informants reported that the cost of conforming to the existing procedures and the time require to deal with the bureaucracy of government offices represent invisible costs of trading, which are incorporated to the final price that consumers pay for imported products.

Despite the complexity and bureaucracy of custom procedures[35], Central American countries have made certain improvements. In Costa Rica many custom documentations are now processed electronically and Costa Rica has established a "one stop import and export window". In Guatemala and Nicaragua, some firms are linked

[35] For example, in Costa Rica bean containers are inspected at Limon Port (approximately 200 km from San Jose), where a sample is taken and then shipped to the capital city, San Jose. Once the sample is analyzed and the bean cargo does not have any problem, authorization is sent back to Limon Port and the shipment is released from customs.

electronically to the custom office to expedite authorization for releasing goods. In El Salvador, an electronic dispatch system links the importer to the central Customs Service, which enables the importer to present and process documents from the firm 's location (Underwood, 2003).

3.3.5 Supermarkets Requirements in Central America

The expansion of the retail system can be considered a major opportunity to sell value-added products, since supermarkets are the main seller of value-added products in Central America. However, the growing consolidation of the retail system in the region has become a threat to local bean traders, due to the requirements that sellers must meet in order to secure shelf space for their products. While these requirements are usually unwritten, they define the ways in which trading is done.

The main characteristics associated with trading with supermarkets are the presence of a distributor who facilitate the transaction, the absence of contracts, and the specific requirements of supermarkets (*e.g.*, product price, quality characteristics, promotions, brand name, and slotting fee). Supermarket managers interviewed during the field research indicated that while their stores almost always sourced value-added products from distributors, in a few cases they buy directly from the producer (*e.g.*, Naturas' products). In each country, the number of bean value-added distributors ranged from 7 to 10; and according to the stores' managers, they have been working for many years with the same distributors. However, because of transaction costs, supermarkets have tended to reduce the number of distributors to the minimum possible in order to reduce the price for consumers.

In general, although supermarkets do not contract with distributors, they negotiate deliveries with large distributors whose brand is already positioned in the market, hence demanded by consumers. Nonetheless, in the late-1990s supermarkets in Central America began to contract with bean packers to pack beans under the supermarket brand (*i.e.*, private brands). Supermarkets saw this as a way to gain more control over characteristics demanded by consumers -- the most important low prices and quality characteristics (*e.g.*, color). In fact, today some supermarket chains only sell their own private label (*e.g.*, the supermarket chain CARHCO sells only its private brand of bagged beans).

According to supermarket managers, distributors (or interested parties) who want to sell bean products in the store should consider the following requirements:

a) Price of the product: provide a competitive price for the bean product, so the supermarket can offer consumers attractive prices and earn as profit a good share of the retail price (*i.e.*, procurement price minus retail price). Another factor related to price is the turnover of the product (*i.e.*, how fast the product sell and need to be replaced) -- the lower the price, the quicker the product will sell.

b) Quality characteristics: many supermarkets in Central America have their own quality standards for dry beans[36]. In general, the main quality characteristic is the freshness of the product (*i.e.*, cooking time). Also, the product must be free of impurities (*e.g.*, clay residues, insects) and homogeneous in color. A new characteristic that has become increasingly important is whether or not the product is ready-to-use (*i.e.*, processed).

[36] For example, in 2002 the supermarket CARHCO in Nicaragua was only buying beans of the variety Esteli 90.

c) Promotions: distributors are responsible for all aspects of promotion (*e.g.*, sample promotions, special sales). Since presentation of products is important to attract consumers, the supermarkets specify standards for product presentations.

d) Brand name: consumers prefer well-known brands, which for dry bean is usually associated with quality characteristics. However, in the past five years, a large number of new brands of processed products have entered the markets, especially after the ratification of FTAs. (*e.g.*, El Salvador- the U.S. in 2001). While processed producst still account for a only small share of value-added bean products sold in supermarkets, consumers interested in processed products look for specific brands (*e.g.*, Ducal, Mahler, Del Monte). Also, famous brands typically offer several products in addition to beans (*e.g.*, the brands mentioned before have a range of products, from canned fruits to seasoning products), which increases their market visibility among consumers.

e) Slotting fee[37]: firms have to pay a fee to the supermarket in order to have their products placed on a supermarket's shelf. The fee depends on the brand and the purchasing agreement (*i.e.*, arrangement with the supplier). However, this is a standard business practice in all supermarkets.

Finally, in order for a supermarket to sell a new value-added bean product (*e.g.*, canned or bagged beans), another brand needs to leave the supermarket shelve. Due to the

[37] "The slotting fee is a one-time advance payment made by manufactures to retailers in return for accepting their product. According to retailers, this fee is charged to offset the costs associated with entering new product information into the computer system, stocking a new item in the warehouse, and placing it on the store shelve. However, in many situations it is considered as an anticompetitive trade practice"
Park, J. L. 2001, 'Supermarket product selection incovered: manufacturer promotions and the channel intermediary.', *International Food and Agribusiness Management Review*, vol. 1, no. 4, pp. 119-131.

tendency of supermarkets to reduce the number of value-added bean brands, new brands face extremely high barriers to market entry.

3.3.6 Barriers to Entering the U.S. Market

3.3.6.1 Tariff and Non-tariff Barriers

Trade barriers imposed by the U.S. are very important because the U.S. is the main market for food products from Central America[38]. In the specific case of beans, the U.S. is an attractive market, considering that Hispanics living in the U.S. have a strong preference for beans grown in Central America.

While the U.S. imposes an average tariff of 5.4% on all types of products (*e.g.*, agricultural and non-agricultural), it maintains important restriction over certain products, such us food products. The tariff regime is characterized by tariff groups and tariff escalation. The groups that have the highest tariffs are agricultural commodities and value-added food products. The average tariff is 5.9% for agricultural products, and 13.3% for processed food products[39] (Scandizzo, 2002). Tariff escalation refers to tariffs that increases with the level of value added to the product. Tariff escalation applies particularly to agriculture products, where tariffs range from 3% for raw materials, 4% for semi-processed products, and 11% for processed products (WTO, 1998).

The U.S. also applies unilateral commercial retaliation and many different forms of non-tariff barriers. Non-tariff barriers include a variety of commercial practices such

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[38] Total exports to U.S. represents 45% of the total Central American exports.
Arauz, A. 2002, ALCA y Tratados de Libre Comercio--Oportunidades y Retos para la Integracion Centroamericana., Fundacion Friedrich Ebert de Nicaragua, Managua, Nicaragua.

[39] The maximum tariff rates are 173% and 350% for agriculture and food products respectively. Currently, tariffs for beans are far below these limits, but tariffs can be increased in the event of excess U.S. supplies.

as import quotas, antidumping measures, export subsidies, licenses, labeling requirements, and technical certificates. Approximately, 75% of all agricultural products exported to the U.S. worldwide are affected by some non-tariff barrier (Scandizzo, 2002).

However, beans and bean value-added products do not face the same strict tariff and non-tariff restriction as some other products. For example, dry beans from Central America are assessed a tariff of 0.1 US$ per kilogram from May to August, and from September to April beans enter tariff free (Pastore-Vazquez, 2003). According to traders, bean products face few restrictions, except for the food safety standards imposed by the U.S. government and the food industry.

3.3.6.2 Food Laws, Regulations and Grade standards

The food rules and regulations are the main barriers that foreign firms face in order to access the U.S. market. U.S. laws with respect to food safety are very strict, especially those related to human safety. In the U.S., four federal agencies administer food laws and regulations: a) the Animal and Plant Health Inspection Center (APHIS), b) the Environment Protection Agency (EPA), c) the Food and Drug Administration (FDA), and d) the USDA Office for Food Safety and Inspection Service (FSIS)[40].

For raw beans, importers require exporters to meet quality specification on foreign matter content (*e.g.*, dirt, glass, rock, and clay-correlates), cracked seed coats, split beans, and contrasting classes (Sterns *et al.*, 2002). While foreign matter, especially cleanliness, is the most important food safety concern, cracked seed coats (*e.g.*, broken bean skins) and split beans are important factors that contribute to the integrity of the

[40]Web pages: APHIS http://www.aphis.usda.gov/ ; EPA: http://www.epa.gov/; FDA: http://www.fda.gov/; FSIS: http://www.fsis.usda.gov/

bean during the canning process. Finally, contrasting classes[41] and color are important for appearance and the color of the bean may be an indicator of flavor (*e.g.*, off-color beans may be off-flavor) (Sterns *et al.*, 2002).

Also, the US bean value-added industry applies specific grade standard for processed beans. These standards are based on four characteristics: yield (*i.e.*, amount of beans to fill a can), integrity (*i.e.*, appearance, cleanliness), flavor, and color (specific to each market class).

3.3.6.3 Supermarkets Requirements

Since the food manufacturing and retailing sector in the United States are very concentrated, its vertical structure may be characterized as an oligopoly. In 1998, four firms accounted for an average of 74% of food retail sales across the top 100 U.S. cities, and a 58% share across major U.S. regions. This concentration limits market access to the products of firms from other countries that are attempting to become more involved in activities beyond the production of raw materials. (Sheldon *et al.*, 2003)

To introduce a new product into the U.S. market, the distributor of a new product must present to the retail buyer various information that is critical to its acceptance decision[42]. First the distributor must submit a written application and a sales presentation, which must include information about the product's characteristics, suggested shelf locations, suggested retail price and profit projections, special cash allowances, product handling methods, and the planned advertising program. Additionally, samples of the

[41] Contrasting classes means the amount of a different class of dry beans in a load (e.g., the percentage of black beans allowed in a load of navy beans).
[42] The U.S. case is presented because it is the main market for Central American bean products.

new item are generally left with the retail representative (Park, 2001). Finally, if the product is accepted for sale, U.S. some retailers charge a slotting fee.

Distributor's promotional offering significantly affects the product selection decision of supermarket channel intermediaries. According to a study carry out by Park, retailers value targeted direct mail promotions, shipper displays, coupons, and in-store demonstrations and sampling. (Park, 2001). Hence, distributors seeking to improve their chances of product selection need to consider using the above described promotions in their marketing campaign.

Consequently, key informants reported that rather than targeting major supermarket chains, they export bean products to distributors who market to ethnic groceries in the U.S. cities with a high concentration of Hispanics.

3.7 Export Promotions

While some Central American governments provide exporters incentive to promote exports, these initiative have not been very aggressive due to the limited financial resources of these countries. Historically, export supports have been in the form of tax revenues reductions, export bonuses, tariff reductions for imported materials destined for export, dividend tax reductions, special exchange rates, and allowing a percentage of production to be sold locally[43] (Scandizzo, 2002). Nevertheless, some Central American governments have promoted exports, especially to the U.S.[44]. For example, in 2003 the government of El Salvador launched an initiative to link importers

[43] Production of maquilas or assemblers are destined for exports only.
[44] *Estudio de Mercado de Productos Etnicos en Estadors Unidos. Caso de Estudio: Frijol Rojo Salvadoreno.* Pastore-Vazquez, 2003. In Costa Rica, MERCANET. www.mercanet.cnp.gov

from the U.S. with food exporter in El Salvador. Drawing on a study on small red bean demand in the U.S., the goal is to promote food products among the Salvadorians living in the U.S. Also, the government of Costa Rica has established a trading office in Miami (for all type of exports/imports) to promote exports to the U.S. However, most firm managers reported that they were not using any special export promotions for exporting beans[45], and most of these managers were not aware that governmental and private firms had created web pages that provided information (free of charge) on requirements to export (or import)[46].

Despite all of the barriers to exporting food products, as discussed previously, the managers interviewed (who were exporting at the time of the field research) confirmed that there were few obstacles to exporting bean products, especially within the region, where tariff on bean products and transportation costs are low. Regarding the U.S. market, exporters agreed that the main obstacle to expanding exports is the insufficient supply of bean in the region which leads to high prices. For example, in Honduras, one exporter had a contract to export five containers of small red bean per month to the U.S. However, he reported being unable to fulfill the contract.

Finally, in order to maintain and expand trade, Central American countries still need to address some problems related to food safety regulations, such as an insufficient national-level commitment to establishing uniform regulation to protect food, and deficiencies in the laws and regulations (Lopez-Garcia, 2003). Moreover, Central American governments and firms should commit to producing beans and bean products

[45] In El Salvador and Guatemala, two canners reported using special treatment in the form of tax reduction.
[46] El Salvador: www.elsalvadortrade.com.sv/ . Costa Rica: www.infoagro.go.cr/negociaciones/exporta.htm Nicaragua: http://www.cetrex.com.ni/ Guatemala: http://www.export.com.gt/ Honduras: http://www.hondurasinfo.hn/

with better technology (*e.g.*, production with improved seed to gain better yields, quality and safety control of food in every stage of production), investing in human resource formation (*e.g.*, food scientists, business specialists), and promoting institutional development (*e.g.*, strengthen agencies that administer food laws, enforcement of contracts) (Arauz, 2002).

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

4.1 Summary

4.1.1 Beans in Central America

Beans are strategically important to assuring food security in the region. They are a basic component in the diet of Central Americans, a main source of vegetable protein for a large share of the population, and an important source of income for many small farmers. However, bean consumption patterns are changing in the region. During the period 1990-1992 to 1999-2001, per capita bean consumption increased in Costa Rica, El Salvador, and Nicaragua, but decreased in Guatemala and Honduras. By the beginning of the 2000s, per capita annual bean consumption was highest in Nicaragua (24.7 Kg), followed by El Salvador (13.5 kg), Costa Rica (11.3 kg), Honduras (9.8 kg) and Guatemala (7.2 kg).

In Central America, common beans are primarily grown by small-scale farmers, characterized by a lack of specialization and access to purchased inputs. Throughout Central America, beans are the second most important "basic grain" for human consumption. Beans account for approximately 12% of Central Americans total crop area. However, the bean area varies by country--ranging from approximately 26% of the basic grain area in Nicaragua to 10% in Costa Rica, and 9% in El Salvador, Honduras, and Guatemala.

Variations with respect to consumption pattern determine the market classes grown in each country. Nicaragua, Honduras, and El Salvador mostly produce and

consume small red bean, whereas Guatemala and Costa Rica mostly produce and consume black bean.

During 1990-2001, an estimated 501,360 ha were planted to beans. Of this total, Nicaragua accounted for the largest share (32%), followed by Guatemala (26%), Honduras (18%), El Salvador (15%), and Costa Rica (9%). The trend in area planted (1990-1992 to 1999-2001) differed among these countries. In Costa Rica, during the 1990s, the planted area declined at a rate of -8.8% annually, which represents a -56% decline over the decade. Similarly, in Honduras, the planted area declined by -2.3% annually (-19% over the decade) and in Guatemala by -0.9% annually (-8% over the decade). In contrast, Nicaragua has greatly increase its planted area since 1990, especially after 1998. Increasing at a rate of 8.7% annually, the planted area has increased by 111% over the decade. Also, in El Salvador, area planted grew slightly, with an increase of 0.7% annually and a total change of 6%.

The biggest bean producers (in terms of volume) in the region are Guatemala, Nicaragua, Honduras, which accounted for an average of 28%, 27.6% and 19% of total production in 1990-2001, respectively. Trends in bean production varied greatly among countries in the region. During 1990-1992 to 1999-2001, bean production declined in Costa Rica (-52%), Guatemala (-18%), and Honduras (-21%). In contrast, during the decade, Nicaragua more that doubled its production of beans (171%) and El Salvador increased its production by 11.6%.

Yields in Central American countries are relatively low compared to the U.S., Canada, and Argentina, where yields average 1.8 to 2 mt/ha. Over the past decade, for the region as a whole, yields increased at an annual rate of 0.5%, up from 694 to 727 kg/ha

from 1990-1992 to 1999-2001. In 1999-2001 yields were highest in El Salvador (877 kg/ha), followed by Nicaragua (746 kg/ha), Honduras (739 kg/ha), Guatemala (689 kg/ha), and Costa Rica (583 kg/ha). During the decade, yields increased most rapidly in Nicaragua (2.8% per year), followed by Costa Rica (1.2% per year) and El Salvador (0.6% per year). In contrast, yields declined in Guatemala (-1.2% per year) and Honduras (-0.3% per year).

In Central America, bean research is conducted by government institutions and universities. Breeders have focused on developing varieties that are resistant to numerous production constraints (including desease and drought), which vary by production season and agro-ecological zone. In addition, for small red beans, breeders have focused on develop varieties with quality characteristics that consumers demand (*e.g.*, lighted color, small size grain).

Since 1990, Central American countries have released 22 improved varieties. Despite the achievements of bean scientists, during the 1990s funding for bean research (and extension) declined substantially.

In Central America, seed multiplication and distribution is usually done by a government institution in cooperation with universities and/or NGOs. While very few farmers plant certified seed, recycled seed of improved varieties is planted throughout the region. Thus, the multiplication and distribution of improved seed varieties to small farmers remains a persistent problem in Central America. This situation is critical, since farmers adoption of improved varieties that are resistant to biotic and abiotic stresses are key to increasing productivity.

In the region, small bean producers have difficulties obtaining agricultural credit from "formal" financial institutions. Several characteristics make beans unattracting to finance, including the price volatility (which is greatly influenced by year-to-year variability in production) and the risk associated with production (which is frequently affected by hurricanes, droughts, etc). Another constraint is high transaction costs for lenders and producers, due to the geographic dispersion of producers and the small amount of money lent to each farmers.

Activities that add value to beans in Central America include: a) cleaning and packaging dry beans in plastic bags and b) transforming raw beans into canned, flexible pack, powder, or frozen bean products. In general, the packaging industry is most developed in Costa Rica, but primarily targets the local market. In Guatemala, the processing industry is well-developed, while the packaging industry is dominated by very small units which in many cases are completely informal. In El Salvador, Nicaragua and Honduras, the packaging industry is growing rapidly, driven by the incentive to sell to local supermarkets and export to neighbor markets in the region.

There are approximately 10 large canning companies in Central America. Of this total seven are located in Guatemala and three are in Costa Rica. However, Guatemalan brands are the most widely sold brands in Central American countries. In the case of the flexible pack, only one company based in Honduras produces this product. While other products, such as powder or frozen beans are sold in some Central American countries, they were not widely consumed. While most of bean-processing firms have their own commercial brand, some of these firms have introduced canning for other companies as a new activity.

Although consumers demand for processed products is limited, demographic changes have influenced the preference for ready-to-use products (*e.g.,* frozen, powdered, canned). During the field research, data collected from major supermarket chains in Central American capital cities indicated the they sold 67 different brands of value-added products (*i.e.,* bagged and processed beans). In each country, the number of different brands of beans in plastic bags ranged from 6-15, while the number of canned brands ranged from 4-12. A key reason for the limited demand for processed products is their relatively high cost. Compared to beans in a plastic bag, the price of canned beans averaged US$ 2.49 per kg, compared to US$1.25 per kg for bagged beans. Bagged beans price ranged from US$ 0.75 per kg to US$ 3.88 per kg, whereas canned beans ranged from US$ 0.46 per kg to US$ 6.48 per kg. While low-income consumers give high priority to price when making their buying decisions, high and medium level income consumers are increasingly willing to pay a premium for quality characteristics.

Bean marketing channels are similar among Central American countries. The marketing channel begins with the producers--usually small-scale farmers who sell their surplus after each harvest. The second level is represented by the traditional intermediary, who collects dry bean production from these small farmers. Once beans arrive at urban markets, they are marketed through the food retailer system, which can be classified into four groups: small full-service stores (corner store, "pulperias"); traditional markets (central markets); small self-service stores (smaller than supermarkets); and supermarkets, either independent stores or chains. While intermediaries and wholesalers are major players in the marketing channel for beans and the central market and small store remain the place where most consumers purchase beans, increasingly, concentration

in the Central American retail system is influencing how beans are sold and where consumers buy beans.

In recent years, the region has become increasingly dependent on bean imports to meet consumer demand. During 1994-1996 to 1999-2001, the region's annual rate of growth in imports averaged 18%, with a total increase of 127%. In the same period, Guatemala's bean imports increased at an annual rate of 28%, followed by Costa Rica (24%), Nicaragua (16%), El Salvador (15%), and Honduras (9%).

Despite annual deficit in the bean supply, Central American countries export beanswithin the region and to niche markets in developed countries. In the period 1999-2001, the region's main exporters were Nicaragua (42%) and Honduras (35%), although Guatemala (11%), El Salvador (10%), and Costa Rica (2%) also exported beans. According to exporters interviewed, exports opportunities outside the region have increased in recent years due to the growing number of Central Americans living abroad and ethnic food restaurants in developed countries (*e.g.,* Canada, the U.S., and Europe).

Among countries the price difference between markets (wholesale t central to retail) varied greatly. The greatest markup from the wholesale to central market price was observed in Nicaragua (23.3%), compared to 16.9% in El Salvador. The greates markup in the central market to the retail price (*i.e.*, value added price) was observed in Honduras (93%) and Guatemala (51% for red beans, 21% for black beans) compared to only 8% in Costa Rica.

To assess the competitiveness of regionally produced beans, the wholesale price was compared to the FOB price of beans from outside the region, both with and without the tariff (30%), and adding transportation costs from each country to the central market.

The case of Guatemala was used to assess the competitiveness of black beans, which have good substitutes from outside the region. During the period 1997-2002, the competitiveness of Guatemalan bean prices vis-à-vis U.S. prices, varied over time. From the third quarter of 1998 to the third quarter of 2001, U.S prices with the tariff where similar to Guatemalan prices. After the third quarter of 2001, U.S prices where significantly higher with the tariffs. However, during the six-year period, U.S prices without the tariff were significantly lower than Guatemalan prices. In the third quarter of 2002, Central American importers could source Argentinean black beans at a substantially lower price than Michigan beans--largely due to the fact that in recent years, the Argentinean bean price has been greatly affected by the devaluation of the peso against the dollar. Thus, the current competitiveness of beans from Argentina is partly due to the volatility of the peso, rather than farm productivity.

No country outside the region produces a good substitutes for small red bean. Although consumer preference reduce the demand for imported red beans, countries where consumers prefer red beans still import since local production is insufficient to satisfy demand. For red beans in Honduras and Nicaragua (the region main producers), since the second quarter of 1997 until approximately the third quarter of 2000, Nicaraguan wholesale prices were higher than U.S. prices with the tariff. However, after 2000 prices in Nicaragua declined, to a level substantially below U.S. prices. In Honduras, from the second quarter of 1998 until the first quarter of 2000 U.S. prices were sometimes cheaper. However, after 2000, bean prices in Honduras were lower than the U.S. prices with the tariffs, and during the period 1997 to 2002 Honduran bean prices were mostly below U.S. prices without the tariff.

Central America has a common external tariff known as Central American Tariff System (SAC). While regional product do not face tariffs, agricultural products remain highly protected from import from outside the region. Included in this group are beans, on which a 20% to 40% tariff is levied. The fact that Central American countries have maintained tariff on bean imports from outside the region have made them somewhat competitive at a regional level. However, since Central American countries greatly depends on bean imports from outside the region when they experienced shortage in production, the external tariff increases the prices that consumers have to pay for bean products.

In Central America, non-tariff barriers are administrative steps that the custom office requires importers to follow in order to obtain import permits. Because the process to obtain the permit is slow in many countries, NTB are considered real barriers to regional trade. In addition, the growing consolidation of the retail system in the region has become a threat to bean distributors, due to the requirements that sellers must meet in order to secure shelf space for their products. While these requirements are usually unwritten, they define the ways in which trading is done.

4.2 Policy Recommendations

4.2.1 Policy Recommendation to Support Agricultural Production

This study documented the importance of bean in enabling small farmers to achieve household food security. However, although yields increased slightly in the majority of this countries during the 1990s, area planted and total production declined

everywhere except in Nicaragua. Thus, the region is increasingly dependant on imports to satisfy its demand of beans.

In order to maintain their competitiveness, Central American countries have impose tariffs on beans imported from outside the region, ranging from 20 to 30%. However, tariffs have failed to make the region self-sufficient in bean production and imports have reduced the price that small farmers have received for beans. Finally, the tariff has negatively impacted consumers of beans--especially the poor-- by increasing the cost of bean products.

4.2.1.1 Continuing Varietal Research

While most small farmers in Central America have limited opportunities to expand bean production to a commercial scale, they will continue to grow beans due to the crop's importance as a food staple and as a source of cash income. Currently, bean yields in the region are very low--compared to yields in the U.S. and Argentina. To remain competitive in an increasingly globalize market, farmers will require access to higher-yielding varieties.

In Central America, biotic and abiotic stresses are the main constraint to expanding production. In the 1990s, bean scientists focused on breeding varieties resistant or tolerant to these stresses. These efforts resulted in the released of over 20 new varieties. However, in order to increase productivity there continues to be a great need for research that focused on developing higher yielding varieties with traits that reduce the risk associated with bean production.

4.2.1.2 Implementing New Mechanism to Evaluate New Bean Varieties

In Central America, currently the process of validation and release of new varieties is carried our by bean scientist and public institutions, with little input from private firms which are moist knowledgeable of consumer's preferences.

During the 1990s, the bean market experienced several structural changes, including consolidation in the wholesale and retail market, an expanding export market and increasing demand for value-added beans products, and growing consumer preferences for beans of superior quality.

Thus, to insure that future varieties meet the quality preference of consumers, there is a need to establish a mechanism to involve wholesalers, the processing industry, retailers, and exporters in establishing quality characteristics and evaluating promising lines prior to their release. As it is done in the U.S., Central Americans bean research programs should establish "Dry Bean Councils"--which would include bean scientists and representatives of the private sector--and involve these councils in identifying needed quality characteristics and assessing the acceptability of new varieties.

4.2.1.3 Improving the Seed Distribution Systems

One of the main constraint that farmers face to expanding bean production is the limited access to improved seed. Unless farmers have greater access to improved varieties that are higher yielding and more resistant to biotic and abiotic stresses, bean supply in the region will continue to be insufficient to meet the region's demand and compete with imports.

Drawing on lessons from the experience of Costa Rica and other countries in the region, national programs need to place greater priority to developing sustainable seed multiplication programs. For example, to relax the seed constraint in Costa Rica, the University of Costa Rica (UCR) in collaboration with farmers has established a bean seed production scheme. Similarly, public agencies in El Salvador and Nicaragua have worked closely with farmers to multiply improved varieties.

Given the limited adoption of certified seed in the region, there is a need to rigorously assess the strengths and weaknesses of existing seed schemes in order to identify lessons that could be used to strengthen seed schemes throughout the region.

4.2.2 Policy Recommendation to Support Bean Marketing

During the 1990s, countries in the region established projects to expand small farmers' access to relevant market information that would help them to obtain higher prices for their bean and take advantage of opportunities and information related to consumers preferences. In addition, governments, universities, international organizations, and the private sector have attempted to establish a universal grade standards in Central America for basic grains (including beans).

Despite the efforts of projects in all Central American countries to increase farmers' access to markets, there still exists a lack of coordination among producers, processors, and retailers. Farmers continue to face a significant number of obstacles that limit their access to basic market information (*e.g.,* prices, market opportunities) including the high cost of obtaining this information. In addition, the initiatives to establish grade standards applicable in all countries has failed.

Finally, the growing consolidation of the food retail system and the packaging industry have created new challenges for bean farmers to access urban markets. Today, most retailers and packaging firms have their own private standards, which Central American farmers are either unaware of or fail to complain.

4.2.2.1 Promoting of Strategic Alliances with Food Retailers

As a result of the trend towards concentration in the packaging and processing industry and supermarkets, farmers need to establish strategic alliances with retailers and intermediaries in order to gain access to these markets. Working together with intermediaries and retailers will also help farmers to obtain basic information related to consumer's preferences (*e.g.*, color characteristics, appearance of the grain).

In Central America, some countries have developed strategic alliances with food retailers (*e.g.*, melons in Honduras, vegetables in Guatemala) that have succeeded in helping farmers gain access to retail markets. Similarly, in Costa Rica, producers' associations have successfully strengthened coordination between bean farmers, scientists and a retailer.

4.2.2.2 Disseminating Private Grade Standards

Due to the lack of dry bean public grade and standards, bean packers, processors, and food retailers determine their own private standards. In Central America, the intermediary or trader is the main transmitters of this type of information (especially with respect to market class preferences) and is still the main supplier to packers, processors, and retailers in urban areas. However, small farmers have limited access to information

about private standards, despite the fact that all Central American countries already have marketing offices that are supposed to disseminate this kind of information to farmers and traders in rural areas. Currently, most of the market information is available either in the marketing office or posted on the internet. However, bean producers and traders have limited access to these offices (for the distance to rural areas) and in rural areas the access to internet services is highly difficult.

National bean programs or institutions providing support to bean research need to implement ways of disseminating information, especially to small farmers. Using the already existing infrastructure of official bean programs or NGO offices (*e.g.*, telephones, internet access, fax, radio) farmers and traders in rural areas can access market information with respect to standards required. Also, some countries have implemented programs to disseminate information regarding market prices throughout local radio stations. However, due to the cost of this type of program it is important to assess whether or not farmers will benefit before implementing this alternative.

4.2.2.3 Exploring Alternative Niche Markets

Currently, exports to countries outside the region are limited by supply constrain and market access. However, these markets have a potential to grow in the future, especially in developed countries where the demand for ethnic food is growing rapidly. Also, at the regional level, many consumers are willing to pay a premium for differentiated products.

In the case of Central American beans, the small red bean known as *"Rojo de Seda"* (red silk) is highly appreciated in the region and in the U.S. For example, in the

U.S. there is a company that sells the brand *"Rojo Salvadoreno"* beans, targeting the Salvadorian community in the U.S. Drawing on the example of the "*Rojo Salvadoreno*", a potentially promising export strategy would be to for each country to establish farmers-owned brands and target sales towards high-income consumers and consumers in developed countries.

Farmer-owned brands are relatively rare and, until now, have only been successful in developed countries (*e.g.*, Bruenello de Montecino wine from Italy, Vidalia onions in the U.S.). Many requirements are necessary for the success of farmer-owned brands, including producer control over the quantity supplied, and products need to be based on some fixed and identifiable attribute (*e.g.*, brand coming from a certain area). Also, the scale of production must be sufficiently large to justify the costs of creating and maintaining the differentiated image among consumers (Hayes *et al.*, 2002).

4.3 Limitation of the Study and Future Research

The main limitation of this study is the short time spent in each country (one week in each country), which limited the number of key informants interviewed. Also, analysis of the secondary data (*e.g.*, production, area planted and exports and imports) identified inconsistencies which indicated that these data may be inaccurate--thereby making it difficult to draw more specific conclusions with respect to trends in production and potential for exporting. In addition, due to the limited availability to private sector information related to retailers bean's procurement (*e.g.*, volume of dry bean and value-added products over the years, and trends in bean procurement) it was impossible to estimate the share of supermarkets and other retailers in bean sales.

The following are some relevant questions that should be addressed in future research:

- What mechanisms do Central American countries need to implement in order to increase farmers' access to seed of improved bean varieties?. What lessons can be learned from the seed distribution experiences of countries in the region and outside the region that are applicable to strengthen seed production and distribution throughout the region?
- What strategy would Central American countries promote to enabling farmer's access to relevant market information?.
- How can Central American countries adapt regional experiences in other agricultural sectors in order to increase bean farmers access to markets?
- How is consolidation in the food sector affecting the demand for products and how will this impact on bean farmers' market access.

APPENDIX A

DATA COLLECTED FROM MAJOR SUPERMARKET CHAINS, CENTRAL AMERICA, JULY, 2002.

Country	Type of Preparation	Product Package	Market Class	Source	Country of Origin	Brand Name	Manufacturer company	Superm arket	Weight (lbs)	Weight in Grams	Retail Price (US$)	US$/ Kg
1	4	2	1	2	3	16	1	1	10.5	298	0.60	2.01
1	2	2	3	2	7	32	30	1	15.5	439	1.08	2.46
1	2	2	1	1	8	10	38	1	400	400	0.70	1.75
1	4	2	1	2	3	47	46	1	5.5	156	0.39	2.51
1	4	2	1	2	3	55	26	1	298	298	0.66	2.22
1	3	2	1	2	7	32	30	1	15	425	0.99	2.34
1	4	2	1	1	8	8	19	1	150	150	0.40	2.70
1	4	2	4	2	7	50	53	1	16	454	1.18	2.60
1	4	2	2	2	3	9	4	1	10.5	298	0.74	2.49
1	2	2	6	2	7	32	30	1	15.5	439	1.28	2.90
1	4	2	1	1	8	63	5	1	10.5	298	0.68	2.28
1	4	2	2	1	8	57	5	1	380	380	0.76	2.00
1	4	2	2	2	3	16	1	1	5.5	156	0.37	2.34
1	3	2	2	2	7	36	37	2	15	425	1.83	4.31
1	1	1	2	1	8	6	42	1	900	900	1.04	1.15
1	1	1	2	1	8	55	26	1	900	900	0.95	1.06
1	1	1	2	1	8	12	32	1	900	900	1.04	1.15
1	1	1	1	1	8	28	32	1	900	900	0.91	1.01
1	1	1	1	1	8	55	26	1	900	900	0.94	1.04
1	1	1	1	1	8	6	42	1	900	900	0.97	1.07
1	1	1	1	1	8	43	16	2	900	900	1.04	1.16
1	1	1	1	1	8	61	49	2	900	900	0.96	1.06
1	1	1	1	1	8	48	17	2	900	900	0.89	0.98
1	1	1	1	1	8	23	17	2	900	900	0.98	1.09
1	1	1	1	1	8	44	17	2	900	900	0.94	1.05
1	1	1	1	1	8	14	17	2	900	900	0.97	1.08
1	1	1	1	1	8	29	17	2	900	900	0.96	1.06
1	1	1	1	1	8	13	47	2	900	900	1.06	1.18
1	1	1	2	1	8	30	17	2	900	900	0.94	1.05
1	1	1	2	1	8	43	16	2	900	900	0.94	1.05
1	1	1	2	1	8	20	17	2	900	900	0.93	1.03
1	1	1	2	1	8	61	6	2	900	900	0.98	1.09
1	1	1	2	1	8	48	17	2	900	900	0.92	1.02
1	1	1	2	1	8	23	17	2	900	900	0.98	1.09
1	1	1	2	1	8	13	47	2	900	900	0.99	1.11
1	1	1	2	1	8	22	17	2	900	900	0.85	0.94
1	1	1	2	1	8	14	17	2	900	900	0.97	1.08
1	1	1	2	1	8	44	17	2	900	900	0.96	1.06
1	4	2	2	2	3	67	55	1	5.5	156	0.40	2.56
2	1	1	2	1	8	19	23	3	5	2178	1.90	0.87
2	1	1	3	1	8	19	23	3	5	2178	2.40	1.10
2	1	1	1	1	8	2	20	4	1	436	0.65	1.49
2	1	1	3	1	8	2	20	4	1	436	0.64	1.47
2	1	1	2	1	8	56	8	4	2	871	0.80	0.92
2	1	1	3	1	8	18	8	4	2	871	0.97	1.11
2	1	1	3	1	8	12	7	4	2	871	0.91	1.04
2	4	2	1	2	6	39	41	5	580	580	1.67	2.88
2	4	2	2	2	3	47	46	4	29	822	0.45	0.55
2	4	2	1	2	3	9	4	4	29	822	0.38	0.46
2	4	2	1	2	3	47	46	4	5.5	156	0.45	2.89
2	3	2	5	2	7	51	28	4	15	425	0.21	0.49
2	3	2	2	2	7	36	37	4	7.4	210	1.36	6.48
2	4	2	2	2	3	47	46	5	5.5	156	0.36	2.31
2	3	2	2	2	3	62	25	4	5.5	156	0.73	4.68
2	4	2	1	2	3	9	4	4	5.5	156	0.38	2.44
2	3	2	2	2	6	42	50	4	430	430	1.16	2.70
2	4	2	2	2	3	9	4	5	5.5	156	1.26	8.08
2	4	2	2	2	3	52	2	5	5.5	156	0.47	3.01
2	5	1	2	1	8	31	33	4	113.5	114	0.44	3.88
2	3	3	2	2	4	49	3	4	4	113	0.26	2.29

Country	Type of Preparation	Product Package	Market Class	Source	Country of Origin	Brand Name	Manufacturer company	Superm arket	Weight (lbs)	Weight in Grams	Retail Price (US$)	US$/ Kg
2	3	3	2	2	4	49	3	4	4	113	0.26	2.29
2	3	3	2	2	4	49	3	4	4	113	0.29	2.56
2	4	3	1	2	4	49	3	4	4	113	0.29	2.56
2	4	3	1	2	4	49	3	4	4	113	0.26	2.29
2	4	3	1	2	4	49	3	4	4	113	0.26	2.29
3	1	1	6	1	8	37	40	6	1	436	0.79	1.82
3	1	1	2	1	8	37	40	6	1	436	0.79	1.82
3	1	1	1	1	8	37	40	6	10	284	5.86	20.67
3	1	1	1	2	8	53	48	7	2.3	2300	2.93	1.27
3	1	1	6	1	8	17	22	6	460	460	0.97	2.10
3	1	1	1	1	8	17	22	6	920	920	1.49	1.62
3	1	1	2	1	8	17	22	6	460	460	0.91	1.99
3	1	1	6	1	8	40	43	8	460	460	0.76	1.65
3	1	1	2	1	8	40	43	8	460	460	0.65	1.42
3	1	1	1	1	8	40	43	8	460	460	0.55	1.20
3	1	1	1	1	8	59	27	6	460	460	0.56	1.22
3	1	1	2	1	8	59	27	6	460	460	0.69	1.49
3	1	1	1	1	8	1	27	8	460	460	0.56	1.22
3	4	2	1	1	8	9	4	6	16	454	0.89	1.95
3	4	2	1	1	8	59	27	6	16	454	0.80	1.76
3	3	2	2	1	8	62	25	6	16	454	1.46	3.22
3	4	2	1	1	8	47	46	6	16	454	0.89	1.95
3	4	2	1	1	8	45	1	8	29	822	1.34	1.63
3	3	2	6	2	7	3	29	9	15.5	439	1.46	3.32
3	2	2	7	2	7	3	29	9	15.5	439	1.15	2.62
3	2	2	1	2	6	39	41	6	560	560	0.89	1.58
4	2	2	4	2	7	34	35	10	14	397	0.67	1.68
4	3	2	7	2	7	58	51	11	15	425	2.31	5.43
4	3	2	2	2	7	36	37	11	7.5	212.6	1.72	8.08
4	4	2	1	2	3	55	1	11	298	298.0	0.63	2.10
4	1	1	2	1	8	66	44	10	700	700.0	0.96	1.38
4	1	1	2	1	8	41	44	10	800	800.0	1.18	1.47
4	1	1	2	1	8	11	9	10	350	350.0	0.45	1.28
4	1	1	2	2	7	32	30	11	14	396.9	0.94	2.36
4	1	1	2	1	8	7	45	10	800	800.0	1.15	1.44
4	1	1	2	1	8	24	10	10	700	700.0	1.00	1.43
4	1	1	2	1	8	46	44	10	1400	1400.0	1.69	1.21
4	1	1	2	1	8	27	44	10	1400	1400.0	1.57	1.12
4	1	1	2	1	8	4	9	10	300	300.0	0.24	0.80
5	1	1	2	2	2	55	26	12	900	900.0	0.77	0.85
5	1	1	2	1	8	6	31	12	2	2000.0	1.56	0.78
5	1	1	2	1	8	12	14	13	5	2178.0	2.05	0.94
5	1	1	2	1	8	33	13	13	5	2178.0	2.07	0.95
5	1	1	2	1	8	38	52	13	5	2178.0	2.07	0.95
5	1	1	2	1	8	21	24	14	5	2178.0	2.03	0.93
5	1	1	2	1	8	26	15	14	5	2178.0	1.97	0.90
5	1	1	2	1	8	25	12	14	5	2178.0	1.63	0.75
5	3	2	5	2	1	5	11	n/a	8	226.8	n/a	n/a
5	3	2	5	2	6	39	41	n/a	560	560.0	n/a	n/a
5	4	2	2	2	6	15	36	n/a	560	560.0	n/a	n/a
5	3	2	5	2	7	64	54	n/a	8	226.8	n/a	n/a
5	2	2	1	2	7	32	30	n/a	15.5	439.4	n/a	n/a
5	4	2	4	2	7	60	39	n/a	435	435.0	n/a	n/a
5	3	2	2	2	6	42	50	n/a	440	440.0	n/a	n/a
5	4	2	2	2	7	54	18	n/a	8	226.8	n/a	n/a
5	4	2	2	2	3	45	1	n/a	5.5	155.9	n/a	n/a
5	3	2	2	2	1	35	34	n/a	8	226.8	n/a	n/a
5	1	2	6	2	5	65	21	14	400	400.0	0.80	1.99

List of Codes

Country	**Country where the value-added product was purchased**	
Code	*Name*	*Note*
1	Costa Rica	
2	El Salvador	
3	Guatemala	
4	Honduras	
5	Nicaragua	

Package	**Package presentation of value-added products**	
Code	*Name*	*Note*
1	Plastic bag	
2	Can	
3	Retort pounch or flexible pack	

Market Class	**Classification by color of the bean**	
Code	*Name*	*Note*
1	Black	
2	Red	
3	Silk Red	Rojo de seda
4	Pinto	
5	Pink	
6	White	
7	Mix	Variety of market classes

Source	**where the product was manufactured**	
Code	*Name*	*Note*
1	Local	when it is the same country from which the product was bought
2	Imported	different country from which the product was bought

List of Codes

Country of Origin	Refers to the label inscription where it says "made in country"	
Code	*Name*	*Note*
1	Canada	
2	Costa Rica	
3	Guatemala	
4	Honduras	
5	Italy	
6	Mexico	
7	USA	
8	Local	Same as country where the product was bought

Code	Brand name
1	AA..SISI
2	As de Oro
3	Best Yet
4	Blandito
5	Campbell's
6	Carolina
7	Chelito's
8	Cinta Azul
9	Del Monte
10	Del Tropico
11	Diplomatico
12	Don Frijol
13	Don Pedro
14	Dona Ana
15	Dona Maria
67	Ducal
16	El Angel
17	El Bodegon
18	El Cocinero
19	El Gallo Giro
20	El ganador 2da
21	El Guerrero
22	El jornalero
23	El Nopal
24	Emperatriz
25	Frijol
26	Frijol Impero
27	Frijol Super
28	Frijoles

Code	Brand Name (cont.)
29	Frijoles 2da
30	Frijoles rojos 2da
31	Frijosal
32	Goya
33	Gustoso Premiun
34	Hanover
35	Heinz Vegetarian Beans
36	Hormel Chili with Beans
37	La Campana
38	La Colonia
39	La Costena
40	La Nacional
41	La Preferida
42	La Sierra
43	Los Productos de Mama
44	Los Sabrosos
45	Lo-Zano
46	Magico
47	Malher
48	Megasuper
49	Natura's
50	Old El Paso
51	Oto's Finest Brand
52	Petit
53	Price Smart
54	Rosarita
55	Sabemas
56	San Francisco
57	Santa Cruz
58	Stagg
59	Suli
60	Taco Bell
61	Tio Felipe
62	Toledo
63	Tonos
64	Van Camp's
65	Vitale
66	Zambrano

Code	Manufacturer Company
1	Agroindustrias Lozano SA
2	Ailsa de Guatemala
3	Alimentos del Valle SA Unilever
4	Alimentos Maravilla
5	Alimer SA

Code	Manufacturer Company (cont.)
6	Arrocera Costa Rica SA
7	Arrocera Gumarsal
8	Arrocera San Francisco
9	Beneficio de Arroz Cielito Lindo
10	Bepro-agro
11	Campbell's
12	Centro de Distribucion Comercial La Union
13	Cofam SA
14	COMACESA
15	Comercializadora de Granos de Nicaragua
16	Comercios de El Barreal SA
17	Conagra
18	Conagra Brands USA
19	Conservas del Valle SA
20	Dilosa
21	Domenico Vitale
22	El Bodegon
23	El Gallo Giro
24	El Guerrero
25	Empacadora Toledo
26	Empaques Agroindustriales
27	Empresasa Integradas
28	Faribault Foods INC
29	Fleming Companies INC
30	Goya Food INC
31	Grabacera
32	Granos Continentales SA
33	Grupo Coscafe
34	H.J Heinz Co
35	Hanover Foofs Corporation
36	Herdez SA
37	Hormel Foods
38	Industrias Sanso SA
39	Kraft Foods. Taco Bell
40	La Campana
41	La Costena
42	La maquila Lama SA
43	La Nacional
44	La Preferida SA
45	Libra Comercial
46	Malher Sucesores y Cia.
47	Pedro Oller SA
48	Price Smart
49	Procesadora Jinca
50	Sabormex SA de Mexico
51	Stagg Foods INC

Code	Manufacturer company (cont.)
52	Supermercados La Colonia
53	The Pillsbury Company
54	Van Camp's USA
55	Alimentos Kern de Guatemala

Supermarket	chain or single store from which the value-added product was bought	
Code	*Name*	*Note*
1	CSU	
2	Megasuper	
3	Europa	
4	La Despensa de Don Juan	
5	Super Selecto	
6	Paiz	
7	Price Smart	
8	Econosuper	
9	Super Operadora	
10	La Colonia	La Colonia Nicaragua and Honduras are not linked.
11	Maxi Supermercado	
12	Pali	
13	Union	
14	La Colonia	

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