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AGRICULTURE - COLOMBIA

ANALYTICAL WORKING DOCUMENT # 5

EXPORT MARKETS FOR COLOMBIAN
AGRICULTURAL PRODUCTS

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February 1974

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Table 5-1—Summary of analysis

Commodity	Constraints to Trade				
	External Market	High Internal Costs	Transportation	Costs of Market Entry	Trade Barriers 1/
Fresh fruits & vegetables:	Growing; total market is large, although markets for specific commodities can be quite small.	In most cases does not appear to be a problem (see discussion for individual commodities).	Major barriers: 1) High cost. 2) Delays & unreliable schedules.	Considerable costs to: 1) Develop thorough knowledge of specifications in each external market. 2) Develop capability to produce required product. 3) Develop market channels & promotional capabilities.	Could be important constraint. U.S.: moderate tariffs, sanitary regulations, quality standards not mandatory. EEC: High tariffs, quotas, reference prices, mandatory quality standards. Not insurmountable, however. (See costs of market entry.)
Processed fruits & vegetables:					
Canned	Large.	Could be major barrier.	Minor problem, if any.		Could be important constraint. U.S.: moderate tariffs, mandatory minimum standards of quality, sanitation, identity labeling. EEC: High tariffs, quotas, additional levy on added sugar content. Not insurmountable however. (See costs of market entry.)
Frozen	Small, but growing.	"	Major problem.	See fresh fruits & vegetables.	
Rubric	Small, & not likely to grow.	"	Minor problem if any.		
Sugar	Large, slow growing, prices more attractive recently.	Low-cost supplier.	No problem.	Already incurred.	Substantial, but can be manipulated.
Tropical hardwoods	Large, growing rapidly.	Has been cited as a major barrier.	Costs may be high & discriminatory, if reduced could facilitate exports.	See fresh fruits & vegetables.	Minor problem—zero or very low tariffs for major tropical wood products.
Latin America markets for fruits & vegetables, fresh & processed	Large-	Depends on commodity.		See fresh fruits & vegetables.	Could be major barrier—complex system of tariffs, quotas, exchange controls, import licensing.

1/ See appendices of individual reports for detailed information.

Introduction

This study identifies agricultural commodities deserving priority consideration in Colombia's export expansion program. It focuses primarily on minor agricultural commodities such as fruits and vegetables which have received little attention up to now, but which could become significant export commodities. Criteria used to select these commodities included whether the commodity had export potential and whether it contributed to important domestic goals--increasing employment, improving income distribution, and earning/saving foreign exchange.

This paper summarizes five separate reports which covered in more detail (1) the market for fresh fruits and vegetables in developed countries, (2) the world sugar market, (3) the market for tropical hardwoods in developed countries, (4) the market for fresh and processed fruits and vegetables in neighboring Latin American countries, and (5) the market for processed fruits and vegetables in developed countries.^{1/} Specific information on tariffs, sanitary regulations, quality requirements, as well as volume and value of imports can be found in these individual reports.

The study was limited to an analysis of the demand for these commodities in external markets and an evaluation of the various external restraints to their trade. One end product was to provide AID (U.S. Agency for International Development) with a set of numbers representing the quantity of each commodity which could be absorbed by the external market at a given price. These numbers became part of the final demand sector within a large linear programming model of the Colombian economy; this model is being developed now with AID assistance ^{2/}

^{1/} Working Document 35A, "Markets for Fresh Fruits and Vegetables--United States and Western Europe"; Working Document 35C, "Tariffs, Quality Specifications and Sanitary Regulations for Fresh Fruits and Vegetables"; Working Document 35D, "Markets for Processed Fruits and Vegetables, United States and Western Europe"; Working Document 35E, "Markets for Tropical Hardwoods--United States, Europe and Japan"; Working Document 35F, "The World Sugar Market--How Attractive Is It"; Working Document 35H, "Latin American Markets". Reports are available from the Sector Analysis Division, Office of Development Resources, Latin American Bureau, U.S. Agency for International Development (AID), Washington, D.C.

a. First Step: Estimates of the Market

The first step was to determine whether there was a market for each product and the nature of that market: its seasonality; size; growth; and tariffs, quotas, and other commercial requirements. Imports are the most important measure of the level of demand for the products of a potential exporter. However, trends in domestic production and total consumption in each potential external market must also be analyzed since imports (excess demand) represent the difference between consumption and domestic production.

The important question, however, is not what will be the total level of import demand in the United States for tomatoes, for example, but what share of this total market Colombia can hope to capture. The procedure usually followed to determine whether Colombia can compete in an external market is to assume that the demand schedule facing Colombia is perfectly elastic at some given price, and that Colombia, through its own actions, could have little influence on the market. This assumption is valid as long as Colombia supplies only a negligible part of the market. The next steps in the process are to establish an idea of the price in the given market, evaluate whether Colombia can supply the product at that price, and conclude whether there is a potential market for that commodity. This gives us an answer about whether Colombia can supply the market if it is not already doing so, but it does not give us an answer as to how successful Colombia will be in capturing a significant share of this market.

For example, the feasibility of Colombia's exporting fresh fruits and vegetables to U.S. and Western European markets could be evaluated using the display given in Figure 5-1. This indicates how, given prices in the final market, an analyst can determine whether Colombia is competitive in that market and, if not, where cost reductions must be made. Estimates of competitive price levels in external markets are given in this study. Only for fresh fruits and vegetables was enough data available to make a preliminary evaluation of Colombia's entire export cost structure.

^{2/} This model was developed with 1968 data and updated with 1970 data. The model was used to project optimum resource allocations for Colombia in 1975 and 1980. Numbers used in this analysis reflect these decisions. See Methodological Working Document 28, "Overview of Methodological Procedures for Colombian Agricultural Sector Analysis", by James T. Riordan and Samuel R. Daines for a detailed description of the model.

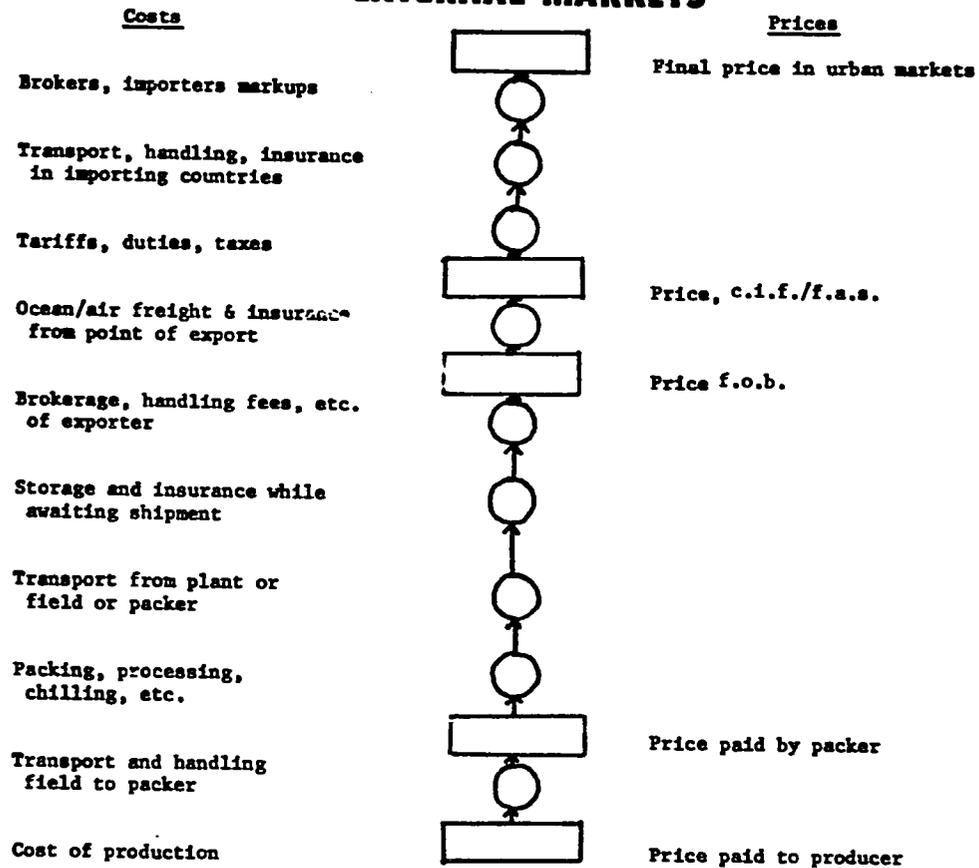
In some markets, Colombia can increase its share over the longer run if it can produce cheaply and if, as it expands its shipments to the export market, prices drop and other producers reduce their supply. In other words, Colombia's exports can grow through a competitive effect as well as a result of the overall expansion of the import market. In order to make a sophisticated analysis of this process one needs to know (1) price elasticities in the large external markets, (2) supply elasticities in Colombia and other suppliers, and (3) Colombia's present market share. Lacking this analysis, evaluation has to be based on informed judgment considering as many of these factors as possible within the limited time, money, and information available.

Success can complicate the analysis, however. As Colombia succeeds in expanding its share of a given export market, it can reach a point where its actions--increasing supplies, for example--can have a direct influence on the market in the short run--depressing prices. Here, knowledge of price elasticities is necessary to evaluate whether in the short run an increase in supplies from Colombia might depress prices in the external market to below Colombia's marginal cost of supplying the market.

In the fresh fruits and vegetables market, a country can supply a small percentage of the total market and still have a substantial effect on a smaller segment of that market during a given day, week, or even season in one city, for example. Both Mexico and Spain believe that they have such an influence--Mexico on the U.S. market and Spain on the United Kingdom. Evaluation of market demand is a continuing process which must become more sophisticated as the market develops. In this market, knowledge of seasonal price variations and interrelationships due to differences in size, qualities, and varieties or species is necessary, first to identify potential markets and then to select the appropriate market strategies to use in developing these markets.

The second major component of this demand analysis was an evaluation of the various external restraints to trade. One of the major impediments to the export of minor agricultural commodities from Colombia is the whole system for transferring these products from the Colombian farmer to the external markets. The actual transportation of goods is only a part of the problem, albeit, an important part. Other factors--grading, packing, transportation from the farmer to the point of export in Colombia, insurance, loading and unloading ships, customs, arranging for brokers, and/or transportation to the wholesale market--add to

Figure 5-1: COST COMPONENTS OF PRODUCT X IN EXTERNAL MARKETS



the final cost of the product at the market. If the costs in either time or money are excessive, Colombia will have difficulty marketing its products.

An attempt was made to identify those commodities and those markets where transportation was a serious restraint to trade. Four criteria were used to evaluate the effectiveness of the existing transfer system: (1) cost, (2) ability to handle the quantities to be shipped, (3) speed of delivery, and (4) ability to perform the desired service (maintain temperature and humidity requirements, for example).

b. Second Step: Estimates of Supply

Knowing that there are markets available is not enough to mount a successful export development program, however. One also has to know whether the country is capable of supplying these markets with sufficient volumes of desired quality at reasonable prices. Such an analysis was beyond the scope of this study. However, this analysis does suggest that, for a number of commodities, the real restraint to trade is internal—the inability of Colombia to produce the desired product at a reasonable enough price.

A more complete analysis would rate each commodity on the following points: Is the product produced in sufficient quantities for export? If not, what are the possibilities for increasing supplies of vegetables, for example, by increasing the area under cultivation and/or increasing yields? Are the modern production inputs and improved varieties needed to achieve yield increases available? Are the physical facilities (roads, storage, markets) needed to handle increased supplies available? Will farmers get adequate backstopping from research and extension services? Will the price structure motivate farmers to increase production? Once bottlenecks are identified, the next step is to calculate the cost and probability of overcoming them.

c. Third Step: The Export Promotion Program

How deeply involved the Colombian government should get in developing export programs for these minor agricultural commodities is a matter of philosophy as well as how production in the export sector is already organized. Certain activities are generally accepted as being the responsibility of the government—improvements in roads and ports or the introduction of quality standards, sanitary regulations, commission of commercial attaches at embassies abroad, and negotiation of access to protected markets. Many governments

have felt that some extra effort was required on their part to coordinate and integrate various efforts within their countries to develop viable export programs. The possible approaches to this problem range from minimum government intervention—supporting or setting up producers associations and national planning and export coordinating bodies—to a complete restructuring of the marketing and export sector—creation of national marketing export agencies, for example. Often other services such as market research, information, extension, export promotion and training are also carried out by governments or government-sponsored agencies as a means of capturing the economies inherent in these activities. This is particularly the case where rather small scale businesses prevail. Reducing the amount of risk faced by individual producers and exporters may be another benefit stemming from government involvement in these activities.

This report does not suggest how Colombia should organize its export development program for the commodities included in the analysis. Certain decisions have been made; others are probably in the offing. It is a function of this report, however, to emphasize the need for quality, sophistication, and flexibility in whatever form of organization is chosen if the goal is to export to the U.S. or Western European markets. The inability to organize this type of operation is likely to be as great a barrier to trade as are existing tariff barriers, especially with the more highly perishable fresh fruits and vegetables. Competition for some of these markets is already keen and likely to become more so; many countries have already devoted substantial financial and managerial resources to insure the success of their programs.

Colombia, like all countries, has limited financial and manpower resources. It must carefully analyze where to use its resources to achieve its greatest payoff for each expenditure for export development. Because of the way its goals are defined, an increase in foreign exchange earnings is not the only benefit from an export expansion program. An increase in employment and better income distribution are also benefits. Although including these benefits may complicate the analysis, someone somewhere in the system should compare the projected benefits to the economy to be obtained from new markets with the cost of developing such markets. These costs include those of conducting feasibility studies, promotion, advertising, and others. One may find that a large, expanding market that costs a great deal to penetrate may be less attractive than a smaller, more stable market where many of the costs of establishing a position in the market have already been met.

3. Demand Analysis

a. Fruits and Vegetables

International trade in fruits and vegetables is larger than commonly thought. Average annual world trade turnover is estimated at \$7 billion^{3/}; fresh fruits and vegetables account for \$5 billion and processed products the rest. Significant fresh items entering international trade include bananas (5.7 million M.T.^{4/} in 1969), citrus (5.0 million M.T.), apples (2.3 million M.T.), potatoes (2.5 million M.T.), and onions (1.1 million M.T.). Among the processed products, the biggest items are citrus juice (600,000 M.T. natural strength in 1967), tomato products (600,000 M.T.), canned peaches (250,000 M.T.), and canned pineapple (387,000 M.T. in 1969-70).

Western Europe is the single largest importer of horticultural commodities, with imports amounting to \$3 billion per year. Only 40 percent of these imports originate from non-European sources. The United States, whose annual imports increased to over \$600 million in 1969, is the second largest buyer of fresh and processed fruits and vegetables.

Developing countries have promising opportunities for exporting fruits and vegetables to the world market. In fact, exports of fruits and vegetables from all developing countries to developed countries (the United States, the United Kingdom, the EEC^{5/}, Japan, and the Soviet Union) exhibited more spectacular yearly increases than any other category of agricultural exports. Imports of fruits and vegetables from developing countries increased 8.9 percent per year compared to 4.2 percent for livestock, 4.1 for sugar, 1.8 percent for coffee, and 0.8 percent for cotton. Moreover, by 1957-68, imports of fruits and vegetables from developing countries were second only to coffee in total value, moving ahead of sugar, rubber, and cotton.

A number of reasons account for developed countries expanding horticultural imports from developing countries. Perhaps the basic reason has been the substantial level of economic growth in the United States, Western Europe, and Japan throughout the last decade. Income elasticities for fruits and vegetables tend to be much higher than for the more staple agricultural commodities like grains.

^{3/} U.S. dollars, unless otherwise noted in text.

^{4/} Metric tons.

^{5/} European Economic Community. Since the United Kingdom did not become a member of the Community until January 1973, it is treated separately in most of the following discussion.

This, plus rapid income growth, leads to rapid increases in demand. Given this attractive market setting, lower foreign production costs have probably been the most important single factor enabling supplies from developing countries to compete effectively in the developed country markets. Moreover, domestic producers in the developed countries have not always been able to supply their own increases in demand because of abnormal weather (in the United States, for example) and the growing demand for fresh fruits and vegetables during the off-season when domestic producers are unable to supply the market except at very high costs (as with greenhouse production for example).

Growing prosperity in the developed countries has also generated new consumer attitudes. Expanding incomes have led to increases in demand for higher quality produce, irrespective of the specific commodity. Quality in this context includes not only the basic characteristics of fruits and vegetables (such as taste and flavor) but also storability, uniform appearances, packaging, and more convenience in handling and preparation for consumption. This is a prominent feature of the U.S., Western European, and Japanese markets. To many consumers, the mere possession of goods of foreign origin has become a symbol of social status. This reasoning applies more to processed than fresh fruits and vegetables and more to imports from developed countries--Europe, Japan, the United States--than from developing countries.

1) Fresh Market - United States and Western Europe

Potential markets for 10 individual fresh fruits and vegetables were analyzed in some detail. These were the most promising among a larger set analyzed. The import market for these commodities appears attractive at first glance. The market is lucrative; in 1970, imports of these 10 commodities into the United States and Western Europe (the United Kingdom and the EEC) came to over \$700 million (Table 5-2 and 5-3) and the market grew at a relatively rapid rate--7.3 percent per year between 1966 and 1970. Further analysis substantiated this first, positive impression.

In selecting these commodities, an attempt was made to get a cross section of marketing situations, each requiring a different type of marketing strategy. The first group of commodities analyzed falls into what can best be referred to as the "counter-seasonal" or "off-season" category. These commodities are perishable (strawberries being the most highly perishable of the group and grapes the least). The markets for these commodities in the United States and Western Europe also exhibit definite seasonal variations, with

Table 5-2--Value of markets for selected fresh fruits and vegetables in the United States and Western Europe^{1/}

Commodity	Value of Imports								
	1966			1970			Change		
	U.S.	W. Europe	Total	U.S.	W. Europe	Total	U.S.	W. Europe	Total
million U.S. dollars									percent
Strawberries	2.4	18.0	20.4	9.0	39.3	48.3	275	118	137
Melons	8.8	11.4	20.2	12.7	19.3	32.0	44	69	58
Tomatoes	52.3	182.3	234.6	95.8	223.6	319.4	83	23	32
Cucumbers	5.5	50.0	55.5	12.3	62.7	75.0	124	25	35
Green peppers	3.9	11.4	15.3	12.8	21.2	34.0	228	86	122
Grapes	3.2	86.4	89.6	3.9	95.4	99.3	22	10	11
Onions	3.6	50.3	54.0	6.7	73.7	80.4	86	47	49
Garlic	2.4	4.2	6.6	3.5	4.9	8.4	46	17	140
Pineapples	0.6	5.7	6.3	1.2	11.4	12.6	100	100	100
Avocados	0.09	0.6	0.7	0.12	4.6	4.7	33	667	570
Total	82.8	420.3	503.2	158.0	556.1	714.1	91	32	50

^{1/} United Kingdom, France, Germany, Netherlands, Belgium-Luxemburg, and Italy.

Table 5-3—Import demand for selected fresh fruits and vegetables in the United States and Western Europe

Commodity	Actual 1970					Projected 1975				
	United States	United Kingdom	France	Germany	Total	United States	United Kingdom	France	Germany	Total
	thousand metric tons									
Strawberries	24.2	1.2	2.2	46.7	74.3	29.5	1.9	3.5	51.0	85.9
Melons	138.7	54.6	18.2	25.6	237.1	150.0	67.0	26.0	40.5	283.5
Tomatoes	293.3	164.8	186.5	296.9	941.5	305.0	170.0	210.0	350.0	1035.0
Cucumbers	65.0	25.2	6.7	220.7	317.6	78.0	28.0	9.5	250.0	365.5
Green peppers	31.7	3.4	8.2	52.9	96.2	38.0	8.1	13.9	64.9	124.9
Grapes	15.9	74.6	13.1	249.2	352.8	25.0	80.0	25.0	260.0	390.0
Onions	34.6	203.4	98.8	259.2	596.0	50.0	205.0	110.0	295.0	660.0
Garlic	8.8	0.8	8.3	1.4	19.3	9.0	0.9	9.2	1.5	20.6
Pineapple	20.0	7.3	17.4	6.5	51.2	25.0	10.0	23.0	10.0	68.0
Avocados	0.5	2.9	3.2	0.3	6.9	0.8	3.9	4.6	0.5	9.8

supplies shorter and wholesale prices generally higher during the winter months. Supplies from domestic sources or nearby countries with the same climatic conditions are usually plentiful and cheap through the summer months but either unavailable or only available in small quantities during the winter months.

The U.S. fresh tomato and fresh onion markets, for example, exhibited quite different seasonal price and delivery patterns in 1970. (Figure 5-2 and 5-3). The fresh tomato market was characterized by more extreme fluctuations and by a definite pattern of lower than average deliveries and higher than average prices during the mid-winter. This inverse relationship was not apparent in the onion market, however, where lower than average onion deliveries occurred with lower than average prices.

Consequently, it is the off season segments of these markets in which Colombia should be most interested. The commodities included in this category are: strawberries, melons, tomatoes, cucumbers, green peppers (capsicum), and grapes.

The second group of products are those that store well for relatively long periods and are available all year long in relatively equal amounts, with less seasonal price variation. Onions and garlic are examples.

The third group includes two of the tropical fruits--pineapples and avocados. These commodities are generally not grown in the developed countries for climatic reasons (the United States is an exception) and are therefore not well known to consumers in these markets.

Other commodities which could have been included in this study were green beans, eggplants, asparagus, cauliflower, okra, and mangoes. These were excluded because there were no imports, at present, into one or more of the markets being analyzed and/or import levels were small and showed limited promise of growth. Developed country markets were analyzed separately. Markets in the United States, the United Kingdom, France, and Germany were analyzed in more detail. Other markets such as Holland, Belgium, Sweden, and Canada may also offer opportunities, but their levels of import demand as well as total demand are generally much lower.

a) Strawberries

The import market for fresh strawberries in the United States and Western Europe grew from a little over \$20 million in 1966 to almost \$50 million in 1970--a 130 percent increase. EEC strawberry imports (53,000 M.T. in 1970) were more than double the

volume of U.S. imports (24,000 M.T.). But, these occur primarily during the summer months whereas the majority of U.S. imports occur during the off-season--October through April. During the off-season in the United States, the major foreign competitor is Mexico, and the major sources of domestic competition are Florida and California. Since the market on the East Coast is the most logical of the several markets in the United States, Florida would be Colombia's major domestic competitor. In terms of wholesale prices in the New York market, October, November, and December, before the big volumes of Mexican and Florida strawberries reach the market, seem to be the most advantageous months during the off-season for a new exporter.

Although still small, the off-season market for strawberries in Western Europe has grown rapidly over the last 6 years. Off-season imports (August 1 to April 30) into France, Belgium, Luxemburg, Holland, and Italy grew from 131 M.T. in 1966 to over 1,000 M.T. in 1970. Over half of these imports went to France. Germany imported 997 M.T. of strawberries during the 1968-69 off-season and the United Kingdom imported 206 M.T. From January to March the market is dominated by air-lifted supplies from the United States, Mexico, Kenya, and New Zealand. The Mediterranean countries supplying the off-season market--Italy, Spain, and Israel--ship at the beginning or end of the off-season. Off-season strawberry production in the Mediterranean areas, however, is a highly sophisticated exercise beset with many technical problems.

b) Melons

The import market for fresh melons in the United States and Western Europe increased from \$20 million in 1966 to \$32 million in 1970--a 59 percent increase. In the United States, cantaloupes are the favored melon both in terms of per capita consumption and level of imports, accounting for over half of the U.S. imports in 1970 (67,000 M.T.). Honeydews accounted for only 12 percent (17,200 M.T.). In general, consumers in the United States and Europe accept all three melon types--the ribbed cantaloupes, ribbed melons, and the smooth-skinned honeydew melons. Certain preference seem to exist for honeydew melons in the Scandinavian countries and Germany, however, and for cantaloupes in France. Israel has successfully introduced a new variety on the European market--the Ogen. Highly perishable, it is expensive because it must be air freighted to market. Being expensive, its demand will be more limited than the more traditional varieties--cantaloupes, honeydews--on which Colombia should concentrate.

Cantaloupes are available in the United States primarily from May through September with reduced supplies during the early

Figure 5-2: INDICES OF MONTHLY UNLOADS AND RETAIL PRICES OF FRESH TOMATOES, SELECTED U.S. CITIES, 1970

% of average
yearly unloads
or price

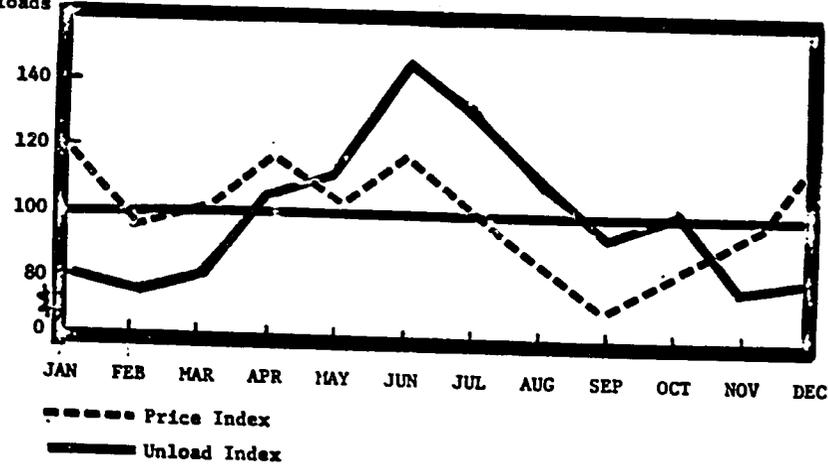
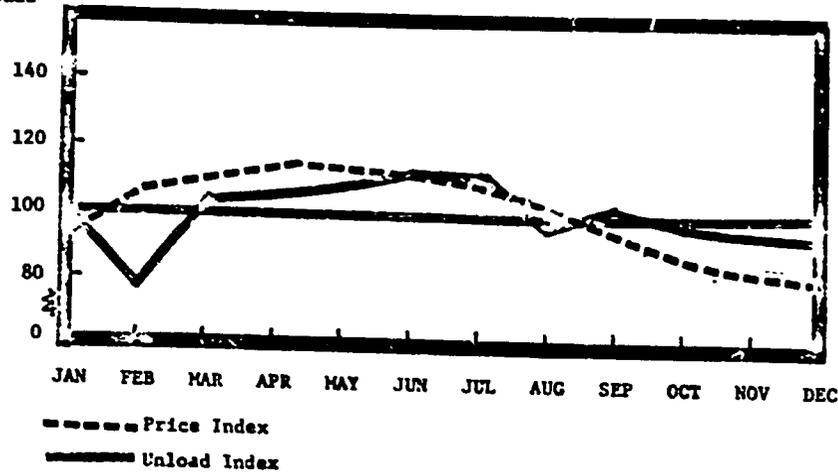


Figure 5-3: INDICES OF MONTHLY UNLOADS AND RETAIL PRICES OF FRESH ONIONS, SELECTED U.S. CITIES, 1970

% of average
yearly unloads
or price



spring (March and April) and late fall (October and November). During the winter (December through February), supplies are practically non-existent. There is virtually no U.S. winter production of cantaloupes, and Mexico, which has supplied almost 99 percent of U.S. cantaloupe imports during the past 10 years, does not begin shipping until February.

The market for honeydews is also seasonal, with reduced supplies November through February. From January through April, the market is supplied almost exclusively by imports, with over 50 percent coming from Chile and another 25 percent from Mexico. Based on an analysis of wholesale prices in the New York market and monthly shipments from domestic and foreign suppliers, November through January seem to be the most advantageous months for a new exporter to ship honeydew melons. December through February are best for cantaloupe shipments.

The United Kingdom is the largest European importer (54,600 M.T. in 1970), followed by Germany (25,600 M.T.). Other European markets are little developed, but expanding rapidly. Melon consumption is still limited to the July-October period, however, at which time Spain, Southeastern Europe, and Italy dominate the markets outside France. Most other suppliers ship either at the beginning or end of the winter season: Canary Islands--April and May; Israel--October to November and May; and Chile--March, April, and May. Nor are supplies likely to become available from most Mediterranean countries during the winter months, since climatic conditions are unfavorable to winter production. Cultivation under plastic is necessary there, even in late spring. The United Kingdom already imports considerable quantities of melons during the winter from Chile and South Africa. If the rest of Europe were to follow suit, the marketing of melons in Europe during the winter could be very attractive to a potential supplier like Colombia.

c) Tomatoes

The import market for fresh tomatoes is one of the largest fresh fruit and vegetable markets. By 1970, imports into the United States and Western Europe totaled more than \$300 million. Imports into Western Europe accounted for over 70 percent of those imports. The market is growing at a relatively slow rate, however, increasing by only 36 percent between 1966 and 1970.

Two types of tomatoes are grown for the U.S. market--vine-ripened and mature-green. Mature-green tomatoes are harvested green and sent to ripening rooms near the market. They can be produced at lower costs in the United States, primarily because they

do not have to be staked as do vine-ripened. But, they do bring a lower price than vine-ripes at the shipping point. Colombia, then, has a choice of whether to enter the United States with vine-ripened or mature-green tomatoes.

Colombia seems to have an advantage in producing the more labor intensive vine-ripes because of cheaper labor costs. However, vine-ripes spoil quicker than mature-greens (the storage for vine-ripes is from 4 to 7 days compared to 1 to 3 weeks for mature-greens) and are more difficult to ship. From the point of view of getting the product to market, mature-greens appear more attractive. However, their export could bring smaller returns to Colombian producers and exporters; payments for the ripening and packaging operations, of course, would accrue to the United States rather than Colombia. European markets also have distinct differences in consumer preferences. Whether mature-green tomatoes would be acceptable in any of these markets is a question that will have to be explored further.

There is also an off-season market for fresh tomatoes in the United States and Western Europe. Tomatoes are in short supply in the U.S. market during 5 months (November through March). Florida is the major domestic producer of vine-ripened tomatoes during the winter--December through April.

The market for imports has grown almost 80 percent between 1966 and 1970 (from 163,000 M.T. in 1966 to 293,300 M.T. in 1970). Mexico is the major supplier, having furnished over 95 percent of U.S. imports since 1961. Mexico's shipments occur year-round but are concentrated January to May. An analysis of wholesale prices in the New York market and shipments from other suppliers indicates that the best time for Colombia to try to penetrate the U.S. market with fresh tomatoes would be the beginning of the winter season--November, December.

The demand in Europe for off-season tomato imports has grown and will continue to grow faster than the demand for summer tomatoes. Present requirements in Western Europe for off-season tomatoes amount to more than 300,000 M.T. (Germany, Benelux, Switzerland, United Kingdom, France, and Austria). From January to March, the European markets outside of France are dominated by supplies from the Canary Islands. Morocco ships to France from November through April. January through May, then, is one of low supplies, with competition more severe at the beginning and end of this period when supplies from Italy and Spain are also entering the market. This January through May season would be desirable to

a potential supplier like Colombia for several reasons: supplies are short, prices are higher, and imports from third countries are not subject to the EEC reference price system (see section on trade barriers for a further explanation of this point).

d) Cucumbers

By 1970, the import market for fresh cucumbers in the United States and Western Europe was valued at \$74 million, an increase of almost \$20 million from 1966. Imports into Western Europe accounted for over 80 percent.

Cucumbers also have an off-season market. In the United States cucumbers are sold throughout the year, but supplies are shorter during winter (December through March). This coincides approximately with the import season, and U.S. cucumber imports have increased quite rapidly--7.3 percent per year during the last decade. Mexico, the principal foreign supplier of the U.S. market, has increased its share of the market from 13 percent in 1960 to 85 percent in 1970. Mexican shipments begin in November and run through May, while volume shipments from Florida, the major domestic supplier of the winter market, run October through June. Wholesale prices in the New York market are highest November through April. Cucumber shipments could be made anytime between November and April and still take advantage of the winter market.

The off-season market for cucumbers in Western Europe is developing in both France and the United Kingdom. Supplies in both countries are limited during the winter months. Moreover, a good share of both countries' imports go to supply their off-season markets. Since 1966 over 80 percent of French cucumber imports have occurred between November 1 and May 15 (total imports were 6,700 M.T. in 1970). Over 40 percent of United Kingdom imports (total imports were 25,200 M.T. in 1970) have come from the Canary Islands, October through May. Wholesale prices also seem highest November through April. German cucumber imports are much larger (over 90 percent of total EEC imports enter the German market), but its off-season market is quite small.

e) Green Peppers

By 1970, the U.S. import market for green peppers (capsicum) had increased to almost \$13 million surpassing in value the U.S. import market for cucumbers. This market had increased over 200 percent from 1966 to 1970. The combined U.S. and Western European import market totaled \$34 million over \$40 million less than the combined cucumber market.

Green peppers are available year-round in the United States but larger shipments arrive at markets during the summer. Florida and Texas are the major domestic suppliers of the off-season market. Florida's big shipments begin November and run through June. Production of bell peppers in South Texas is restricted to fall and spring crops with shipments running May through December. Mexico is the major foreign supplier of this market, supplying over 90 percent of the U.S. imports in 8 out of the last 10 years. Mexican production generally is ready for harvest and shipping in November, with major shipments terminating in May. Wholesale prices in the New York market are also highest November through May. Consequently, any time between November and May would be appropriate months for Colombia to ship peppers to the United States.

The market for sweet peppers in Western Europe has also shown considerable expansion recently, increasing by 86 percent between 1966 and 1970. Germany is the major market, importing over 50,000 M.T. in 1970. Most supplies are imported during the summer when produce from Spain, Italy, Yugoslavia, Romania, Bulgaria, and Hungary dominates the market. During the winter, Israel, Ethiopia, Kenya, and Uganda have begun to ship increasing quantities of fresh pepper by air to Western European markets. Morocco is also a major source of off-season French supplies.

f) Grapes

World trade in fresh grapes reached 934,000 M.T. in 1969. About 70 percent of these exports were from European countries, with most re-entering European countries. The United States is another significant exporter, accounting for 14 percent of world trade in 1970. The value of the import market in the United States, the EEC, and the United Kingdom reached a high of over \$100 million in 1969.

The U.S. import market is quite small, only 2 percent of world imports in 1969 (less than \$4 million) and growing relatively slowly. There are short supplies January through June when this market could be exploited by a country like Colombia. California, the major domestic supplier, ships throughout the year, but its major shipments arrive on the market July through December. Canada, one of the major foreign suppliers, ships during the summer and fall, while Chile, the other major foreign supplier, ships primarily from February through May. Auction prices recorded in the New York market are highest in February, May and June. The most advantageous months for Colombia to aim at in terms of auction prices in the New York market and shipments from other suppliers seem to be February through May, making Chile its major competitor.

The grape import market in Western Europe is much larger than the U.S. market (EEC imports in 1970 were 20 times larger than U.S. imports), but the EEC market is also slow-growing. Since Italy, France, Greece, and Spain are among the world's largest producers of table grapes, whether there is a market for suppliers outside the European continent depends on the seasonal distribution of European supplies. The main harvest season for table grapes in Europe runs July to October, and tapers off by December. Efforts to develop early and late varieties in order to prolong the marketing season in Europe have only met with limited success. Limited quantities of grapes are available from European sources during the winter months, even though winter grapes make up the bulk of Spanish production. Winter grapes are harvested November through February, as are the grapes produced in hot houses in Belgium and Holland.

In light of the reference price system, the tariff schedule, and the timing of supplies from European producers, Colombia's best opportunities for exporting fresh table grapes to any Common Market country are from the end of November to the end of June. These remarks also apply to the United Kingdom a non-producer whose imports are larger than French or U.S. imports. However, more information is needed on the seasonality of these markets before Colombia seriously considers any export program. What is the timing of present imports? The main import season in France is from November to the middle of July, but what about Germany and the United Kingdom? Do present consumption patterns follow seasonal patterns? They seem to in France where the percentage of total supplies consumed between January and June is very small. Prices may also vary by season or variety. All of this information is needed in greater detail.

a) Onions

World production of onions has almost doubled over the last 2 decades (from an average of 5.6 million M.T. in 1948-52 to 11 million M.T. in 1969). About 10 percent of world production moves in international trade (1.1 million M.T. in 1969), with over half imported by the United States and Western Europe. This market is large, worth over \$63 million in 1969—but there is no seasonal advantage to be gained in either the United States or Western Europe. The U.S. import market has grown rapidly over the last decade (8.4 percent per year), although its 34,600 M.T. imports in 1970 still represented only 6 percent of the total onion imports by the United States and Western Europe.

Mexico is the major foreign supplier (81 percent), although its share of this market is smaller than its share of the markets for

the more perishable commodities such as tomatoes and strawberries. The EEC/ import market for onions is approximately 10 times the size of the U.S. market (some 400,000 M.T. in 1970 valued at more than \$50 million). Germany, which accounts for over half of these imports, relies on Holland for a major share of its supplies. France, whose imports have almost doubled in less than 10 years and now accounts for one-fourth of EEC imports, also imports a majority of its supplies from Holland. Spain is the largest foreign supplier to the U.K. market, which is also large (200,00 M.T. in 1970). Competition appears to be strong among other suppliers to the market. Morocco, Spain, and Tunisia have lost ground to India in the French market since 1967. Egypt has also lost ground in the German market to Czechoslovakia and in the U.K. market to Chile.

b) Garlic

The garlic import market in the United States and Western Europe is small relative to the market for fresh tomatoes or grapes—only \$8 million in 1970. Nor has the market undergone rapid growth, increasing by only 27 percent between 1966 and 1970. The markets for some fruits and vegetables in temperate countries are attractive because supplies from domestic producers are short during the winter. This offers Colombia the opportunity to exploit its geographical climate advantages. Other markets for tropical fruits are attractive for the same reason. The market for garlic in the United States and Western Europe has none of these additional advantages, however. Nevertheless, if Colombia is a low-cost supplier, this may be an attractive potential market.

The U.S. import market has actually declined over the last decade (from 10,600 M.T. in 1960 to 8,000 M.T. in 1970) while domestic production increased. Domestic shipments, primarily from California, occur throughout the year but fall off slightly from February through June. Foreign shipments, mainly from Mexico, accelerate during this decline. Italy, the second most important supplier, ships from August through February, and Peru from February through May.

The European Community market for garlic is slightly larger than the U.S. market (over 11,000 M.T. in 1970). French imports are large (over 75 percent of Community imports in 1970, making its market almost as large as the U.S. market) and increasing. Another member of the European Community, Italy, supplies almost three-fourths of the French market. Egypt and Argentina are the second and third largest suppliers. German imports, on the other hand, are much smaller and stable, while imports into the United Kingdom are almost non-existent.

6/ Excluding the United Kingdom.

1) Pineapple

Canned pineapple is second only to canned peaches in world imports. But fresh pineapple is less significant in the fresh fruit trade, which is dominated by citrus, bananas, and apples. World production is large (3.5 million M.T. in 1969), but only around 3 percent moves in international trade in its fresh form. The remainder is consumed domestically or canned. Pineapple is delicate, requiring great care in handling, packing, and temperature and humidity control. Trade mark-ups in most importing countries are high, partly due to the high risks in importing; the result is to make the fruit a luxury. There is also the general reluctance of housewives to go to the trouble of preparing the fresh fruit for consumption when canned pineapples are readily available at reasonable prices. In fact, the canned pineapple industry is so well established that many consumers in the importing countries tend to regard the flavor of canned pineapple as the true flavor of the fruit, with the result that the fresh fruit is not readily accepted. Consequently, the import market for fresh pineapples in the United States and Western Europe is still relatively small--\$12.6 million in 1970.

The United States is still one of the single biggest importers of fresh pineapple, even though its imports declined steadily from a high of almost 50,000 M.T. in 1958 to a low of 11,000 M.T. in 1967. During that time, U.S. imports of canned pineapple rose spectacularly. Since 1967, the market for fresh pineapple has been looking better, with imports almost doubling between 1967 and 1970. Fresh pineapples are available in the U.S. market from Hawaii and Puerto Rico throughout the year, although supplies are slightly shorter August through October and during January and February. Fresh pineapples are also imported throughout the year, but imports peak during June. Mexico, still the major foreign supplier (60 percent in 1970), ships primarily December through June. Mexico has been losing its share of the market, however, to other suppliers such as Honduras (22 percent) and the Philippines (17 percent). Central American shipments occur primarily during May, June, and July.

The EEC market for fresh pineapples is now larger than the U.S. market, reaching 30,000 M.T. in 1970 for a value of over \$9 million. France accounted for over half of these EEC imports and Germany for about one-fifth. Imports into the United Kingdom were slightly larger than German imports. This market has increased in value 100 percent from 1966 to 1970, the same rate of growth

undergone by the U.S. market. The European market, however, has different suppliers. France relies on its ex-colonies--the Ivory Coast, Martinique, and Guinea (in that order); Germany on the Ivory Coast, Brazil, and Kenya; and the United Kingdom on its ex-colonies--South Africa and Kenya.

2) Avocados

World avocado trade is directed mainly toward European countries which do not grow them. This trade has been increasing spectacularly. Between 1966 and 1970, Western European avocado imports increased more than 600 percent. In 1970, the EEC countries imported over 3,500 M.T. valued at some \$2 million. France accounted for almost 90 percent of these imports (3,200 M.T.). Germany and the United Kingdom are the other two major importers (300 M.T. and 2,900 M.T. in 1970, respectively).

At present, Israel, South Africa, and Martinique dominate European markets. Israel alone supplies over 30 percent of the U.K. market, over half of the French market, and over 75 percent of the German market. The remainder of these markets is captured almost completely by South Africa. The production seasons in Israel and South Africa are well synchronized; avocados are available in South Africa from April to October, while Israeli harvesting spans October through May. This washing of production seasons effectively eliminates seasonal shortages in the European market. Other suppliers are blocked.

Nor is there a seasonal advantage to be exploited in the U.S. market. Supplies are available from domestic sources all year. Shipments from California occur throughout the year and are supplemented by shipments from Florida July through March. U.S. production levels doubled during the 1960's, making the United States the world's largest avocado producer. U.S. imports dropped drastically from almost 3,000 M.T. in 1960 to less than 100 M.T. in 1961. Since then, imports have been gradually rising and, in 1970, reached approximately 500 M.T.--still nowhere near earlier levels. Over 95 percent of the imports come from the Dominican Republic. The overall size of this market in the United States and Western Europe is still relatively small--only \$5 million in 1970.

2) Processed Market - United States and Western Europe

World trade in processed fruits and vegetables is smaller and perhaps more complicated than trade in the fresh product. In

1970, the total import market for processed fruits and vegetables in the United States and Western Europe was worth almost \$1 billion (Table 5-4). Imports of processed fruits and vegetables into the United States were each valued at a little over \$100 million in 1970, and each was growing at approximately the same rate during the late sixties. The Western European processed fruit market is approximately four times the size of the U.S. market and its processed vegetable market is three times. European processed vegetable imports have grown faster than fruit imports between 1966 and 1970. The rate at which imports of individual processed fruits and vegetables have been growing varies widely, by commodity and country, however. Imports of some commodities have increased over 100 percent in only 5 years (1966-1970)—canned mixed fruit into the Common Market, the United Kingdom, and the United States, for example, or Common Market imports of tomato products, mushrooms, and asparagus, for another. At the same time, imports of other commodities, especially into the United Kingdom, have actually decreased.

The individual commodities analyzed in this section were selected primarily because there is a large and/or rapidly growing external market for them—fruit juices, tomato products, and canned pineapple, for example. Because no cost of production data, factory price list, or even wholesale prices for Colombian processed fruits and vegetables were available, no attempt was made to evaluate whether Colombia could compete in price in the external markets for these commodities. This differs from our fresh fruit and vegetable analysis.

Brief analyses of the small external market for processed tropical fruits (exotic fruits) and the market for frozen fruits and vegetables were included, the first because these are products of special interest to Colombia and the second because an increasing share of the fruits and vegetables consumed in the developed countries are being consumed in the frozen form.

Markets for processed fruits and vegetables may be more complex than markets for the fresh product because they are characterized by a great deal more product differentiation. Differences stemming from the raw product itself are compounded by added differences due to preparation—canning, pickling, freezing, dehydration—as well as size of containers and the deliberately contrived differences due to brand advertising. This analysis is further complicated by multiple end users—households, mass feeding institutions, and industrial users. These markets differ both in the structure of their marketing channels and in the nature of the goods demanded. Appropriate marketing strategies should be adapted to the particular market in question.

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Table 3-4--Value of markets for processed fruits and vegetables
in the United States and Western Europe/

	Value of Imports											
	1966				1970				Change			
	EEC	U.K.	W. Europe	U.S.	EEC	U.K.	W. Europe	U.S.	EEC	U.K.	Europe	U.S.
	million U.S. dollars											percent
Processed fruits ^{2/}	176.3	175.4	351.7	68.3	280.0	154.6	434.6	100.3	59	-12	24	47
Pastes, pulps, jellies	8.2	7.4	15.7	4.3	10.9	6.4	17.3	6.5	33	-14	10	51
Fruits in syrup	106.1	136.2	242.3	36.8	141.8	115.9	257.6	58.7	34	-15	6	60
Pineapples	28.2	18.4	46.7	19.1	35.6	19.8	53.4	29.2	26	8	14	53
Oranges ^{3/}	.3	11.3	11.6	17.4	13.0	11.0	24.1	22.9	4,233	-3	108	32
Mixed fruit ^{4/}	1.1	5.0	6.0	0.6	15.4	14.6	30.0	2.1	1,300	192	400	250
Fruit juices	53.6	23.2	76.8	7.2	107.6	24.3	131.9	12.3	101	5	72	71
Citrus juices	27.0	17.8	44.8	2.0	60.1	17.5	77.7	2.4	122	-2	73	20
Frozen fruit	0.8	2.6	3.5	17.4	0.9	2.4	3.2	19.1	12	-8	-8	10
Processed vegetables ^{5/}	144.9	65.2	210.0	67.0	268.8	69.8	338.6	104.1	86	7	61	55
Tomatoes & tomato products	19.2	35.8	54.9	16.9	38.9	38.6	77.6	24.5	103	8	41	45
Mushrooms	26.2	-	26.2	7.7	51.1	-	61.1	14.8	133	-	133	92
Asparagus	18.0	1.8	19.8	-	36.2	1.3	37.5	0.8	101	-30	89	1
Peas	13.9	0.2	14.1	0.5	19.5	0.3	19.8	2.0	40	50	40	300
Olives	11.9	0.9	12.8	28.7	18.5	0.8	19.2	38.6	55	-11	50	34
Pickled vegetables	7.8	2.5	10.3	6.0	13.8	3.0	16.7	11.7	77	17	62	95
Sauces	19.1	-	19.1	2.3	34.9	-	34.9	3.2	83	---	83	39

1/ United Kingdom, France, Germany, Netherlands, Belgium-Luxemburg, Italy.

2/ Excludes dried fruit.

3/ Includes mandarin oranges.

4/ Includes fruit cocktail and fruits for salads.

5/ Excludes dried vegetables.

In general, consumers purchase goods in small containers and are influenced by brand names. Consumers like products that are familiar to them in physical appearance as well as taste. They do not always purchase top-quality products, however, and will buy goods of a lower quality if they think they are getting good value. Consumers, however, are not very good judges of quality and therefore must rely on the reputation of a particular processor or retailer. This is one reason why advertised brands are so strong at the consumer level.

Mass feeding institutions purchase in somewhat larger containers. Brand names are less important to the institutional buyers who are professionals able to judge quality and value. Quality, however, is very important, especially with regard to physical appearance, color, size, and number of portions.

Industrial users buy in large volume, often in very large containers such as barrels and drums. Quality is essential in this market, although the quality characteristics may not be the same as those for the consumer market. Physical appearance is often less important than the absence of extraneous material such as seeds, cores, and insects. Brand name and country of origin have no impact on industrial users.

Because of the distinctions in containers, sizes, and quality characteristics among the three markets, it would not be practical for a new processor to attempt to enter all three markets at once. A more appropriate strategy would be to enter and become established in one market. Later, as production capabilities expand, other markets could be entered in order to make use of common agricultural and productive inputs. Because of its characteristics, the industrial market would probably be the easiest market for a country like Colombia to enter successfully and have the most potential for continuing success.

However, it is hard to determine exactly the size and promise of each of these three markets. Trade data seldom give any indication whether imports are for direct consumption, for institutions, or for industrial purposes. Occasionally commodity categories are broken down by container size, with the larger sizes presumably going to institutional and/or industrial users. In most cases, one will be unable to determine either the size of these markets or the nature of their demand without interviewing the trade, however. To get more detailed information on the type of processed product demanded by households, one can first look at the legal requirements and then at the recommended grades (both are included in the separate appendix to the study on markets for processed fruits and vegetables).

If more details about consumers' tastes and preferences are desired, they can be obtained through interviews with importers, wholesalers, retailers, and even consumers themselves, and/or by getting samples of the types of commodities various competitors already have on the market.

However, knowing the basic standards and grades is not sufficient to successfully penetrate the institutional and industrial markets for processed fruits and vegetables. Here, there are no "standard" container sizes and other demands may differ widely. There seems to be no way to get the type of detailed information necessary to develop a successful export program directed to these types of final users other than to interview importers and purchasing agents themselves. When information was available from secondary sources on institutional and industrial users of processed fruits and vegetables, it was included in this analysis. A further analysis was beyond the scope of this report. Before any export development program is inaugurated, however, much more detailed information is needed on (1) the size and potential growth of the mass feeding and industrial markets in each country for the more important commodities and (2) the nature of the commodities demanded.

a) Canned Fruits and Vegetables

Canned fruits and vegetables are still the most important category of processed fruits and vegetables produced, traded, and consumed. For example, during the late sixties, the United Kingdom imported over 6,000 M.T. of frozen fruits and vegetables; its canned tomato paste imports alone were 10 times higher during this same period. Tomato products, fruit juices, peaches, and pineapples are some of the most important canned products moving in international trade.

1. Tomato Products

Processed tomato products include tomato concentrates, peeled whole tomatoes, and tomato juice. The volume of international trade in tomato products is estimated to be around 600,000 M.T. about 20 percent of the world's output. For most of the tomato manufacturing countries, the United States for example, the domestic market is the principal outlet. Exports of tomato paste, the main trade item, reached 350,000 M.T. in 1967, double the volume of the late fifties. Two countries, Italy and Portugal, account for two-thirds of the total volume of tomato paste entering international trade. Italy

was the single largest exporter of tomato paste until 1968, when it lost its leadership to Portugal. Both countries have geared their industries to the export market. World trade in preserved whole tomatoes makes up around one-third of the total market for tomato products (approximately 200,000 M.T.). Italy alone supplies more than three-fourths of this market, with a little competition from Portugal. Exports of tomato juice are even smaller—50,000 M.T. per year. The Mediterranean countries as a group have doubled their shipments since the end of the fifties and are now estimated to account for about one-third of world tomato juice exports.

The United Kingdom, United States, and Canada are the major importers of tomato products. The United Kingdom is the biggest single importer of tomato paste, taking almost 64,000 M.T. or roughly one-quarter of total world imports in 1970. U.K. imports rose almost 50 percent in the last decade, with the largest part coming from Portugal. Germany is another large importer of tomato paste (38,000 M.T. in 1966), with Italy its most important supplier. U.S. imports of tomato paste and tomato sauce have fluctuated, but were at a remarkably high level of 70,000 M.T. in 1967 and 1968, decreasing to 41,450 M.T. in 1970. Imports of preserved whole tomatoes are concentrated in three countries—the United Kingdom, United States, and Canada. The United Kingdom alone accounts for more than 50 percent of these imports (almost 95,000 M.T. in 1970). The United Kingdom is also the major importer of tomato juice, taking about half the volume traded internationally (14,000 M.T.).

Future trade flows are difficult to predict. Export availabilities during the next few years seem likely to remain at present levels in Italy, but will likely increase in countries with comparatively new processing industries, including Portugal, Greece, Spain, Tunisia, Yugoslavia, and Turkey as well as Eastern European countries, particularly Bulgaria and Hungary. Most of these producing countries hope to ship a substantial part of their additional supplies to Western Europe; however, unless the market expands more favorably than in the recent past, the amount of product available for export might increase more rapidly than import demand and prices could drop.

As far as imports into Western Europe are concerned, Portugal, a very low-cost producer, seems to be in a favorable position at present. Other Mediterranean countries with relatively low labor and cultivation costs might also be able to compete profitably on this market, however. The Italian industry would seem to be facing serious difficulties since it has already lost considerable ground in this market.

Consumption of processed tomatoes will continue to increase, particularly in developing countries. However, it is unlikely that trade opportunities will increase correspondingly. In summary, countries which wish to develop their tomato processing industries essentially for export to the Western European or U.S. market are likely to meet sharp competition.

11. Citrus Juice

The volume of citrus juice moving in international trade increased from 300,000 M.T. in 1960 to about 580,000 M.T. in 1967 (single strength equivalent). Most of this growth was in concentrates; shipments of citrus concentrates doubled between 1960 and 1967, reaching a level of 80,000 M.T. in 1967. Brazil, United States, and Israel are the largest exporters of citrus juice. More than 90 percent of the citrus juice output in the United States is sold on the domestic market. In most citrus producing countries, however, domestic sales are regarded only as a residual outlet; juice production is mainly geared for export.

Orange juice is the most important citrus product; it constitutes about three-quarters of the total volume of citrus juice entering international trade. World export trade in single strength orange juice did not show significant changes in volume between 1960 and 1966, as decreasing exports from the United States were offset by increased shipments from other countries, mainly Israel. However, exports increased dramatically in 1967 (by almost 30 percent) when the United States, after recovery in 1966, nearly doubled its foreign sales. By the end of the sixties, the United States and Israel were supplying two-thirds of the world's exports of single strength orange juice.

Concentrated orange juice, however, is the most important item in international citrus juice trade as far as value is concerned. Exports have undergone almost continuous expansion reaching almost 80,000 M.T. in 1968. This increase in trade originated mainly from the southern hemisphere—Brazil, Argentina and South Africa. Brazil alone expanded its shipments of orange concentrate (mainly frozen) from 200 M.T. in 1962 to a record volume of over 30,000 M.T. in 1968.

World trade in lemon juice, dominated by Italy, is stagnating (at around 5,000 M.T. per year). World exports of grapefruit juice in natural concentration amount to 50,000 M.T. and Israel and the United States are the two major exporters. Mixtures of orange and

grapefruit juice are the major item in the international blended juice trade. They are traditionally traded as single strength, but shipments have shown a marked downward trend (from 15,000 M.T. in 1960 to 4,000 M.T. in 1968). Exports of single strength lime juice are estimated to have reached 15,000 to 20,000 M.T. in 1967, mainly from Ghana, Mexico, and Jamaica.

Canada is the leading importer of citrus juices (15 percent of world imports of single strength juice and 30 percent of imports of concentrated juices in 1968). In 1968, it imported over 36,000 M.T. of single strength juice, the majority orange juice (64 percent) followed by grapefruit juice (27 percent). The bulk of its supplies come from the United States, but smaller quantities are also imported from Brazil, British Honduras, and Jamaica.

In Europe, the two main importing countries are the United Kingdom for single strength juice (almost 27,000 M.T. in 1970, over half of which was orange and almost 30 percent grapefruit) and Germany for concentrates. The United Kingdom has increased its imports of both single strength and concentrated juice in recent years after a temporary reduction in the early sixties. Israel, the major supplier, supplies over half of the single strength orange juice, one-third of the orange concentrates, and half of the grapefruit juice entering the United Kingdom.

The United States, which held about 50 percent of the German market for citrus concentrates in the early sixties, has lost considerable ground to other suppliers, especially Brazil, which has now become the principal supplier. German imports of single strength orange juice have also increased, primarily from Israel and Greece. U.S. imports of citrus concentrate (mainly orange) increased to over 9,000 gallons in 1964, dropping back to 2,000-3,000 gallons for the next 3 years. Then in 1968, the reduced 1967-68 pack resulted in a massive expansion of orange concentrate imports (to over 17,000 gallons) again dropping back drastically the next year (to 6,000 gallons in 1969). Since 1966, more than 90 percent of the U.S. imports have come from Brazil, replacing Mexico, which had been the traditional supplier.

Despite the strong competition from soft drinks, consumption of citrus juices has risen faster in the last few years than consumption of fresh citrus fruit. Processed citrus products are consumed overwhelmingly in developed countries. Developing countries account for only about 3 percent of total world consumption. The bulk of citrus products (more than four-fifths) is also consumed in developed producing countries, above all the United States, and only about 15 percent is consumed in developed importing countries. As

far as consumption in importing countries is concerned, above average increases in demand are expected in Northwestern Europe and in Canada. FAO (Food and Agriculture Organization) has projected that aggregate imports into these countries would almost double between 1970 and 1980, from 1.6 to 3 million M.T. of fresh fruit equivalent. Countries where demand has grown considerably include the Netherlands, Denmark, Sweden, Germany, and the United Kingdom, although per capita consumption levels are still much lower than levels in the United States.

However, export supplies are likely to expand considerably also. In Brazil, the rapidly expanding industry is geared to the export market. It is also doubtful whether U.S. consumption can be pushed to such a level that the total expected increase in output could be absorbed by the domestic market; the same holds true for Japan. Thus, increased marketing must be expected from these countries, and their exports will compete with exports from the Mediterranean area and the Republic of South Africa. Supplies to the processing industry in these latter areas are still largely a residual item; they stabilize the fresh fruit market and utilize fruit not meeting export standards. If larger supplies are marketed, prices will tend to fall, making it harder for new suppliers to enter the market. It will also be difficult for those suppliers to compete whose industries were established in order to process fruit left over from the fresh market. U.S. exports will be very competitive because of the size of the U.S. industry, its financial power, and its efficient organization. Clearly, competition in the international juice market will become much sharper.

iii. Pineapple

World output of canned pineapple increased by 34 percent during the 1960's (from 503,000 M.T. in 1960 to 674,000 M.T. in 1969). The United States (Hawaii) was the largest producer of canned pineapple, accounting for 46 percent of the estimated output in 1969. Taiwan (14 percent), Malaysia (10 percent), Philippines (9 percent), and South Africa and Australia (approximately 5 percent each) are the other major producing countries. Industries in this latter group of countries produce primarily for export.

Almost 60 percent of the total output enters world trade (387,000 M.T. in 1969-70). In 1969-70, over half of the world's exports were divided among four countries: Taiwan (19 percent), Malaysia (15 percent), the Philippines (15 percent) and South Africa (10 percent). The U.S. share of the market dropped drastically from 19 percent in 1962-63 to 6 percent in 1969-70.

By 1969-70, the United States supplanted Germany as the major importer of canned pineapple (taking almost 30 percent of world imports). Germany was the second major importer followed by Japan and the United Kingdom (approximately 16 percent each). Together, these four countries account for over three-fourths of the world's imports of canned pineapple. Other important markets include Canada, France, the Netherlands, and Belgium. Taiwan has supplanted the United States as the major supplier of the West German market (34 percent in 1969-70). It is also the major supplier of the Japanese market and second only recently to the Philippines as a supplier of the U.S. market. Malaysia and South Africa each account for about one-third of the U.K. market. The stiff competition characterizing this market during the sixties will probably continue as more countries begin to produce canned pineapple and as trade in competing fruits, especially canned peaches, expands.

iv. Exotic Fruit Products

A ready market for tropical fruit products does not exist outside of the developing countries themselves. As in the case of fresh tropical fruits, these products are not well known to U.S. or European consumers. Nor do exotic fruit products necessarily have good sales prospects in these export markets, even though they may enjoy great popularity at home. Tastes differ considerably. For example, the taste for highly sweetened products which is characteristic of many developing countries is far less pronounced in European countries. Included in this category are products manufactured from mangoes, papayas, guavas, passion fruit, lulo, lychees, and mangosteens. The principal products manufactured from such exotic fruits are: (1) jams, marmalades, and jellies; (2) fruits in syrup; and (3) fruit juices, syrups, and nectars.

The principal European market for exotic fruit products is the United Kingdom, owing probably to its large immigrant population. Any future development in consumption is likely to take place among the "British" consumers, however, since the immigrant market appears to be nearing saturation. Most exotic fruit products now imported into the United Kingdom are ready to consume, and the bulk goes to the retail trade. Approximately 4,000 M.T. of ready-to-consume products are imported each year and 850 M.T. of brined mangoes (for making chutney) could be used if supplies were available. Over three-fourths of these imports consist of fruits canned in syrup; lychees lead the list, followed by tropical fruit salad, guavas, and mangoes. The market is supplied by relatively few countries--India, Commonwealth Caribbean countries (primarily Jamaica), Australia, and South Africa.

Officially published trade data on imports of exotic fruit products are so meager that it is impossible to determine past trends in demand or predict future prospects statistically. Moreover, for some markets, published data is so limited that one is unable to even determine with any accuracy the dimensions of the existing market. Therefore heavy reliance must be placed on information supplied by the trade. For example, according to U.K. importers, the prospects for increasing imports of exotic fruits in syrup are generally good, although they see no great spurt in demand; nor do they see their job of merchandising becoming any easier.

Germany is the principal European importer of exotic fruit products for reprocessing, with the exception of mangoes in brine which are imported on a large scale by the United Kingdom. Since such products have only recently come into commercial use, quantities required by industry are still small. Passion fruit juice is in most demand. Annual requirements are estimated at about 40,000 imperial gallons, and the trend is slowly increasing. The juice goes into the manufacture of fruit drinks and lemonades, and two firms are using it to manufacture a liqueur. So far, sufficient supplies have been available from a dozen countries. Demand is also growing for fruits canned in syrup for direct consumption, with lychees leading the list, followed by mangoes, loquats, tropical fruit cocktail, and guavas. As in the United Kingdom, prospects in Germany are best for high quality fruits in syrup, while sales of nectars, jams, and jellies, (which are small now) show little promise.

The small but wealthy Swiss market could absorb increasing quantities of exotic fruit products, especially fruits in syrup, but present consumption is very small. The Netherlands market is even smaller and unpromising. However, since a considerable proportion of the exotic fruit products presently on sale in Europe are imported from developed countries (South Africa and the United States), there would appear to be an opportunity for developing countries to increase their share of these markets.

The U.S. market is undoubtedly as large or larger than the U.K. market, but trade data is so meager that actual dimensions of the market are unclear. Although exotic fruits are imported in ready-to-consume form, a major share enters as fruit pastes and pulp, much of it to be used for further processing. For example, almost 3,000 M.T. of guava, mango, and papaya pastes and pulps worth \$600,000 f.o.b. entered the United States in 1970. Moreover, this market appears to have grown quite rapidly, increasing by over 250 percent between 1966 and 1970. Imports of exotic fruit jellies and jams were much smaller, only 40 M.T. valued at less than \$16,000. Latin American countries have been the major supplier of this market, although some supplies have also been obtained from India and South Africa.

v. Canned Vegetables

The most important processed vegetable items (other than potato products) are canned vegetables, soups and sauces, pickles, and chutney. Canned vegetables, however, are the only items traded in substantial quantities. Trade in soup, sauces, and pickles is generally limited to a few specialty items, with most countries producing their own requirements. Mushrooms, asparagus, peas and beans are the most important vegetable items. These are primarily an international trade and were European imports of these four commodities amounted to \$199 million in 1970.

Germany was the largest importer of canned mushrooms, followed by the United States. German imports of canned mushrooms more than doubled in 5 years, reaching almost \$58 million in 1970 (56 M.T.). Taiwan, the major supplier of the German market in 1966 (over 60 percent), disappeared during the late sixties and by 1970 found itself splitting the market three ways with France and Holland. Taiwan, on the other hand, is still the major U.S. supplier. The United States is a large and growing market (overall M.T. in 1970, valued at almost \$15 million). The penetration of the U.S. market by Taiwan has been spectacular, with a rise from zero in 1960 to almost 16 M.T. in 1970 valued at almost \$13 million, or over 80 percent of the market.

The U.S. and European import market for canned asparagus amounts to \$38 million, about half the value of the canned mushroom market. Germany accounts for almost 80 percent of these imports. At one time, Germany was a lucrative market for exports of canned asparagus—especially the white variety—from the United States. But Taiwan, whose white asparagus production did not even begin until 1963, has dramatically taken control, capturing over 60 percent of the market by 1966 (over 23 M.T. valued at some \$15 million) and over 90 percent by 1970 (56 M.T. valued at \$58 million).

European imports of canned peas and beans, although large (over \$40 million in 1970), are supplied primarily by neighboring countries. U.S. imports of canned peas, although smaller than European imports (\$2 million in 1970), increased threefold during the late sixties and are supplied by the Dominican Republic. U.S. imports of canned beans, although growing, are miniscule (less than \$200,000).

b) Frozen Fruits and Vegetables

Consumption of frozen fruits and vegetables has expanded rapidly over the last decade in the United States. A similar trend is expected in Europe. The total volume of European

the late sixties was equal to only 10 percent of U.S. consumption. There is a wide variation in the per capita consumption levels of frozen foods among countries, ranging from 21.5 kilograms per person per year in the United States in 1966 to 4.4 in the United Kingdom, 2.0 in Germany and 0.8 in France. The importance of fruits and vegetables as a part of the frozen foods industry also differs considerably from one country to another, going from 10 percent in Norway to 45 percent in the United Kingdom, 50 percent in Germany, and 55 percent in France.

Frozen vegetables consumed in Europe are mainly peas and spinach, followed by french beans, brussel sprouts, and broccoli. In the United Kingdom, peas account for 70 percent of frozen vegetable sales while, in Germany, spinach makes up 65 percent. Frozen vegetables are tending to lose a part of the market already in many European countries due to market saturation by the leading products, and to good supplies of fresh vegetables at competitive prices. Frozen fruit is still a relatively small line in most European markets. Prices tend to be high relative to canned and fresh fruit, and European markets are well supplied with fresh fruit throughout the year. As a result, consumption is rising only slowly. The most popular fruits are strawberries, raspberries, and blueberries, which share a relatively short season and a short "shelf-life" as fresh products.

In the United States, the major frozen vegetables consumed are potatoes and potato products, peas, corn, snap beans, and broccoli, in that order. Berries—strawberries, blueberries—and citrus juices are the most important frozen fruits consumed.

Reasons why European frozen food consumption has not yet reached American levels are the prevailing distribution pattern, lower purchasing power, and the rather traditional attitude of consumers towards innovations. However, positive factors are the creation of an image of high quality, freshness, and preparation convenience. Emergence of supermarkets and self-service stores are also positive factors. Another is the expansion of the catering sector (restaurants, canteens) as a major consumer of frozen foods.

An important side effect of increases in supplies of frozen fruits and vegetables could be a decrease in the consumption of fresh and/or canned produce. The rapid growth in the demand for frozen products in the United States was at the expense of fresh fruit and vegetables, while the consumption of canned produce remained

relatively stable like total fruit and vegetable consumption. In European countries, competition between certain types of frozen fruit and vegetables and fresh "off-season" products may be expected in the future, particularly if fresh produce could be offered on the market at substantially lower prices. Here, this competition might be at the expense of the frozen product.

In most European countries, the consumer retail market is the most important outlet for frozen foods, but it is anticipated that, during the 1970's, there will be a very substantial increase in sales to institutional markets. These markets will grow more rapidly than retail sales in at least some of the more developed countries. In addition to sales for direct consumption, there is a growing business in frozen products for processing by a variety of food manufactures—for soft drinks, preserves, canning, bakery goods, soups, prepared meals, and yoghurt, for example. Similar trends are already underway in the United States and are expected to continue.

The market for frozen foods in Europe is dominated by a few large manufacturers. Unilever and Nestle account for about 70 percent of the total retail market in Western Europe. Only the United Kingdom and France are substantial net importers, with the United Kingdom accounting for approximately 50 percent of total frozen food imports by Western European countries in 1966-67. Because imports are small, trade data is deficient, making it difficult to analyze present trade patterns, let alone project future patterns. The two heaviest importers of frozen vegetables are the United Kingdom (52,500 M.T. in 1967), and Germany (11,000 M.T.), followed by Belgium, France, and Italy. Imports into the United Kingdom are primarily peas (44 percent of frozen vegetable imports), beans (11.5 percent) and brussel sprouts (8 percent). These vegetables are purchased primarily from Europe, Canada, and South Africa, with the bulk of other frozen vegetable imports coming from Canada and the United States. Germany imports primarily peas and spinach; France imports primarily spinach; and Italy peas.

The United Kingdom is also a major importer of frozen fruit and fruit juices (6,600 M.T.), followed by Sweden (4,500 M.T.), the Netherlands (3,100 M.T.), Germany (2,900 M.T.), and France (2,500 M.T.). U.K. imports are mainly in bulk, non-sweetened form from the Netherlands and Eastern Europe. German frozen fruit imports are mainly in fruit or puree form for further processing by jam and fruit juice manufacturers. German imports come largely from Eastern Europe while French imports are chiefly from Yugoslavia, Morocco, and the Netherlands.

There is much less concentration in the U.S. market for frozen fruits and vegetables; in 1967 the four largest freezers accounted for less than a quarter of total production. The only frozen fruits and vegetables imported into the United States in any quantity are strawberries and blueberries. Strawberry imports are large and growing. In 1969, they were valued at \$15.6 million, 10 times the value imported in 1956. In volume, they totaled 42,000 M.T., 8,100 M.T. above the level a year earlier and over 8 times the quantity imported in 1956. Over 95 percent of these imports came from Mexico. Imports of frozen blueberries although fluctuating were back up to 5,000 M.T. Close to 90 percent of these imports came from Canada, with Poland supplying most of the remainder.

3) Latin American Markets

Markets in Latin America may also hold some potential for Colombian exports of fresh and processed fruits and vegetables. The market is still small, however, only about one-third the size of the U.S. market. In 1967, all Latin American countries imported more than \$192 million worth of fruits and vegetables compared to U.S. imports of \$556 million. Moreover, because each country has its own peculiar demand pattern, product specifications, and import regulations, the cost of entering this market per dollar of potential sales is much higher than for the United States. Quality requirements for these countries are probably high also, especially when imports are used to supply the demands of the high income classes or the tourist trade.

Nevertheless, some of the markets are large and growing. Brazil alone imported \$65 million of fruits and vegetables in 1967 and Venezuela \$25 million. Colombia should have a locational advantage to exploit in supplying these markets, although this may be weakened by a lack of transportation facilities.

A more detailed analysis was made of the potential markets in seven of Colombia's closer and more promising neighbors—Panama, Venezuela, Brazil, Trinidad and Tobago, the Netherland Antilles, Ecuador, and Peru (Table 5-5 and 5-6). In 1968, these countries imported over \$112 million of fresh dried, and processed fruits and vegetables—an increase of almost 80 percent over 3 years earlier. Imports of fresh fruit, primarily temperate fruit, were the largest market—almost \$44 million in 1969.

Apples were by far the most important fresh fruit imported, accounting for over 60 percent of the total value of fresh fruit imports (118,000 M.T. in 1969). Brazil was the most important

Table 5-5--Value of combined import market for selected fruits, vegetables and related products in seven Latin American countries^{1/}

	Value of Imports		Change percent
	1966	1969	
	million U.S. \$		
Fresh fruit	24.7	43.8	77
Apples	15.2	27.5	81
Pears	3.6	7.0	94
Grapes	3.6	5.5	53
Processed fruit	6.5	6.8	5
Fruits in syrup	2.7	1.7	-37
Fruit pastes, pulps	2.0	2.7	35
Fruit juices	1.1	1.6	45
Fresh vegetables	7.8	8.9	14
Garlic	5.9	6.2	5
Onion	1.0	1.3	30
Dried beans, peas, lentils	14.6	15.1	3
Processed vegetables	4.7	4.5	- 4
Tomato products	0.6	0.3	-50

^{1/} Brazil, Ecuador, Netherland Antilles, Panama, Peru, Trinidad and Tobago, Venezuela.

Table 5-6--Import demand for selected fruits, vegetables and related products in seven Latin American countries, 1969

Commodity	Imports						
	Brazil	Ecuador	Netherland Antilles	Panama	Peru	Trinidad & Tobago	Venezuela
	metric tons						
Fresh fruit	147,541	340	---	2,717	903	1,553	13,792
Apples	113,924	---	841	1,664	776	875	---
Pears	21,486	---	128	274	110	---	5,165
Grapes	2,654	340	91	364	---	102	2,147
Processed fruit	1,409	---	3,466	2,739	---	3,085	6,846
Fruits in syrup	957	9	20	1,083	209	584	1,514
Fruit pastes, pulp	63	14	237	839	20	596	5,200
Fruit juices	351	15	2,450	689	1	1,808	5
Fresh vegetables	19,200	---	3,315	2,097	---	6,170	1,678
Garlic	14,928	---	52	297	---	552	4
Onions	4,270	---	1,121	1,609	---	3,623	898
Dried vegetables ^{1/}	14,163	72	509	4,099	8,716	7,506	39,094
Processed vegetables	193	291	2,615	1,455	200	601	3,582
Tomato products	6	183	443	37	17	234	14
Dehydrated vegetables	70	---	---	30	76	13	291
Peas & beans	38	---	---	448	30	16	1,254

^{1/} Primarily dried peas, beans and lentils.

market, accounting for 95 percent of all apple imports. Imports of pears were second in importance (over 27,000 M.T. worth almost \$7 million), and grapes third (over 14,000 M.T. worth over \$5 million). Brazil again was the major importer of both pears (21,500 M.T.) and grapes (6,000 M.T.). Argentina is Brazil's major supplier of all three of these fruits. Because it is a neighbor, Colombia might have a chance of supplanting the United States as the major supplier of grapes to Venezuela; in 1969 the United States supplied two-thirds of Venezuela's grape imports--a market which totaled \$1.5 million. The United States is also the major supplier of grapes to the Netherland Antilles, Trinidad and Tobago, and Panama, while Chile is the major supplier of apples, pears, and grapes to Peru and grapes to Ecuador.

The United States has, in fact, built up a lucrative market for its exports of fresh fruits and vegetables to Latin America, aiming its products primarily at the demands of the high income and tourist market for high quality fresh produce. The United States ships fresh table grapes, apples, pears, plums, melons, strawberries, cherries, citrus, apricots, peaches, lettuce, celery, tomatoes, melons, onions, peppers, carrots, and asparagus. In 1970 it exported \$7.7 million worth of fresh fruit and \$500,000 worth of fresh vegetables to Latin America.

There is no reason why other Latin American countries such as Colombia should not be able to take over some of these markets. Moreover, there is every reason to expect that the importers themselves will try to provide more of their own requirements for fresh produce, especially vegetables. Many fruit and vegetable production projects are certain to be funded; how successful they will be is another question. Still, Brazil, Venezuela, and the Netherland Antilles, for different reasons, may continue their imports.

The second most lucrative import market appears to be for dried vegetables, particularly dried beans, peas, chick peas, and lentils. The seven countries analyzed imported over 74,000 M.T. of dried pulses in 1969 valued at over \$15 million. Five of these countries imported over \$1 million worth each (Venezuela \$7.3 million, Brazil \$3.2 million, Peru \$2.0 million, Trinidad and Tobago \$1.3 million, and Panama \$1.0 million). Imports came from a wide variety of sources. The United States, Argentina, and Chile were major suppliers of these markets, but substantial supplies also came from Mexico, France, the United Kingdom, Spain, Portugal, Romania, Morocco, and Canada.

This market tends to be forgotten because beans are usually thought of as having a low or even negative income elasticity, meaning that bean consumption does not increase rapidly with income growth and in fact may decline. Income elasticities are not really constant, however, but can be positive at low levels of income, zero at middle levels, and negative at higher levels. If the mass of consumers in the Caribbean and South America are still at the point where their income elasticity for beans is positive, increases in overall income and/or programs to more equally distribute income could lead to large increases in the demand for beans. The fact that the import market for beans has only increased by 2 percent per year between 1966 and 1969 only indicates that, so far, domestic production has kept reasonable pace with demand.

The market for processed fruits and vegetables is smaller, more complicated, and probably less promising. Imports of processed fruits and vegetables by the seven countries totaled \$11.3 million in 1969, \$4.3 million less than the market for dried pulses, and only \$100,000 more than was imported 3 years earlier. Although the market for dried pulses is by no means homogeneous, the processed fruit and vegetable market includes many more commodities and many methods of preparation--canning, pickling, freezing, and juicing. The major categories of imports are: fruits in syrup, fruit pastes and pulps, fruit juices, canned vegetables, dehydrated vegetables, and tomato products. Within these major categories exist a myriad of preferences for certain commodities (peas rather than corn, for example, or peaches rather than fruit salad), certain varieties, can sizes, degrees of sweetness, and brand names. The United States and Western European countries supply the lion's share of these markets at present. Imports of processed fruits and vegetables by the seven have grown relatively slowly, (less than 1 percent per year) perhaps as a result of individual country policies to encourage the development of domestic food processing industries.

Of course this market is segmented as is the market for processed fruits and vegetables in the developed countries. Again the natural tendency is to think primarily of producing for the retail market for households. Yet, as in the developed countries the institutional or mass feeding markets or even the industrial market may be more attractive alternatives. For example, a U.S. trade promotion team found particular interest in institutional type food products in several Caribbean markets, especially portion control items, and also in bulk food items for further processing. In devising strategies to exploit the nearby Latin American markets,

Colombia must continually keep in mind that most of these countries are equally interested in processing their own food products, decreasing imports and increasing exports. Supplying bulk semi-processed products for further processing may be one way of entering these highly protected markets with a product which still captures some of the value added in processing for Colombia.

Although only one-fifth the size of the fresh fruits market, the market for fresh vegetables is bigger than either the processed fruit or the processed vegetable market (\$8.9 million in 1969) and has grown more rapidly than either--4.5 percent per year. The biggest imports within this group are of garlic (almost 16,000 M.T. in 1969 worth over \$6 million) and onions (11,500 M.T. in 1969 worth \$1.3 million). Brazilian imports accounted for 90 percent of the seven's garlic imports and Trinidad and Tobago for over half of the onion imports. Sources of supply are varied and include the United States, Argentina, Italy, Mexico, Spain, Chile, and Hungary for garlic and the United States, Canada, Holland, and Portugal for onions.

b. Sugar

World trade in sugar averaged 16 million M.T. during 1967-68 for a value of \$1.8 billion. During these same years, the major developed countries (United States, EEC, Soviet Union, United Kingdom, and Japan) imported approximately \$1.5 billion of sugar, \$1.3 billion of it from developing countries. The sugar market is one of the most attractive markets for agricultural products that the less-developed countries have in the developed countries; it is third only to coffee and fruits and vegetables in value, and it grew at a presentable rate (4.2 percent per year) during the 1960's.

By 1980, total world trade in sugar is projected to increase to 22 million M.T., an increase of almost 40 percent over the 1967-68 level (Table 5-7). By then, the share of world demand being met by exports will have decreased from 28 percent to 24 percent. This reflects a policy supported trend toward self-sufficiency in many countries. FAO projections indicate that the developed countries will still account for two-thirds of world net import demand, even though consumption levels in the developing countries are growing at a much more rapid rate.

Distribution of shares among the developed countries will change, however. For example, Japan's net imports will increase by 1 million M.T. during the decade, increasing Japan's share of world

net imports from about 12 percent to 15 percent. Based on 1970 policies, U.S. net imports will increase by almost half a million M.T., but its share of the world total will decline slightly from 30 to 29 percent. Trade within the EEC will increase largely because of the increased requirements of Italy, but there will be a reduction in import requirements elsewhere in southern Europe. Little change is predicted for net imports into the centrally planned importing countries. Requirements of Eastern European countries are predicted to increase, but the increase will be offset by a reduction in Soviet imports. The slight increase in the share of the world's sugar imports going to the developing countries is due mainly to an increase of 700,000 M.T. into Asia and the Far East (Pakistan, Indonesia, Ceylon, Republic of Vietnam, and Korea).

Shifts will also occur in the pattern of exports. Australia and South Africa (the two developed country cane sugar producers) will increase their shares, along with Brazil, Mexico, the Philippines, Colombia, and the African exporters as a group. FAO predicts a decrease in Cuba's share of the world export market (although it will remain the largest exporter). Taiwan, Peru, the Commonwealth exporters in the Caribbean, and the Eastern European, and EEC exporters also will experience decreasing shares. The major share of the projected increase in exports will still come from developing countries, although their share in the world market will decrease a little further in favor of the developed country exporters.

Developing country exporters, then, will continue to rely primarily on developed country markets as outlets for their exports. The level and growth rate of their exports will be limited under these circumstances by what occurs within the developed countries. FAO has assumed that the production growth rates in the developed countries will decrease; if these reductions fall short of the estimates, this leaves little scope for expanding exports from the developing countries. Making accurate estimates is complicated by the fact that domestic sugar production in many of the major importers is more a question of politics than economics. Developing country markets are even less promising, however, due to (1) their official commitments to self-sufficiency and (2) financial support for these goals from various bilateral and multilateral aid agencies.

At the world level, FAO's individual country supply and demand projections add up to a slight deficit by 1980 (270 thousand M.T.). Although such a deficit is unlikely to materialize, it does conjure up a market situation that, at least on the surface, looks much more favorable to the sugar exporters of the world than the earlier FAO projections which forecast a slight surplus for 1975.

Table 5-7--Import demand for sugar

Importers	Actual	Projected		Importers	Actual	Projected	
	1964-66	1970	1980		1964-66	1970	1980
	thousand M.T.				thousand M.T.		
<u>World</u>	16,394	19,268	22,135	<u>Developing</u>	4,000	4,434	5,457
<u>Developed</u>	12,394	14,834	16,678	Africa	1,159	1,228	1,267
North America	5,001	5,902	6,545	Morocco	356	333	302
United States	4,232	4,968	5,432	Algeria	205	251	330
Canada	769	934	1,113	Latin America	259	249	226
Western Europe	4,058	4,146	4,288	Near East	1,480	1,318	1,511
EEC	580	465	800	Iran	395	158	134
United Kingdom	2,179	2,246	2,268	Iraq	285	350	427
Oceania	126	152	183	Asia & Far East	928	1,378	2,114
Others	1,738	2,424	3,485	Malaysia	262	249	295
Japan	1,636	2,271	3,288	Ceylon	252	310	435
USSR, Eastern Europe	1,471	2,210	2,177	Oceania	33	45	56
USSR	1,310	1,776	1,536	Asian Centrally Planned	141	216	283

The accuracy of this most recent outlook depends on the validity of two FAO assumptions: (1) existing government policies will remain the same and (2) the International Sugar Agreement will maintain prices reasonably stable in the residual world market. Changes in either one of these conditions could invalidate FAO's supply projections and, in turn, its trade projections.

Although unlikely, major importers could liberalize their existing arrangements for importing sugar. Such a move would result in increased imports as consumers try to purchase sugar from cheaper sources and as a result, a number of domestic producers going out of business or switching to other crops because they can no longer compete with imports.

Several studies have tried to quantify the benefits of a move toward freer world trade in sugar, or what is the opposite side of the same coin, the costs of existing restrictions. In the United States alone, according to D. Gale Johnson, the present sugar program imposes an additional cost of approximately \$1 billion on consumers and taxpayers. This is against \$700 million in cash receipts from domestic sugarcane and sugar beet production in 1970.^{7/}

In an earlier study, Harry Johnson tried to calculate the gains to both developing and developed countries if a policy of free sugar trade were adopted.^{8/} By substituting imports for protected domestic production (allowing for price changes due to the free trade), the major Western protectionist countries would have saved real resources worth \$319 million in 1959 according to Johnson. The additional export earnings of the exporting countries due to this substitution would have been worth \$67.5 million making an estimated net benefit of nearly \$120 million. If the drop in price due to free trade increased consumption, the gains would be even larger.

Johnson argues that sugar import protection policies waste resources and reduce earnings of the developing countries that have a comparative advantage in sugar production. Although logical, these arguments are unlikely to be heeded by the major protectionist countries unless they feel they have something to gain from dropping their protectionist measures (such as increasing

^{7/} D. Gale Johnson, "Comparative Advantage and U.S. Exports and Imports of Farm Products," Paper prepared for National Agricultural Outlook Conference, Washington, D.C., February 23, 1972.

^{8/} Harry G. Johnson, Economic Policies Toward Less Developed Countries. Washington, D.C.: The Brookings Institution, 1967, pp. 257-266 based on data taken from R. H. Snape, "Some Effects of Protection in the World Sugar Industry," Economica, Vol. 30, (Feb. 1963), pp. 63-73.

exports of other commodities, a possibility which the United States is beginning to think about). They would also have to have adequate programs to help their existing domestic producers adjust.

For the past several decades the international sugar market has been characterized by imbalance between supply and demand. There were long periods of excess production, interspersed with short spells of deficits and sharp price advances. The latter, in turn, tended to induce overexpansion of output, which led to the surplus phases.

One source of this instability is the series of preferential arrangements which divide the market into separate orbits. For example, the U.S. Sugar Act dating back to the thirties controls domestic production through a complex quota system; imports under quotas are admitted at prices close to the sheltered domestic level. Likewise, exports by Commonwealth producers to the United Kingdom are regulated by the Commonwealth Sugar Agreement. In fact, more than half of the world's sugar moving in international trade moves under some such arrangement.

An attempt was made in 1954 to bring trade on the residual "free" market under some controls through an international agreement. This Agreement dissolved in 1961 but was reinstated in 1968. In making its projections, FAO assumed that this Agreement would remain in effect and be able to maintain prices reasonably stable in the residual world market at around the real equivalent of 9 cents per kilogram. However, another phase of shortfalls in production and price rises on the "free" market have occurred since FAO's 1960 projections were made. This, of course, has encouraged speculation that the cycle has begun again, with the next phase of overproduction and depressed prices about to begin. If so, the world sugar market in 1980 could look much different than the forecasts.

Whether the present shortages and high prices on the world market will result in the longer periods of overproduction and depressed prices that occurred in the fifties and early sixties remains to be seen. There are significant differences between now and then, however, that make it improbable that there will be the same reaction. First, the 4 years of disaster prices following the overexpansion after the earlier shortage will not be easily forgotten. Second, even though Cuba's production may continue to exhibit large year-to-year fluctuations, the prospect of a continued shrinkage in the country's output, which had previously induced offsetting expansion elsewhere, no longer exists. Third, the International Sugar Agreement will have a moderating influence on the market as long as it remains in its present form. The Agreement, through imposing quotas, controls members' free market exports, thus greatly reducing incentives for expanding output in order to

compete on foreign markets. It also insures importing members adequate supplies at predetermined prices, should world quotations exceed these prices. These provisions were designed to prevent the unrestrained competition for additional export markets which was an important factor in the large expansion of production in the sixties. Negotiations are now underway to continue the agreement beyond its current expiration date of December 1973. An agreement will probably be signed, but whether members will agree to accept some form of import quotas and supply price commitments while world market prices are so high remains to be seen.

Still other factors contributing to a slower expansion of output in reaction to higher prices include the higher cost of obtaining capital to purchase processing equipment and the availability of more profitable alternatives to cane and beets within the exporting countries themselves.

The highly-regulated U.S. market remains the most important outlet for Colombian sugar. The amount of sugar that can be marketed in the United States each calendar year is fixed by the Secretary of Agriculture according to estimated needs. By controlling the amount of sugar marketed, the United States has maintained a domestic sugar price which fluctuates only moderately and exceeds the world free market price most of the time. This fixed market is then allocated to the four domestic sugar production areas and to foreign countries in the form of quotas. The quota system gives foreign countries the same premium received by domestic producers. Domestic suppliers also receive a government payment; foreign suppliers receive the price paid by U.S. buyers minus a duty.

Recent U.S. sugar requirements have ranged around 10 million metric tons (11 million short tons). About 55 percent has been imported, even though the quota system has reserved up to 62 percent of the market for domestic producers since 1966. When domestic producers fall short of their quotas (primarily Puerto Rico), their allocations are redistributed according to formula to foreign countries. Participating in this redistribution is one way Colombia can increase exports beyond its basic quota.

Whatever tonnage remains after U.S. producers, the Philippines and Ireland receive their fixed shares is allocated to 33 foreign countries according to percentage quotas. This has been about 3 million metric tons (one third the total U.S. market) recently. Cuba's share was reduced from 50 to 25 percent in 1971, but this has been temporarily apportioned to the other 32 countries until U.S. and Cuban diplomatic relations are resumed. Since Latin American countries, including Colombia, have the largest percentage of quotas, they have benefited most from the reduced and reapportioned Cuban quotas.

Whether the U.S. sugar market remains attractive in 1980 depends on prevailing U.S. policies. For example, if sugar requirements in 1980 were to reach 11.3 million M.T. (12.5 million short tons) (an annual growth rate of 1 percent), the new South Texas cane quota was in effect, the mainland areas

received 65 percent of market growth, and no beet area was deficit, the domestic share of the market would increase to 58.4 percent (Table 5-8). The last three columns show market shares that would prevail if present percentage quotas were in effect but the foreign market share was raised by 5, 10 and 15 percentage points. If Cuba were reinstated as a U.S. supplier in 1980, the foreign quotas other than Cuba and the Philippines would be reduced substantially. The United States would have to increase the percentage supplied by imports 10 percent to avoid such reductions.

U.S. sugar legislation expires in 1974. The United States seems unlikely to eliminate all regulation of this market, but some liberalization such as reducing or eliminating its sugar tariff while retaining its quota system have been recommended.

c. Tropical Hardwoods

Forest products are the seventh most important export commodity of the developing countries. This is, and shows every sign of continuing to be, a buoyant market. Exports of logs, sawwood, and wood-based panels (the major forest products) from the developing countries increased from less than \$400 million per year in the late 1950's to about \$1.25 billion in 1968, an average of 12 percent per year. FAO estimates that trade in all forest products will continue to grow in the next decade (1970 to 1980) at a rate of not less than 5 percent per year.

However, it is not the demand for all wood products but the demand for "tropical hardwoods" that is of major interest to Colombian producers. World consumption of tropical hardwood increased by 4.2 percent annually between 1954 and 1966. Consumption in the importing areas rose much faster than in producing areas (12.2 percent per year compared to 1.2 percent). As a result, the importing countries increased the share of tropical hardwood they consumed from 20 to 40 percent. Japan, Western Europe, the United States, and Australia are the principal importers of tropical hardwoods. Korea, Taiwan, Singapore, and Israel also import significant quantities, but re-export most of it in processed form.

By the mid-1960's Japan had become the largest importer, accounting for 40 percent of the consumption by the four principal importers. However, a little more than a half a million cubic meters (in log equivalent) of its 10 million cubic meter imports of tropical hardwood logs was exported as plywood. Western Europe

Table 5-8: Final adjusted continental U.S. quotas, 1970-77, with projections for 1980 under various assumptions^{1/}

(1,000 short tons, raw value)

Producing area	Actual		Estimate 1972 2/	Projected 1980 assuming-			
	1970	1971		Increased foreign share			
				No change	5 percent	10 percent	15 percent
Domestic:							
Sugarbeet area.....	3,597	3,406	3,500	4,025	3,626	3,226	2,827
Mainland cane.....	1,308	1,256	1,678	1,765	1,594	1,424	1,253
South Texas.....				100	100	100	100
Hawaii.....	1,145	1,110	1,218	1,110	1,055	1,000	945
Puerto Rico.....	360	150	205	300	300	300	300
Total, domestic.....	6,410	5,922	6,601	7,300	6,675	6,050	5,425
Foreign:							
Philippines ^{3/}	1,301	1,594	1,403	1,293	1,454	1,615	1,776
Dominican Republic...	678	656	704	679	760	841	922
Mexico.....	653	618	622	601	672	743	814
Brazil.....	638	605	607	586	655	724	793
Peru.....	456	482	434	419	469	519	569
Australia.....	206	205	210	218	244	270	296
British West Indies..	217	209	226	219	245	271	297
Colombia.....	68	64	76	78	87	97	106
All other.....	973	945	1,112	1,107	1,239	1,370	1,502
Total, foreign.....	5,190	5,378	5,399	5,200	5,825	6,450	7,075
Total requirements..	11,600	11,300	12,000	12,500	12,500	12,500	12,500
Percent distribution:							
Domestic.....	55	52	55	58	53	48	43
Foreign.....	45	48	45	42	47	52	57
Total.....	100	100	100	100	100	100	100

^{1/} Projections are based on the following assumptions: (a) Col. (4) represents the present program with no change from the 1971 amendments to the Sugar Act. Puerto Rican output is estimated at 425,000 tons with 125,000 used for local consumption, and the remaining 555,000 ton deficit allocated to foreign countries. (b) Cols. (5) through (7) represent arbitrary increases in the foreign share of total requirements of 5 percent, 10 percent and 15 percent respectively, with equal reductions in domestic quotas. All 1980 projections assume no change in the relative share of total quotas assigned to individual producing areas of foreign countries from that existing in the present Sugar Act.

^{2/} As of April 21, 1971.

^{3/} The 1980 projections imply Philippine participation in market growth. Under the present formula, the Philippines has a fixed quota of 1,126,020 short tons raw value; they receive certain deficit reallocations, but no share in market growth.

was second with 36 percent of the total consumption. The EEC and the United Kingdom are its principal consumers. The United States was third accounting for 14 percent of the consumption.

Most U.S. tropical hardwood imports are in the form of plywood (67 percent in the mid-sixties). Up through the mid-sixties Japan's imports of tropical hardwoods were almost exclusively in log form (averaging 99.6 percent during 1964-66). European imports were also primarily in log form (84 percent), but sawnwood imports were also important (14 percent).

So far, only Southeast Asia and, to a more limited extent, tropical Africa have been able to take advantage of the growing market for tropical hardwoods. Southeast Asia increased its share of the world's exports from 45 percent in 1953 to 71 percent in 1969. The growth of tropical plywood exports from Southeast Asia, especially the Philippines, and from Taiwan and South Korea was also striking growing from almost nothing in 1953 to 440,000 cubic meters in 1969.

The market for tropical hardwood will continue to be attractive for at least the next 15 years. Demand in the importing areas was projected to rise rapidly from 1965 to 1975 (9.1 percent per year) but to decline during the next decade to a smaller but still significant growth rate (5.3 percent per year, 1975-85). By 1985, world import demand for tropical hardwoods will have increased almost 4 times from 23 million cubic meters (r) in 1965 to 91 million in 1985 (Table 5-c).

Japan had already become the most important importer of tropical hardwoods by 1965 when it imported almost a million cubic meters (r) more tropical hardwood than Europe. By 1985 its lead over the next largest importer--the United States--should increase to almost 40 million. By 1985, Japan's imports as a percentage of the total world import market will have increased from 40 to 60 percent. Needless to say, Japanese imports of tropical hardwoods will grow the fastest--9.4 percent per year between 1965 and 1985, followed by the United States at 8.4 percent per year and Europe at 2.6 percent per year.

The United States will continue to import tropical hardwoods predominantly in plywood and veneer form (a projected 78 percent by 1985) although the share imported as sawnwood will increase (from 12 to 20 percent). Japanese imports of tropical hardwoods, on the other hand, will continue to be primarily in log form. Because of their proximity to the Japanese market, Southeast Asian producers will probably continue to dominate this largest market.

The most logical market for Colombian exports of tropical wood products, then, is the United States. During the last two decades, this market has become more dependent on imports to supply its requirements. In 1950 imports represented only 6 percent of all the hardwood lumber, plywood, veneer, and pulp products consumed (in roundwood equivalent). By 1970 this percentage had doubled.

Hardwood plywood and veneer hold the greatest potential, both in volume and value. The U.S. market for hardwood plywood alone was worth \$200 million in 1970, and it is growing rapidly. Plywood imports have increased 80 times in the last two decades, from 5.9 million square meters in 1950 to 481.4 million square meters in 1971. Almost all of this increase was of tropical hardwood plywood. Luan alone accounted for 80 percent of hardwood plywood imports in 1968. The main suppliers of this market in 1971 were Asian countries--Korea (43 percent), Taiwan (27 percent), Japan (12 percent), and the Philippines (11 percent).

In addition to direct imports of hardwood plywood, part of the hardwood plywood produced in domestic plants is made from imported veneers. Hardwood veneer imports have also increased spectacularly over the last two decades--by over 400 percent between 1950 and 1971. In this case, the Asian exporters, primarily the Philippines, share the market about evenly with Canada (40 and 41 percent respectively in 1971).

Almost three-fifths of U.S. hardwood plywood and veneer was supplied by imports in 1969. This was a major change from the early 1950's, when imports accounted for only 3 percent of U.S. consumption. This change was caused in part by a scarcity of high quality hardwood timber of preferred species in the United States.

Imports of tropical hardwood plywood and veneer will continue to dominate the U.S. import market for tropical hardwoods. Imports are projected to rise from 240 million square meters in 1968 to 550 million in 1985, an annual 5 percent increase (Table 5-10). In 1985 these imports should still account for 78 percent of all tropical hardwood imports.

The U.S. import market for hardwood sawnwood is much less attractive. Hardwood lumber imports represented only 4 percent of total U.S. consumption in 1969, and averaged only \$50 million per year from 1966 to 1970 (one-fourth the value of the U.S. hardwood plywood market). This import market grew a slow 2 percent per year over the last two decades. Moreover, over 40 percent of this lumber is still supplied by a non-tropical exporter, Canada.

Table 5-9--Import demand for tropical hardwoods

Importer	Actual volume					Projected volume			Annual growth rate	
	1955-1960	1965-1968	1968-1975	1975-1980	1980-1985	1955-1965	1965-1975	1975-1985		
	million cubic meters roundwood equivalent							percent		
Europe	3.5	6.2	8.4	10.0	12.0	13.0	14.0	9.1	3.6	1.6
United States	1.4	2.0	3.2	6.4	10.9	14.3	16.0	8.6	13.0	3.9
Japan	1.3	4.1	9.2	13.7	28.0	39.0	55.0	15 +	11.8	7.0
Rest of World	1.1	1.9	2.1	3.1	3.6	4.7	6.1	6.7	5.5	5.4
Total	7.3	14.2	22.8	33.2	54.5	71.0	91.1	12.1	9.1	5.3

Table 5-10--United States: Import demand for tropical hardwoods

Product	Unit 1/	1968 actual	1975	1980	1985
Flywood & Veneer	Million m ² (9.5 mm basis)	240.0	400.0	510.0	550.0
	Million m ³ (r)	5.4	9.1	11.5	12.5
Sawnwood	Million m ³ (s)	0.44	0.86	1.4	1.8
	Million m ³ (r)	0.8	1.6	2.6	3.3
Logs	Million m ³ (r)	0.2	0.2	0.2	0.2
Total	Million m ³ (r)	6.4	10.9	14.3	16.0

Units:
 m² = square meters
 m³ (r) = cubic meters, roundwood
 m³ (s) = cubic meters, sawnwood

FAO conversion factors:
 Plywood & Veneer: 1m²(9.5mm) =
 0.0225m³(r)
 Broadleaved sawnwood: 1m³(s) =
 1.82m³(r)

Imports of hardwood sawwood have been less important because more of these requirements can be supplied by domestic sources. Around three-fifths of the hardwood lumber used in the United States is consumed as railroad ties, pallets, containers, and flooring. Lumber for these uses can be economically manufactured from relatively small-size and/or low quality logs which are available domestically.

Most of the remaining demand is for lumber for cabinets, paneling, furniture, and other uses where quality and surface appearance are important. The economic manufacture of lumber for these uses requires relatively large-size, high quality logs which are more difficult to obtain in domestic forests. Imports of tropical hardwood lumber are projected to increase from 440 thousand cubic meters in 1968 to 1.4 million by 1980, an increase of 10 percent per year. By 1985 these imports will account for 20 percent of the total import market for tropical hardwoods in the United States, up from 12 percent in 1968.

The import market for hardwood logs is even less attractive actually decreasing over the last two decades from 0.5 million cubic meters in the early fifties to 0.2 million cubic meters. Nor is it likely to increase in the future. Significantly, Latin America is the major supplier of this declining market.

4. Constraints to Trade

a. Price/Cost Relationships

To compete successfully in the major external markets for most agricultural products, the Colombian producer-exporter must:

1. Provide a specified and uniform quality product,
2. Provide a sufficient quantity of the product over time,
3. Guarantee a certain delivery date, and
4. Provide the product at a competitive price.

To determine whether Colombia can penetrate a market and what share of this market it can hope to capture after entry, someone must evaluate whether Colombia can supply an assured quantity of a product of a given quality at a price which is competitive with other suppliers in the market.

An evaluation of this nature requires information on the type of product required in the external market and an estimate of what would be a competitive price in that market. Detailed information on product specifications in each market for each commodity is given in the appendices of the individual reports. With such information, people familiar with the capabilities of Colombian agriculture can evaluate the ability of Colombia's farmers and processors to produce the product required.

Some estimates of competitive price levels will be discussed in this report. However, because markets may be further segmented by varieties, species, brands, or other product characteristics, more detailed analyses of seasonal price relationships, long-run price trends and relationships between prices and product characteristics must be made before initiating any export program.

1) Fresh Fruits and Vegetables

This study makes a preliminary evaluation of Colombia's ability to compete in several external markets with fresh fruits and vegetables by comparing Colombia's cost of production plus transportation with what it costs other suppliers to enter the market (when that information was available) or what importers pay competing foreign suppliers for the same or similar products. The analysis indicates that small-scale Colombian farmers may be able to produce fresh fruits and vegetables at competitive prices. They will need help, however, in marketing these products to insure that their prices remain competitive in the final market.

Various studies have shown that there are economies of scale to be exploited in packing, transportation, and market promotion activities. Small-scale producers acting alone will be unable to exploit these economies and will need either direct government intervention in the marketing process (to collect, pack, and market the product) or government help in developing co-operatives to carry out these tasks.

Government assistance will also be needed to help small-scale producers bear the risk inherent in producing and marketing fresh fruits and vegetables. The uncertainty and risk involved in this is much higher than for many other commodities. One of the riskiest decisions comes at harvest time when the decision has to be made whether or not to harvest the crop. If the market information is misleading and the actual price is below the price which would have at least covered out of pocket costs, growers will suffer a loss. Storage until prices improve is not available as an alternative with perishables. At other times, the price may be right, but it cannot be acted upon instantaneously because of problems of co-ordinating and timing marketing activities. Sufficient competent labor may not be available. Packing materials may be unavailable or in short supply. Or few ships may be scheduled through local ports, so that changes in the timing of harvesting and

marketing operations due to shortrun market changes could result in long shipping delays. In the fresh fruit and vegetable market, the need for a well-organized, well-timed operation is paramount. Otherwise losses could be high.

These marketing considerations have important implications for organizing a fruit and vegetable export program in Colombia. The employment and income distribution objectives of the Colombian Government would seem to foster the organization of this program around small and medium-size farmers. But it is doubtful that such farmers could either successfully organize the production and marketing of a perishable export crop on their own or cover the risk involved in such a program. Small farmers could lose everything in one season if prices failed to cover their out of pocket costs. Consequently, they are unlikely to enter such a program in the first place unless the government guarantees them a price and shoulders the risk itself. If the government decides, for broad social objectives, to organize an export program for fresh fruits and vegetables around small and medium farms, the least it can do to help minimize the risk to these farmers is to help organize the marketing system. The other alternative is to work with large farmers--those who can capitalize themselves and sustain losses.

a) Strawberries

Based on what it costs Florida and Mexico to put a kilogram of strawberries into the New York market during the off-season, Colombia could profitably compete for this market with a price of approximately 80¢. The cost of producing strawberries in Colombia is estimated at about 31¢ per kilogram (although producers receive up to 53¢ per kilogram). Adding a charge for packing (12¢ per kilogram), shipping (by air to New York at 30¢ per kilogram), and import duties (1.8¢ per kilogram) brings the cost to 75¢ per kilogram. At this point the possibilities for Colombian strawberry exports look promising, although there are still additional charges that are not accounted for which could put the total close to or above 80¢ per kilogram. Also, without the special air cargo rate of 30¢ per kilogram (minimum of 136 kilograms) for fresh fruits and vegetables from Bogota to New York City, this picture would not look so rosy.

Off-season prices for fresh strawberries appear to be much higher in Western European markets, ranging from \$1.36 to \$2.10 per kilogram in France in 1970 (c.i.f. prices), \$.73 to \$1.76 per kilogram in Germany, and \$1.50 per kilogram in the United Kingdom.

New suppliers have been entering the off-season market, however, increasing competition and putting downward pressure on prices. If prices fall sharply with increasing deliveries, some existing and even potential suppliers could be eliminated from the market.

The answer to whether Colombia can penetrate this market depends primarily on whether they can negotiate lower transportation charges. The only feasible way to ship fresh strawberries is by air, but air cargo rates from Colombia to Europe are high. The cheapest rates from Bogota to Paris and Bogota to Frankfurt, the only two European cities to which passenger planes are scheduled more than once a week, are over \$1.30 per kilogram for loads larger than 500 kilograms. This would make it \$1.76 to put a kilo of Colombian strawberries into Paris. This comes close to the average c.i.f. price paid for Mexican strawberries in 1970, but I would feel more comfortable in recommending this as a good potential market if there were some evidence that Colombia could widen the differential by negotiating a special rate with the airlines for fresh fruits and vegetables.

b) Melons

The market for melons has to be broken down into sub-categories--watermelons, cantaloupes, and honeydew melons. The market for the last two categories is more attractive because cantaloupes and honeydew melons are less perishable and their value to weight ratio is higher.

If Colombia were to ship cantaloupes to the U.S. market in late spring, its major competitor would be Texas and it would have to match or better what it costs Texas to supply the New York market (18 to 21¢ per kilogram). However, if Colombia could time its shipments earlier to compete with Mexico or before the Mexican shipments begin, its costs could be 10 to 15¢ per kilogram higher.

Texas is also the major competitor in the late spring market for honeydews in the United States. If Colombia were to aim for this market, it would have to sell its melons for around 31¢ per kilogram. Similarly, if it could time its shipments to reach New York earlier, the wholesale price for Mexican honeydews (35¢ per kilogram) would furnish the frame of reference.

One is unable to make such seasonal and varietal distinctions for the European market because data is more limited. The lowest c.i.f. prices paid are for melons coming from Hungary (primarily an in-season supplier) and the highest for those from Israel (off-season). Prices paid for supplies from Chile, Morocco and Spain

fall between these extremes (5 to 19¢ per kilogram in France, 6 to 23¢ per kilogram in Germany, and 18 to 20¢ per kilogram in the United Kingdom). Whether either the U.S. or the European melon market is a potential export market for Colombia depends on whether it can match these prices.

c) Tomatoes

Colombia could probably compete for the vine-ripened tomato market in the United States if it could place tomatoes into the U.S. market for 30 to 35¢ per kilogram. Costs of producing tomatoes in Colombia are estimated at 4¢ per kilogram (although producers often receive twice that amount). Adding a charge for packing, ocean freight, and import duties brings the cost to either 15¢ or 17¢ in New York depending on the time of the year. There seems to be enough difference between Colombia's costs and the Florida and Mexican costs to cover calculation errors, substantial profits to Colombian producers, and/or substantial additional export costs.

Transportation is again a crucial variable. Vine-ripened tomatoes could be moved quickly to market by air, except that the charge of 30¢ per kilogram might price Colombia out of the market unless its tomatoes are very high quality. Ocean freight charges are reasonable, but because ripe tomatoes only store well from 4 to 7 days, problems arise in making precise scheduling arrangements and avoiding delays. Since mature green tomatoes have a longer storage life (1-3 weeks), they may be the better alternative for Colombia. In this case, the price that Colombia would have to match in the New York market would range from 19 to 21¢ per kilogram. This, however, would mean a drop in per kilogram gross revenues to Colombian producers-exporters of over 10¢ per kilogram and the employment impact within Colombia would probably be less.

The combination of lower wholesale prices and higher transportation costs would seem to make the European market less attractive than the U.S. market. European prices for fresh tomatoes during the off-season are noticeably lower than the averages of monthly prices quoted for the same period for tomatoes on the New York wholesale market. Averages of monthly wholesale prices from October 1968 through June 1969 ranged from 20-50¢ per kilogram in France, Germany, and the United Kingdom (although prices for some greenhouse tomatoes from Holland went to almost \$1.20 per kilogram). Although Colombia is a low cost producer, Spain and Morocco are also low cost producers and much closer to European markets. Shipping by air is impractical since air cargo rates are so high that, even if cut in half, they would still price Colombian producers out of the market unless the quality of their product were such that

they could compete with the high quality Dutch greenhouse tomatoes. Moreover, the paucity of sailings combined with the length of the trip and the probability of frequent delays almost rule out shipments of fresh tomatoes to the European market by sea freight.

d) Cucumbers

Colombia could profitably compete in the New York cucumber market at 15 to 20¢ per kilogram. Costs of producing cucumbers in Colombia are approximately 6¢ per kilogram (although some producers receive 8¢). Adding a charge for packing, ocean freight, and import duties brings the cost of putting a kilogram of Colombian cucumbers into New York to either 18 or 20¢ per kilogram, depending on the time of year. Again an opportunity worthy of further analysis. The storage period is almost as critical for cucumbers as for vine-ripened tomatoes (1 to 2 weeks) and, therefore, the timing of any export project must be examined in great detail.

To penetrate the European off-season market for cucumbers, Colombia must match Dutch or Italian prices in the French and German markets and the Dutch or Canary Island prices in the United Kingdom. In France, c.i.f. prices for off-season imports ranged from 31-37¢ per kilogram as opposed to the 22¢ per kilogram price during the in-season. In the United Kingdom the average c.i.f. price paid for off-season supplies from the Canary Islands has declined from 47¢ per kilogram in 1965 to 38¢ in 1970. Since Colombia is not a member of the Common Market nor a part of its preferential system, the c.i.f. price at which Colombian cucumbers enter these markets would have to be under the Dutch and Italian c.i.f. prices in order to compensate for the cost added to Colombian products by the Common External Tariff. Colombia would be on the same footing with the Canary Islands, however.

Assume that 25-35¢ per kilogram is the range in which Colombia could profitably compete for the French market. Subtracting 6¢ per kilogram for production costs and 8¢ for packing leaves 11 to 21¢ to cover shipping costs, producer profits, and other costs. This rules out air freight, and ocean freight could present timing problems since fresh cucumbers only store well for 1-2 weeks.

e) Green Peppers

Colombia could profitably compete in the off-season market for green peppers in the United States if it could place a kilogram into New York for around 32¢. This was Florida's cost of getting a

kilogram of green peppers to New York in 1970-71. In the European market, it could compete if its c.i.f. price per kilogram was around 50c (preferably a little less in France, but it could go a little higher in Germany).

Shipping costs to New York and tariff charges come to 8c per kilogram. Subtracting this from 32c per kilogram gives 24c per kilogram which would be available to cover Colombian costs of production, packing, and exporting—unknown at present. An equal or even larger residual would probably be available to cover these costs from exports to the European market. Since green peppers can be stored 2 to 3 weeks, deliveries from Colombia to the United States and to Western Europe by ship are possible, making these markets look even more attractive.

f) Table Grapes

Colombia may be a low cost supplier of fresh table grapes to the United States during the winter months. The average price paid for imported grapes doubled during the last decade (from 12c per kilogram f.o.b. in 1960 to 24c in 1970). At the same time, the average f.o.b. price paid for Mexican grapes declined, and by 1970 Mexico seemed to be the low cost foreign supplier (18c per kilogram). Chile and South Africa, the major suppliers during the winter months, are higher cost suppliers (24c per kilogram and 63c respectively).

Assuming that Colombia's shipping costs would be similar or slightly less than those incurred by Chilean exporters, Colombia should be competitive in the U.S. off-season market if it can offer a product similar to Chile's at 24c per kilogram f.o.b. Colombia. Whether Colombia's exporters would be able to supply grapes f.o.b. Colombia at this price is unclear. Variable costs of producing grapes in Colombia using present technology have been estimated at 4c per kilogram, yet producers receive 55c per kilogram. If this information is correct and if the majority of this difference represents payments to fixed costs rather than producer profits, Colombia would not be able to compete in the U.S. market with its present levels of technology. If, however, fixed costs are much less, and packing and other costs of getting the product to the port can be held down, Colombia may be competitive. The fact that Colombia now exports some grapes within Latin America gives some cause for optimism.

An evaluation of whether Colombia can compete in the Western European markets cannot be made until more detailed information is available on Colombia's costs of production and marketing. Within the Common Market, c.i.f. prices paid for imports have ranged from 11c per kilogram (German imports from Bulgaria in 1970) to 64c per kilogram (South African imports). The c.i.f. prices paid for French, Italian, and Spanish imports all cluster around the average (23c, 21c, 19c per kilogram respectively). Imports from Bulgaria, Spain, and South Africa are subject to the Common External Tariff and, consequently, an additional charge must be added to their c.i.f. prices to get a figure comparable to the Italian or French c.i.f. prices, for example. The same adjustments would have to be made to determine whether Colombia could be a competitive supplier to this market. Moreover, Colombian shipments could only undercut local prices if Colombian exports entered the market between November 21 and June 30 when the reference price system is not in effect. Timing is not crucial in this market since table grapes can be stored 2-8 weeks. However, costs, appropriate varieties, and quality requirements are crucial.

g) Onions

Colombia could probably compete price-wise in the U.S. market for white onions, regardless of whether one uses a producer price figure of almost 10c per kilogram or the lower estimated production cost of 5c per kilogram. The average f.o.b. price for Mexican onions rose from 13c per kilogram in 1960 to 20c in 1970. Canada and Italy's f.o.b. prices are even higher. Chile, the strongest price competitor at 9 to 11c per kilogram f.o.b. between 1966-70 has discontinued shipping to the U.S. market.

To develop a market for its onions in Europe, Colombia would have to keep prices down to 7-15c per kilogram c.i.f. to compete with Holland and Czechoslovakia. This seems unlikely; Colombia's 5c per kilogram production cost plus 10c per kilogram to cover producer and exporter profits, transportation, and marketing and export costs, already adds to 15c. Besides, Spain can produce onions on irrigated land 3c per kilogram cheaper than Colombia. A more detailed analysis of markets for specific types of onions (white, yellow, purplish) might uncover a potential advantage to exploit, but it is doubtful.

h) Garlic

Colombia should be a low-cost supplier to the U.S. market. In 1970, the United States bought Moroccan garlic for an average

f.o.b. price of 36c per kilogram. Peru, Argentina, Spain, and Italy supplied garlic at 39 to 44c per kilogram. Compared to these competitors, Colombia appears to be a low cost supplier whether one uses a producer price figure of 24c per kilogram or the lower estimated production cost of 15c per kilogram. Since transportation charges from Colombia should be similar to charges from Peru and probably less than from Argentina, it should be at least competitive with these two suppliers in the U.S. market. Moreover, if Colombia can hold its transportation, marketing, and export costs down to around 10c a kilogram, it should be able to compete with existing suppliers in the French and German markets, where c.i.f. prices run 35 to 45c and higher per kilogram.

i) Avocados

Not enough information was available to reach a conclusion regarding Colombia's ability to compete in the European and U.S. markets with avocados. The European market is more attractive because it imports all of its avocados, while the United States produces most of its own supply. The 1970 c.i.f. price for avocados averaged 64c per kilogram in France, 90c in Germany, and 75c in the United Kingdom. By comparison, U.S. imports from the Dominican Republic cost 23c (f.o.b.) per kilogram in 1970, down from 31c per kilogram in 1966. If Colombia could land avocados in France, Germany, and the United Kingdom at prices lower than the present major suppliers, it could take part of the market away from existing suppliers.

There could be an additional benefit to this strategy. According to European trade circles, the avocado could become a popular fruit if its prices were lowered. This assumes, however, that both old and new suppliers will be able to supply the increased demand and still cover their costs at the lower prices.

j) Pineapples

The United States paid from 3.8c to 9.3c per kilogram (f.o.b.) for its imports of fresh pineapples in 1970. Mexico supplied the lowest cost pineapples and Honduras the highest. Fresh pineapples from several other Central American producers were around 7c per kilogram.

Producing pineapple in Colombia costs a little over 3c per kilogram, although producers sometimes receive over 7c per kilogram. Colombia has already negotiated a special 4.85c per kilogram rate for shipping pineapples under refrigeration from the west coast of Colombia to U.S. Gulf and Atlantic ports. If Colombia could trim its prices slightly to be more competitive with Mexico and aim for fall rather than spring and early summer markets when Mexico and Central America countries ship, it should be able to expand its share of the market. Its previous shipments have been erratic in price and quantities.

European prices appear to be much higher than U.S. prices. The average c.i.f. price for fresh pineapple in 1970 was 28c per kilogram in France, 34c in Germany, and 32c in the United Kingdom. With a producer price of 7c per kilogram, Colombia's c.i.f. price in Europe could be 17c per kilogram if marketing, exporting, and shipping costs are held around 10c per kilogram. Added to this would be a 2c per kilogram charge for duties and a 9 percent ad valorem charge. Colombia would still be competitive with Guinea (whose average c.i.f. price was 21c per kilogram in 1970) and would undercut the Ivory Coast (32c) in the French market, however, even though ex-French colonies like the Ivory Coast, Guinea, and Martinique can enter the Common Market without paying the ad valorem charge. Colombia would also be competitive with Brazil and undercut both Guinea and the Ivory Coast in Germany (28 and 35c per kilogram, respectively).

South Africa is now the low-cost supplier to the United Kingdom (30c per kilogram), while Kenya and the Azores are its high-cost suppliers (50c and 61c per kilogram respectively). For the next several years, the United Kingdom will continue to import fresh fruits and vegetables under its old tariff rates with preferential status given to Commonwealth members. The goal of the enlarged Community is for these imports to be handled the same as imports into original EEC members. Tariff rates, at least, are to be fully synchronized by July 1, 1977.

Differences in c.i.f. prices can reflect differences in quality as well as differences in costs, however. For example, shipments from the Azores (overseas territory of Portugal) bring uniformly high prices because the fruit is of superior quality and delivered in perfect condition. On the other hand, prices paid for Brazilian pineapples are uniformly low because the quality of the Brazilian fruit is not considered high. The influences of cost, quality, transportation charges, etc., on price would have to be evaluated before Colombia should go too far in trying to develop these markets.

k) Summary

Table 5-11 summarizes the most promising markets for Colombian fresh fruits and vegetables as determined by the preceding analyses.

Table 5-11--Potential markets for Colombian fresh fruits and vegetables

Type of market :	Commodity :	Evaluation of Colombia's ability to compete in:	
		United States :	Western Europe :
Counter-Seasonal:	Strawberries	Promising	Promising
	Melons	Promising	Promising
	Tomatoes	Promising	--
	Cucumbers	Promising	--
	Green Peppers	Promising	Promising
	Grapes	Promising	--
Non-Seasonal ...:	Onions	Promising	--
	Garlic	Promising	--
Tropical	Pineapple	Promising	--
	Avocados	--	Promising

2) Processed Agricultural Product

High costs, low quality, and unreliable deliveries are important restraints to trade. Difficulties in product procurement and processing affect all three of these factors adversely and may be one of the biggest restraints to Colombia's export trade. This is definitely the case for processed fruits and vegetables and tropical hardwoods.

a) Fruits and Vegetables

There are a number of advantages to be gained from exporting processed foods. Processed food prices are generally more stable than prices for primary products (Figure 5-4 for an example from the United States). Income elasticities are usually higher, meaning that, if incomes are growing abroad, markets will expand more rapidly. Further, exporting processed food products can increase foreign exchange earnings because the country gets paid for the value added in the processing operation as well as in the basic product.

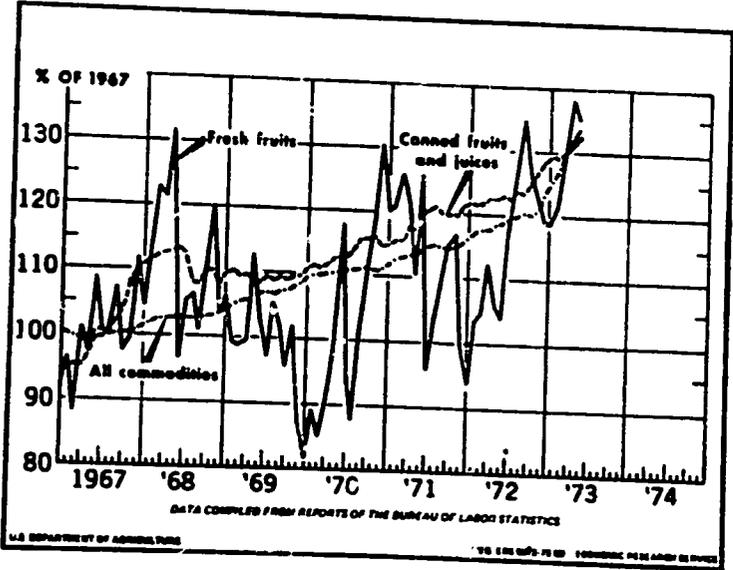
A major question, however, is whether the comparative advantage that a country like Colombia may have in the production of primary commodities can be extended into the production of processed food products. There are two advantages that Colombia could possibly exploit in its production of fresh fruits and vegetables for external markets: (1) a seasonal advantage and (2) a cost advantage. The seasonal advantage is lost once the product is processed. The cost advantage could also be lost if Colombian processing and marketing costs are high.

Since there are several reasons why costs of food processing in Colombia may be high, the ability of Colombian food processors to compete in the international market should be evaluated carefully before supporting any large-scale export promotion project. Per unit production costs may be high if plants are small and, therefore, do not capture the economies of scale inherent in modern food processing technology. Likewise, costs may be high if plants are not used to full capacity.

Food canning consists of a simple series of processes, but for hygienic and quality reasons these have to be supported by constant laboratory and technical supervision. Therefore, the proportion of overhead costs to total costs tends to be high and to grow with the complexity of the products. A considerable range of labor substitution for capital still exists in food processing, which makes it attractive from the point of view of two of Colombia's national objectives—employment generation and improving income distribution. But there is a growing tendency to substitute capital for labor to produce quality products, especially products for export. For example, where the appearance of individual pieces such as pineapple slices is important, there is a strong tendency to replace manual labor by machines to ensure uniform appearance of the finished product. In the production of fruit and vegetable juices, the productivity of capital intensive processes is so much higher than of manual operations that wage differentials have become relatively unimportant.

The main opportunities for employing labor rather than machines exist in products such as mushrooms and asparagus, where mechanical handling has not yet been developed. Made-up mixture dishes, where the appearance of individual pieces of fruit or vegetables is not important, provide other opportunities. The proportion of these products in total processed fruit and vegetable consumption is, however, small.

Figure 5-4: UNITED STATES: WHOLESALE PRICES FOR CANNED AND FRESH FRUITS



Containers are an important cost, and the economics of can making favor large-scale production. Cans can be purchased in a semi-processed form; made from tinplate sheet by methods of varying labor intensity; or made by fully automatic can making machines. Semi-processed cans are not always available in developing countries, and the cost of transporting and storing them is usually high. For most canners in industrializing countries, the choice is between an automatic can machine and various labor intensive methods. Provided the can making machinery is fully utilized, it usually halves the manufacturing cost. Automatic can making units are designed to produce about 100 million cans per year on a three-shift basis, however, and this implies an output of about 25,000 M.T. of canned food a year. Workers in efficient large-scale fruit and vegetable canneries (1,000 employees) can produce 25,000 kilograms of canned food per head annually, so a plant has to be operating on this scale to utilize a can making machine adequately. Canning factories in the Philippines and Australia have found that average costs fall steeply until annual output of more than 25,000 M.T. is reached, and that it is only beyond this production that the average cost curve begins to flatten out. In developed countries there is a strong trend toward plants with more than 1,000 employees. Lower wages in developing countries might offset the diseconomies due to operating at slightly less than this optimum capacity, however.

Small-scale food processors sometimes avoid can problems by hand filling glass containers, but the use of glass containers is limited by transport costs and difficulties, particularly for export markets. Glass containers are competitive with cans in developed countries only when the scale of production is so large that some 100 million units can be purchased a year. The main product marketed in glass containers on this scale is baby food, which is not a particularly suitable export product because of difficulties in transportation and fears about hygiene standards of imports from developing countries.

In many developing countries, difficulties in raw material procurement set a limit to the size of the processing plant and often explain why existing plants are not being used to full capacity. A year-round regular supply of fruits and vegetables is required for plants to work at full capacity. Apart from pineapples and papayas, there are few crops which provide opportunities for such continuity. Canners, therefore, generally process a mix of products. Although usually necessary, there are several disadvantages to this strategy. Farmers have to be adept at growing a number of crops, increasing the demands on the extension service and other support systems.

Changing operations for different products may make it difficult for even a labor-intensive plant to achieve the available economies of scale if the changes are made before workers have had enough time to learn routines and achieve their peak levels of productivity. Moreover, the need to merchandize a line of products rather than a single commodity may complicate the marketing process in external markets.

Even with reduced-scale plants, small farmers in developing countries have difficulty supplying processors with the required quantities and qualities of fruits and vegetables. Fruits and vegetables have to be grown expressly for canning or freezing since the best strains for fresh eating are frequently not suitable for processing. Quality and uniformity are often just as important in producing for food processors as in producing for the external fresh fruit and vegetable market. Whether the goal is to export fresh fruits and vegetables or to supply canners who in turn export, it is unlikely that small farmers will be able to regularly provide uniform, high quality products without assistance from the large-scale canners or the extension service and other government programs. Failure costs are higher for processed fruits and vegetables since there is the added cost of idle plant capacity when supplies are low. These considerations are important since examples are numerous throughout the developing countries of plants operating at less than full capacity because of supply shortages. There are even some examples of plants importing raw materials from developed countries in order to keep operating.

It is likely that within Colombia there is a complicated relationship between processors' high costs, small plants, and small and highly-protected domestic markets. Yet the international market for processed fruits and vegetables is highly competitive. Under these circumstances, the Colombian Government could (1) subsidize exports of processed fruits and vegetables, (2) try to make the existing domestic industry more competitive by reducing tariff barriers, and (3) support the development of new processing plants designed primarily for the export market. The first alternative is questionable unless followed by measures to correct the structural reasons for high costs. Reducing tariff barriers would help eliminate one reason for inefficiencies, but would still not deal directly with one of the major causes of high costs--small scale. With the help of foreign investment or foreign aid, a plant designed to capture more economies of scale could be constructed; however, unless some way is found to deal with the problem of supply procurement, unit costs might still be high because plants are not running at full capacity.

Economies of scale are also important in marketing and, when large markets such as the United States or Western Europe are to be covered, they become more important than those in processing. Economies of scale in marketing are influenced by the fixed nature of certain marketing costs, particularly sales organizations and promotional activities. A single fruit and vegetable processing unit of optimum scale even for a developed country generally is not large enough to support a dynamic sales policy in a developed country which is backed by a brand name and promotional activities. For example, the cost of an effective nationwide brand advertising campaign in France, according to estimates made by the national planning commission, would amount to 2 million francs. Assume that French canners would be willing to pay no more than 1 percent of their annual turnover for promotional activities. Not one French canner out of several hundred has a volume large enough to afford such a campaign. In fact, the industry would have to be consolidated into one fruit and three vegetable canners before any one firm's annual turnover would justify a promotional campaign of this magnitude.

In industrialized countries, economies of scale in processed fruit and vegetable marketing are pursued through various kinds of mergers. Food companies like Nestle and Heinz have integrated processing and marketing operations into one enterprise. A large part of the Florida citrus processing industry, for example, is integrated into larger food companies like Coca Cola, National Dairy Products, and General Foods.

Canners in developing countries have overcome their export marketing difficulties in two ways. Canners totally or partially-owned by foreign investors have marketed their products under the parent company's name and marketing and advertising umbrella, another important reason for the relative success of direct foreign investment in this industry. The other strategy is for canners to sell their products under the label of the buyer in the importing country. While this saves the producers marketing and advertising problems, it does not allow them to build up their image in the consuming countries; some have, therefore, tended to lose their share of the market, particularly in times of intense competition. Since marketing requires large-scale organization in order to capture economies of scale, the alternative to direct foreign investment appears to be a cooperative effort by canners to sell and advertise their country's products in export markets.

Developing countries are precluded from entering U.S. and Western European markets for the main lines of frozen fruits and vegetables because transporting frozen foods over long distances is extremely expensive. Therefore, and for these products will,

in the foreseeable future, be supplied from domestic production or imports from neighboring countries (in Europe, the European Common Market countries; in the case of the United States, Canada and Mexico).

Normally a country would produce major line products in order to use its plants and machines most efficiently. By achieving some economies of scale, Colombia could reduce costs and, thus, price its product more competitively in external markets. This strategy is inappropriate, however, because major line frozen foods from Colombia are likely to be priced out of the U.S. and European markets once the high transportation costs are paid.

The frozen fruits and vegetables in which a country like Colombia is likely to have more success are (1) products that are able to command relatively high unit prices because of scarcity or gourmet value and (2) products that are not readily available from domestic temperate sources because the growing season is short or because the products are tropical or subtropical and not available at all from domestic sources. If this strategy is followed, however, the volume of exports of any one commodity to any one market will be small since demand for these types of products, although growing, is still relatively limited. A frozen food processor in Colombia, therefore, would have to produce a variety of products and aim at several export markets to achieve a sufficient volume of business to capture some of the economies of scale available in both processing and marketing.

Because competition in the international market for all the major processed fruit and vegetable products has been keen and is likely to become more so in the seventies, Colombia's ability to compete in these markets must be carefully evaluated. Although some of this competition is through brand creation, Colombia will have to place its product into the various external markets at prices competitive with domestic and other foreign suppliers.

Price competitiveness is necessary in the retail market, but because consumers are aware of brands, it does not guarantee sales. In the institutional and industrial markets, price alone is important, assuming, of course, that qualities are equivalent.

1. Canned Fruit and Vegetable Prices

It is difficult to obtain prices that represent competitive price levels in the different markets. There is no organized open market for processed food products which may be considered to represent "the market." Also, there are many types of raw products involved, as well as different brands. Even for a well-defined category of product of a specific quality in a specific container size, it is difficult to obtain a series of prices of any usable length.

Possible proxies for the "competitive price" include retail or wholesale prices, factory list prices, or per unit import values. Per unit import values are much less reliable for processed fruits and vegetables because they disguise all the price variations due to differences in container size, grades, method of preparation (heavy or light syrup, for example). A better yardstick is probably the ex-factory price for the commodity in a major producing and exporting country. These numbers are better than retail and/or wholesale prices which incorporate a whole series of marketing margins that may differ widely from country to country, obscuring even further the real production cost. Time series information on the major fruit and vegetable packs is readily available only from the United States. Quotations f.o.b. U.S. packers for some of the main line products are given in Figures 5-5 and 5-6. These prices can be used as a reference point by persons evaluating Colombia's ability to produce a competitive product, be it a major product or an exotic fruit.

Where the United States is a major exporter, price f.o.b. U.S. packers may give some indication of competitive price levels in other parts of the world. But where the United States is not a major supplier of a market or has been losing its share to other foreign suppliers, additional price information will be necessary. For example, 24 cans of fruit cocktail (2 1/2 size can) sold ex-factory in the United States from \$8.20 to \$8.65 in 1971-72. In Hamburg, Germany, importers sold 24 cans of fruit cocktail (heavy syrup, number 2 1/2 can) from the United States for \$11.56 in October 1971. At the same time 24 cans of choice fruit cocktail from Australia were selling for \$11.28 and fruit cocktail from Italy for \$9.04. These prices include the duty and the sugar-added levy, but exclude the value-added tax. Sales were in lots of 50 to 100 cases.

In the case of canned pineapple, the price at which Taiwan can land its product in various external markets is probably a better estimate of the competitive price level in those markets than the price of the U.S. product. The price in Hamburg for 24 cans number 2 1/2 of sliced pineapple from the United States in October 1971 was \$11.72 for fancy and \$8.32 for choice. At the same time 24 cans of choice pineapple slices from Taiwan in a fractionally smaller can were selling for \$7.88.

11. Exotic Fruit Prices

Exotic fruit products are generally priced considerably higher weight for weight at the retail level than volume line fruit products such as canned pineapple, peaches, and pears. Indian

mangoes in syrup sold for \$20-\$23 per 24/No. 2 1/2 tins at import level in Germany in 1970, while the corresponding price for one of the more expensive volume lines such as U.S. fruit cocktail in heavy syrup was about \$10.50 (based on sales in lots of 50 to 100 cartons). If selling similar quantities of canned mangoes, importers would probably reduce prices slightly, but not enough to make the exotic product competitive at retail. In another example, the U.K. retail price for canned papaya varied from 32c to 66c per "1 Tall" can in 1970, compared to the "usual" price of 24c for "1 Tall" can of quality pack peaches. These high prices are due in part to high distributor margins and in part to high import prices. As long as these products are distributed in relatively small quantities through department stores, delicatessens, and small shops specializing in the sale of immigrant food, margins are bound to remain high, both because of the type of retail outlet stocking them and because the exporters and wholesalers need higher margins to cover their costs and make a reasonable profit.

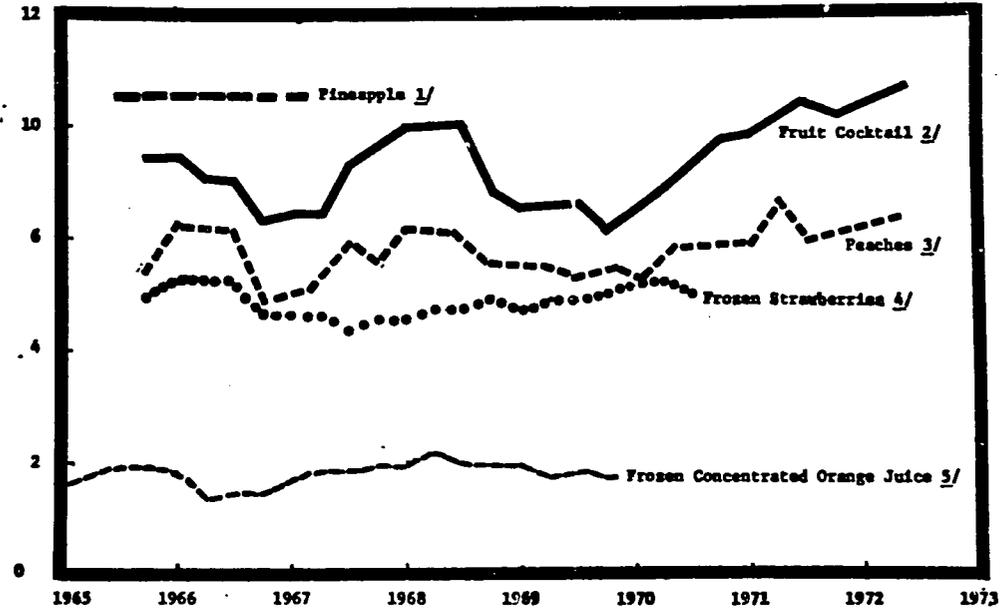
The question, then, is whether a reduction in the landed price is possible and, second, whether such a reduction would stimulate sufficient demand for these products to attract the interest of the mass market and make them commonplace items in supermarkets. In the United Kingdom, the price of guavas is competitive with major fruit packs, and tropical fruit salad is competitive with deciduous fruit salad; yet, the imports of these commodities have not increased dramatically, nor do importers expect them to do so. Price is not, therefore, the only constraint; unfamiliarity is another. Although price reductions would probably stimulate demand, it is uncertain whether exporters' net profits would improve. Demand for these products may be rather inelastic; for example, present day consumers in the United Kingdom do not buy on impulse and seem to be prepared to pay the premiums currently asked. Moreover, in some markets, the small quantity of purchases seems to be due more to shortages of supply rather than high prices--purchases of mangoes in the United Kingdom and Germany, for example. As with other commodities analyzed, irregular, erratic, or un punctual supplies will be a major obstacle to the creation of a stable and increasing market for exotic fruit products in the developed countries. Still, to attract many new consumers to exotic fruit products, considerable price reductions will be needed.

111. Frozen Fruit and Vegetable Prices

Colombian producers will also have to be very price competitive to enter the U.S. or European markets for frozen foods. Frozen food prices have been remarkably stable, particularly for the top selling lines. Several factors have been responsible for this

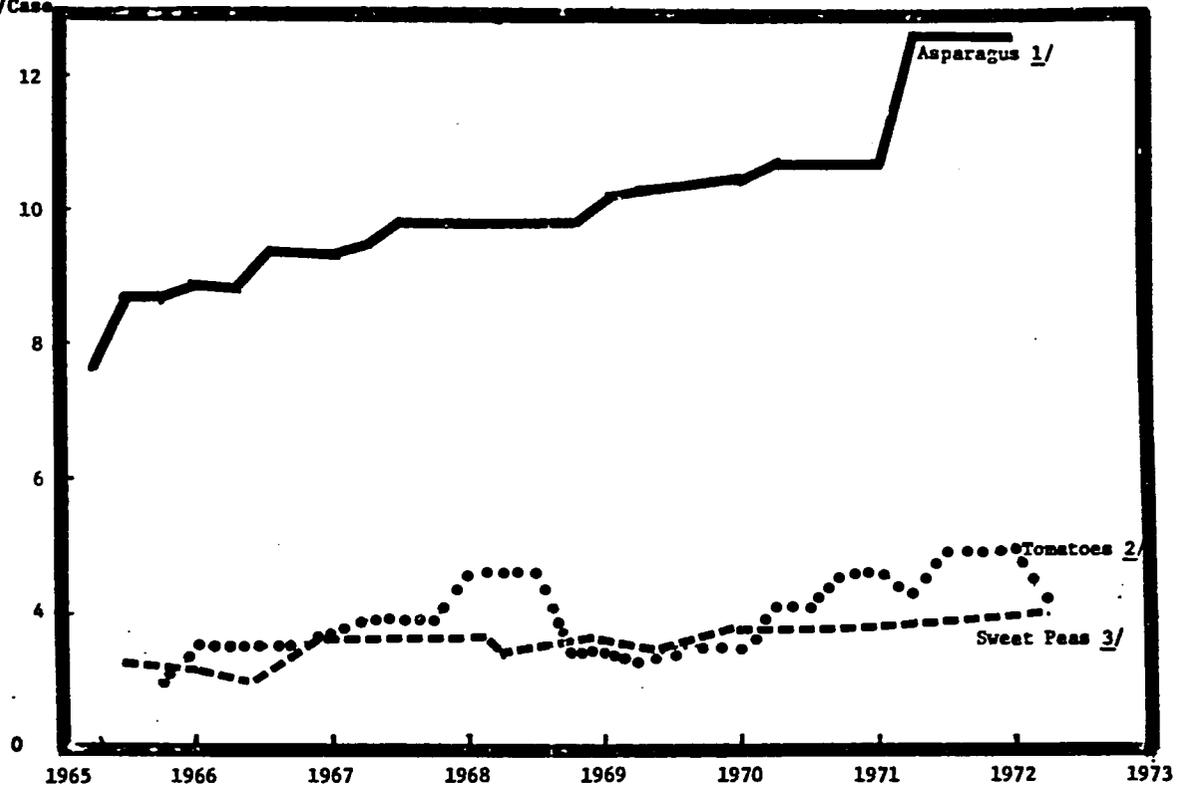
Figure 3-5: **PROCESSED FRUIT PRICES, UNITED STATES, F.O.B. FACTORY**

U.S. \$/Case



- 1/ Pineapple, Hawaii, Fancy Sliced; 24/2-1/2's
- 2/ Fruit Cocktail; Cal. Fancy; 24/2-1/2
- 3/ Peaches; Cal. Ch. Cling; 24/2-1/2
- 4/ Frozen Strawberries; Northwest, Sliced; 24/10 oz.
- 5/ Frozen Concentrated Orange Juice; Fla.; 12/6 oz.

Figure 5-6: **PROCESSED VEGETABLE PRICES, UNITED STATES, F.O.B. FACTORY**
 US \$/Case



1/ Asparagus; East, Fancy, S.D.; 24/300
2/ Tomatoes; East, Ex. St.; 24/303
3/ Sweet Peas; Midwest Fancy; 24/303

stability: (1) economies of scale as the market grows, (2) extreme inter-brand competition, (3) the cut price activity of distributors' own label brands, and (4) reductions in packaging costs. In at least two European countries--the United Kingdom and Germany--prices have actually fallen. For example, in the United Kingdom retail prices for frozen strawberries fell from 46¢ per 10 ounce pack in April 1960 to 26¢ in April 1969. Over the same period prices for Birds Eye peas fell only 1¢ from 14¢ to 13¢ per 5 ounce pack. Competition in these markets has also led to greater price equalization, especially within major volume lines.

b) Tropical Hardwoods

Latin American tropical hardwood producers-exporters have had difficulties in providing external markets with sufficient quantities of the products demanded at competitive prices. These difficulties appear to arise, in part, from the nature of their forest resources: (1) a scarcity of areas with concentrations of given species, (2) a lack of readily available species groups, and (3) high costs and difficulties transporting wood due to a general lack of transport infrastructure. Most major importers require large quantities of a particular species in a shipment as well as assurance that such supplies will be forthcoming on a regular schedule. For example, the U.S. market would consider 5,000 board feet of lumber from a particular species and 50,000 square feet of veneer per year as a "readily available" supply.

Because most Latin American tropical hardwood forests are very heterogeneous, with the exception of limited areas of such coastal types as Virola or Cativo, it is extremely difficult for the average Latin American producer to supply large enough quantities of a given wood at low enough cost. One way to alleviate this problem is to identify and merchandize "groups" of species with similar working characteristics so they can be used interchangeably. Two such groups, the Lauan from Asia and Okume from Africa, have been widely accepted on the international market and provide Asian and African producers flexibility in logging their tropical forests which helps them meet the quantity requirements of the U.S. and European markets. No such species groupings have been adequately developed for Latin America, however. Without such species groupings, Latin American producers either have to cover very large areas in order to obtain the necessary volumes (which under existing wood procurement conditions means high costs and likely delays in meeting schedules) or they have to plan far in advance and carry large inventories of logs and/or finished products. This latter alternative

is also expensive due to high capital costs and storage problems. Other external market requirements, deterrents to meeting these requirements, and possible corrective programs are presented in Table 5-12.

Production cost data is not available to prove that Colombia is a high cost producer. The most readily available measure to use in comparing the cost of buying in one market compared to another, ignoring the cost of transportation, is unit export prices f.o.b. the product source. Prices calculated from U.S. import data show that, over the past 5 years (1966-1970), it has cost U.S. importers much more to purchase the more processed tropical hardwood products (plywood and veneer) from Colombia than from the major tropical hardwood suppliers. From 1966-70 U.S. importers paid an average \$50 (f.o.b.) per thousand square feet for Philippine mahogany from the Philippines, \$38 for the same type product from Malaysia, and \$123 for hardwood plywood (NES) from Colombia. Similarly, U.S. importers paid an average \$14 f.o.b. per thousand square feet of mahogany veneer from Malaysia, \$18 for the same category product from the Philippines, and \$37 for hardwood veneer (NES) from Colombia.

Colombian exports of hardwood logs and lumber seem to be more competitive, although these are the two least attractive U.S. markets for tropical hardwoods in terms of size and growth. From 1966-70, U.S. importers paid an average f.o.b. price of \$84.55 per thousand board feet for hardwood logs from Colombia, \$84.46 for mahogany logs from the Philippines, and \$78 for hardwood logs from Costa Rica. Colombia appeared to be more competitive in the hardwood lumber (NES) category; 1966-70 purchases averaged \$83 f.o.b. Colombia per thousand board feet, \$120 f.o.b. Brazil, and \$130 f.o.b. Malaysia. Colombian exports of hardwood lumber (NES) to the United States have almost doubled during this 5 year period, indicating that Colombia may well be competitive in the U.S. hardwood lumber market.

b. Transportation

There are other factors causing high costs, low quality, and unreliable deliveries that may be major restraints to Colombia's exports. Costly and inadequate transportation systems add to the cost of the product to the final user and the unreliability of deliveries. Uncertainty about the requirements in each external market for quantities, species, specifications, delivery dates, prices, and problems in dealing with trade channels in the external markets can add to costs and result in a product not adequately designed to satisfy market demands. Legal barriers such as tariffs, quotas, and sanitary regulations are major barriers to the trade of some commodities. These will be examined for each potential Colombian export.

Table 5-12—Latin American lumber and board products exports to external markets: their requirements, deterrents to meeting requirements and possible corrective programs

Type of Requirement	Requirements by Importers	Common Deterrents to Meeting Requirements	Possible Corrective Programs
Quality and dimensional standards	<p>Guaranteed quality and dimensions:</p> <ul style="list-style-type: none"> -uniformity -generally conforms to market rules <p>-proven characteristics:</p> <ul style="list-style-type: none"> light in weight and color, easily worked, dimensionally stable, easily finished 	<ul style="list-style-type: none"> (1) great variety in characteristics for a given species from different areas. (2) inadequate treatment and seasoning facilities for lumber: (3) inadequate information and tests on species characteristics (4) few areas with adequate concentrations of known species meeting quality and physical requirements 	<ul style="list-style-type: none"> (1) research and training programs in processing and treatment (2) cooperative treatment plants (3) incentive programs for quality production units (4) establishment of uniform export standards (5) improvements in sorting & grading (6) research on wood properties and uses
Timing and size of shipments	<ul style="list-style-type: none"> -Guaranteed delivery dates -generally fairly large quantities in a shipment 	<ul style="list-style-type: none"> (6) uncertainty in scheduling ocean transport in advance for many ports (7) coordination problems between logging and processing (seasonal and distance problem) (8) lack of concentration of products for export due to: low volumes of commercial timber per unit area, lack of acceptable species groupings, generally small sizes of production units, poor transport and storage facilities 	<ul style="list-style-type: none"> (7) export concentration yards (associations or cooperatives) (8) integration of processing facilities (9) research on product (or species) groupings and expansion of commercial species (10) selected conversion to plantations (species concentration) (11) renovation of transport facilities and methods (12) improved market information dissemination (13) improved storage facilities

Table 5-12--(Cont'd)

Type of Requirement	Requirements by Importers	Common Deterrents to Meeting Requirements	Possible Corrective Programs
Cost/price relationships	-Competitive delivered price	<p>(9) high overall costs due to lack of markets for lower quality by-products</p> <p>(10) high logging and log transport costs due to low commercial volumes per acre, low level of transport infrastructure, and long hauling distances</p> <p>(11) high processing costs due to: small average size of plants, poor plant layouts and outdated equipment, poor equipment maintenance, low efficiency (conversion ratios), etc.</p> <p>(12) high marketing and product transport costs due to poor shipping facilities, inadequate promotion, existence of outdated trade restrictions and tariffs</p>	<p>(14) relocation of processing capacity (export oriented)</p> <p>(15) specialization and longer production runs, larger units (economies of scale)</p> <p>(16) innovations in logging and transport (cost reductions)</p> <p>(17) initial export subsidization</p> <p>(18) training and technical extension (public programs)</p> <p>(19) ties with foreign companies</p> <p>(20) increased production & management research</p> <p>(21) market research and education</p> <p>(22) associations of producers and exporters (economies of scale)</p> <p>(23) trade barrier reductions</p> <p>(24) "piggy-backing"</p> <p>(25) stimulate domestic market for by-products</p>

Source: Hans M. Gregerson, "The Latin American Contribution to United States Forest Products; Imports: Problems and Potentials for the Exporter." Forest Products Journal, Vol. 21, No. 3 (March 1971), pp. 16-20.

1) Fresh Fruits and Vegetables

A poor transportation system is one of the major constraints to exporting fresh fruits and vegetables from Colombia. Competition in the world horticultural market, already keen, will grow even more severe in the 1970's. Colombia's ability to compete in these markets depends, of course, on whether it is able to offer a high-quality product at prices competitive with other suppliers. Both of these objectives can be undermined by a high-cost and inadequate transportation system. Figure 5-7 compares the cost and time required to ship fresh fruits and vegetables from producing areas in Florida, Mexico, Central America, and Colombia to selected U.S. markets. Colombia's alternatives appear to be high cost or slow.

Transporting fresh fruits and vegetables (perishables) presents many unique problems, many of which are beyond the control of the exporters as well as the developing country itself. Transporting perishables requires closely-integrated arrangements between shippers and receivers; even small delays at various points along the line can result in total losses. A detailed description of the degree of perishability of a variety of fresh fruits and vegetables is given in Table 5-13. Transporting perishables may also call for specialized investments in transporting equipment (refrigerated ships and warehouses, for example). Yet, programs to transport only fruits and vegetables will seldom justify much investment in the transport sector.

In shipping fresh fruits and vegetables, Colombia has two choices--air or ocean freight. Their relative cost is a prime factor determining which method will be selected. In the case of fresh fruits and vegetables, delivery speed and the capability of the air or ocean system to perform the desired services (maintain certain temperature and humidity levels, for example) may be equally important factors. In fact, neither system is entirely satisfactory for shipping fresh fruits and vegetables. Shipping by air is fast but relatively expensive. It is also limited by the amount of passenger traffic moving between Colombia and the external markets, unless the volume of produce moving to and from Colombia can be increased by a quantum jump, to justify either the air lines operating more scheduled, all cargo flights or the exporters, themselves, chartering aircraft on a regular basis. Ocean freight is cheaper but delivery is slow. Integrating shipments with Colombian harvest periods and peak demand periods in external markets is also difficult because sailings are infrequent.

Table 5-13—Degree of perishability, permissible commercial storage time, and temperature and humidity requirements during storage and transit for selected fresh fruits and vegetables

Degree $\frac{1}{2}$ of Perishability	Commodity	In Commercial Storage				In Transit
		Approximate Storage Life	Recommended Temperature	Recommended Humidity	Highest Freezing Point	Permissible Temperature for 48 hrs.
			$^{\circ}$ F.	%	$^{\circ}$ F.	$^{\circ}$ F.
High	Berries					
	Blackberries	2-3 days	31-32	90-95	30.5	up to 40
	Raspberries	2-3 days	31-32	90-95	30.0	up to 40
	Strawberries	5-7 days	32	90-95	30.6	up to 40
	Papayas*.....	1-3 weeks	85-90	45	30.4	45-65
	Asparagus	2-3 weeks	32-36 $\frac{3}{4}$	95	30.9	32-40
	Beans, snap	7-10 weeks	40-45 $\frac{3}{4}$	90-95	30.7	32-50
	Cauliflower	2-4 weeks	32	90-95	30.6	32-50
	Celery	2-3 months	32	90-95	31.1	32-40
	Melons					
	Cantaloup $\frac{3}{4}$ slip	15 days	36-40	85-90	29.9	32-50
	Cantaloup full slip	5-14 days	32-35	85-90	29.9	32-50
	Creshaw	2 weeks	45-50	85-90	30.1	32-50
	Persian	2 weeks	45-50	85-90	30.5	32-50
	Okra	7-10 days	45-50	90-95	28.7	32-40
	Onions, green ..	—	32	90-95	30.4	32-40
	Peas, green	1-3 weeks	32	90-95	30.9	32-40
	Radishes, spring	3-4 weeks	22	90-95	30.7	32-40
	Tomatoes, firm ripe	4-7 days	45-50	85-90	31.1	32-50
	Moderate	Avocados	2-4 weeks $\frac{2}{3}$	40-55 $\frac{2}{3}$	85-90	31.5
Bananas		—	56-58	90-95	30.6	55-60
Cherries, sweet.		2-3 weeks	30-31	90-95	28.8	up to 40
Limes		6-8 weeks	48-50 $\frac{3}{4}$	85-90	29.1	up to 60
Peaches		2-4 weeks $\frac{2}{3}$	31-32	90	30.3	up to 45

Figure 5-7:

SHIPPING COSTS AND TIME REQUIRED TO TRANSPORT FRESH FRUITS AND VEGETABLES FROM WESTERN HEMISPHERE PRODUCING AREAS TO U.S. IMPORTING POINTS

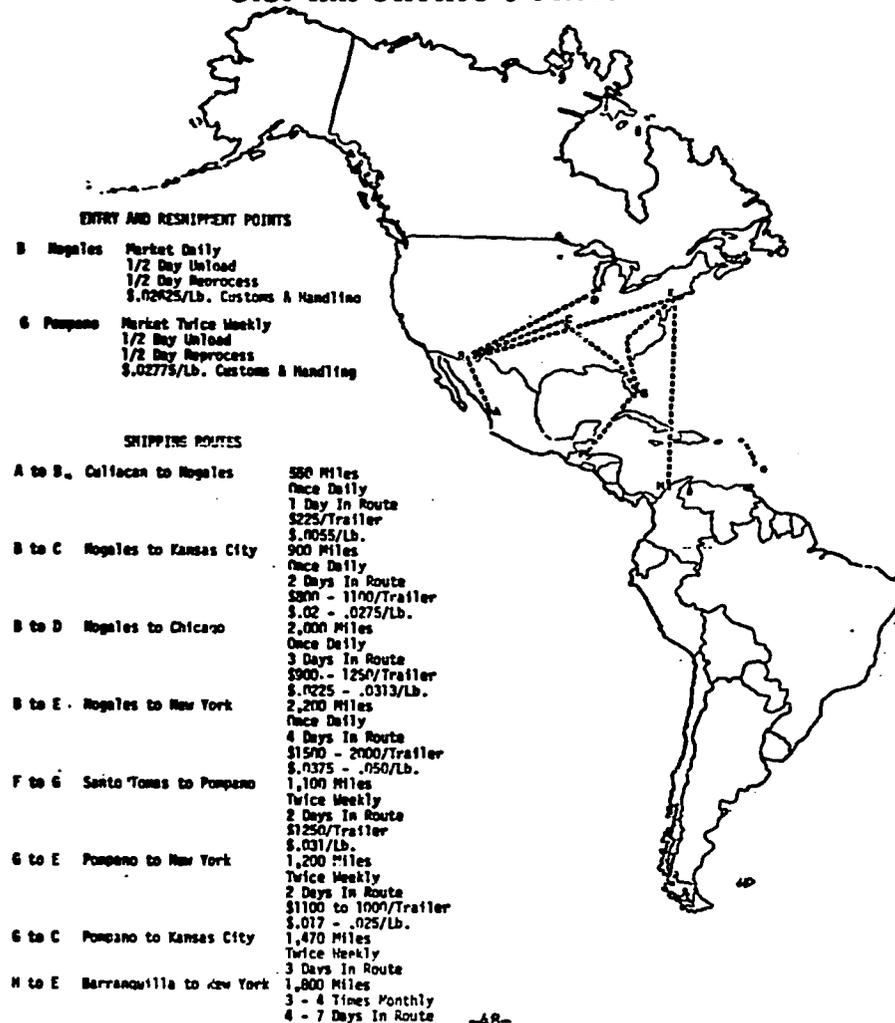


Table 5-13--(Cont'd)

Degree of Perishability	Commodity	In Commercial Storage				In Transit
		Approximate Storage Life	Recommended Temperature	Recommended Humidity	Highest Freezing Point	Permissible Temperature for 48 hrs.
			[°] F.	%	[°] F.	[°] F.
	Plums*.....	2-4 weeks <u>2/</u>	31-32	90-95	30.5	up to 45
	Pineapple green..	2-4 weeks <u>3/</u>	50-60 <u>3/</u>	85-90	30.0	40-60
	Pineapple ripe...	2-4 weeks	45	85-90	30.0	40-60
	Artichoke, globe:	1 month	32	90-95	29.9	32-50
	Cucumbers	10-14 days	45-50	90-95	31.1	32-70
	Eggplant	1 week	45-50	90	30.6	32-70
	Lettuce, leaf,					
	: head, romane ...	2-3 weeks	32	95	31.7	32-50
	: Honeydew melon ..	3-4 weeks	45-50	85-90	30.3	32-75
	: Peppers, green ..	2-3 weeks	45-50	90-95	30.7	32-60
	: Tomatoes, mature:					
	: green	1-3 weeks	55-70 <u>3/</u>	85-90	31.0	---
Low	Grapes,					
	: vinerfera*.....	3-6 months	30-31	90-95	28.1	up to 50
	: Lemons*.....	1-6 months <u>3/</u>	50-55 <u>3/</u>	85-90	29.4	up to 70
	: Oranges	3-12 weeks <u>3/</u>	40-44 <u>3/</u>	85-90	29.7	up to 70
	: Pears*.....	2-7 months <u>2/</u>	29-31	90-95	29.2	up to 50
	: Garlic, dry	6-7 months	32	65-70	30.5	32-80
	: Onions, dry	1-8 months <u>2/</u>	32	65-70	30.6	32-80

*Degree of perishability ranges between this category and the next lower one.

1/ FRUITS - relative perishability: high-not stored commercially; moderate-may be stored or in transit for periods not exceeding 2 weeks; low-may be stored commercially up to several weeks; very low-may be stored commercially for several months. VEGETABLES - relative perishability: high-have market life of only a few days and will require expedient, careful, handling with attention to all details; moderate-have market life of about 2 weeks and will ship with little or no trouble under desirable transit conditions; low-can be held for several weeks and withstand rather unfavorable conditions for short periods.

2/ See Leitz and Hardenburg for variety differences.

3/ See Leitz and Hardenburg.

Sources: J.M. Leitz and R.E. Hardenburg, The Commercial Storage of Fruits, Vegetables, and Florist Nursery Stock, Agricultural Handbook #66, USDA, Washington, D.C., Oct. 1968; L.L. Claypool, et.al. "Air Transportation of Fruits, Vegetables, and Cut Flowers: Temperature and Humidity Requirements and Perishable Nature", AMS 280, USDA, Washington, D.C., October 1958.

Of the 10 most promising fruits and vegetables, only strawberries are priced high enough in the U.S. and European markets during the off-season to cover shipment by air. Shipping the others by ocean freight would keep their prices competitive, but under present conditions could take so long that much of the shipment would either spoil on the way or have a very short shelf life once it arrived at the market. In fact, having perishables arrive in poor condition is a danger using either transportation system. By ocean, delivery times may be long and sailings infrequent, meaning spoilage in transit even though refrigeration equipment may be available and used properly. By air, there may be damage despite the shorter delivery time because air line warehouses, handling facilities, and knowledge about handling perishables may be inadequate.

2) Processed Foods, Wood Products, and Sugar

A poor transportation system is less important with processed foods, wood products, and sugar since deterioration in quality is less a problem. Consistent delays in filling orders can cause buyers to look elsewhere for their supplies, though. High transportation costs can also render a product noncompetitive in what are otherwise very attractive markets. This is especially true in the case of wood products where the export process plus transportation can account for 30 to 50 percent of the delivered cost.

The charge has been made, but not documented, that the per ton mile cost of shipping wood products from Latin America to the U.S. market is higher than from more distant Asian ports. In order to document this charge one should compare the rates charged Colombian and other Latin American suppliers with the rates charged exporters from other supplying countries for shipping similar products. This analysis should also (1) compare conditions under which reductions in rates are given in different parts of the world and (2) analyze whether rates for lumber shipments have increased at a disproportionate rate compared to rates for other commodities. This type of detailed analysis was beyond the scope of this study. Until it is made, however, one cannot really say with certainty whether the existing transportation system is a major bottleneck to exports of Colombian wood products.

A similar analysis of the transportation system affecting each potential export commodity would also be desirable. This analysis should include a detailed evaluation of much more than

ocean freight rates--it should cover transportation costs from the farmer to the point of export in Colombia, insurance, loading and unloading ships, customs, arranging for brokers and/or transporting goods to the wholesale market. One transportation cost study found that ocean freight represented only 50 percent of the total cost of transporting tropical hardwoods to the final user in the United States (Table 5-14). However, the real cost to an exporter includes more than actual rates. Any detailed analysis of a transfer system also should include estimates of exporters costs due to delays and product loss.

3) Frozen Foods

The problem of transporting frozen foods is in a class by itself. The frozen foods distribution chain from factory to consumer is both costly and complex. Any increase in temperature above the crucial -18° Centigrade level leads to deterioration of the product and represents a potential health risk. For this reason, the distribution chain has to be completely integrated and effectively controlled at all its stages.

Frozen foods are most likely to be exposed to temperatures above -18°C . while being transported. Four freezing systems are commonly used in transporting frozen foods: dry ice, liquid nitrogen, cold accumulators, and mechanical refrigerant equipment. Frozen foods are often carried in special refrigerated trucks, rail cars, and ocean cargo ships, but air freight is rarely used for frozen food because it is costly and temperature levels are difficult to maintain.

Introduction of insulated containers has helped reduce the time and cost of moving frozen foods. Refrigeration is supplied by compressors housed in a special compartment of the container, either by dry ice or power drawn from a ship's plant if it is aboard a sea going vessel. Still, maintaining temperatures below -18°C . during all stages of the cold chain requires a great deal of sophisticated management, which often is in short supply in countries like Colombia. Additional investments may also be required to construct special facilities for storing products before they can be exported.

C. Trade Barriers

In addition to evaluating the potential demand in importing countries and the competitive position of suppliers, attention has to be focused on the legal conditions under which Colombia would have access to these markets. Countries have adopted various trade barriers, not all necessarily for protective reasons.

Table 5-14--A comparison of the relative costs of transporting tropical hardwood vs. U.S. domestic hardwoods from the forest to the final user in the United States

Tropical Hardwoods			U.S. Domestic Hardwoods		
Steps in Transportation System	Actual Charge	Percent of Total	Steps in Transportation System	Actual Charge	Percent of Total
	U.S. \$			U.S. \$	
	Per 1000 B.F.	%		Per 1000 B.F.	%
In producing country					
Forest to first stop ..	10	8	Forest to mill	22	48
First stop to port or loading	5	4			
Port charges at loading port	5	4			
Ocean freight					
Average of rates quoted	63	50			
In United States					
Port charges	7	6			
Inland freight to storage	4	3			
Storage and handling	4	3	Storage	6	13
Redelivery to user	<u>28</u>	<u>25</u>	Mill re-delivery to user	<u>18</u>	<u>39</u>
Total	\$126	100	Total	\$46	100

Source: Gregory Frumkin, "On U.S. Markets," Paper Delivered at the Conference on Transportation of Tropical Wood Products, November 16-18, 1971 at State University College of Forestry, Syracuse University, Syracuse, New York.

Trade barriers can be either of a tariff or nontariff nature. In the first category belong import duties, special levies, and taxes, while the second includes various administrative requirements, quantitative restrictions, quality requirements, phyto-sanitary controls, etc. Colombia's competitive position in various markets is also affected by preferential arrangements.

1) Fresh Fruits and Vegetables

The legal barriers to entry of Colombia's fresh fruits and vegetables into the United States and Europe are considerable. The most severe restrictions seem to be the administrative barriers in Eastern European countries, but the European Common Market has also established very definite limitations on fresh fruit and vegetable imports from third countries. Colombia, for example, will find itself at an initial disadvantage in this market compared to the Mediterranean countries because (1) it is located much further from the market (2) it has no preferential arrangements to exploit. None of major barriers in the U.S. or European markets were removed or substantially lowered by the Kennedy round of tariff negotiations.

U.S. trade restraints in fresh fruits and vegetables include tariffs, sanitary regulations, and, under certain circumstances, quality controls. Quantitative restrictions are not generally used, nor are preferential arrangements negotiated. Tariff rates are moderate to moderately high. Rates for a number of fresh fruits and vegetables are lowered during the winter when imports do not compete with domestic production. (See the appendices of the individual reports for more detailed information on the tariff and non-tariff barriers applied to individual commodities.)

Regulation of the quality of fresh fruit and vegetable imports was authorized under the Agricultural Marketing Agreement Act of 1937. The Act itself does not impose regulations on the marketing of any agricultural commodity; it merely provides the authority under which an industry can develop regulations to help solve its own marketing problems. The types of activities authorized under marketing agreement and order programs which could influence Colombian exports are: (1) regulation of quality (2) regulation of quantity, (3) standardization of containers or packs, and (4) prohibition of unfair trade practices. Import regulations only apply, however, when domestic shipments are actually being regulated. In the past, these regulations generally have been established at moderate quality levels; consequently, only low quality products have been affected. Nevertheless, this program could become a potent restraint if domestic producers in the United States see more of their markets slipping away to foreign suppliers.

The commodities which can be regulated under this legislation are tomatoes, green peppers, eggplant, cucumbers, mangoes, avocados, Irish potatoes, limes, grapefruit, oranges, onions, prunes, raisins, olives, walnuts, and dates. The U.S. Department of Agriculture also publishes quality standards for numerous fresh fruits and vegetables. These standards are recorded standards only, and are not mandatory.

Conditions for access to the European Common Market are much more demanding. Duties have to be paid according to a Common External Tariff, and the rates are relatively high for a number of items. Also, to protect Community markets against cheap imports from third countries, a reference price system has been established for major commodities. Under this system reference prices are established annually (composed of 3-year production cost averages for each member country for each commodity) and compared daily with entry prices of produce from third countries. If entry prices fall below the levels of the reference prices, imports may be subjected to a countervailing charge equal to the difference between the reference price and the landed price of the produce concerned. A number of key fruits and vegetables—oranges, tangerines, lemons, apples, pears, table grapes, cherries, plums, tomatoes, and cauliflower—enjoy the highest protection through both tariffs and reference price provisions. Reference prices have been in effect since the 1962-63 season but, as of 1968, countervailing charges had been levied only against table grapes and tomato imports from Eastern European countries. Reference prices have been gradually increasing, however, increasing the likelihood of their application. When the system is enforced, cutting costs is no longer an effective way of improving one's competitive position in this market. In this case, the proper strategy is to schedule one's exports during the winter when reference prices are not enforced.

Some members of the Community continue to operate minimum price schemes, quantitative restrictions, and/or licensing of imports from third countries, although it was thought originally that these policies would be phased out as soon as the Common External Tariff and the reference price system were adopted. Which restrictions remain in which countries and whether they would affect Colombian exports to these markets would have to be explored more fully with the individual countries before initiating any export program.

Fresh fruit and vegetable imports also have to meet certain mandatory quality requirements before being accepted for import. Common quality standards have been accepted for 27 kinds of fruits and vegetables; for products where no Community standards exist, European standards are applied.

The policies adopted by the EEC clearly give Community producers considerable preference over third country suppliers. The most important barrier to imports, of course, is the reference price because it serves as a floor price for the market for imported goods and because the system of application causes many uncertainties for both exporting countries and the import trade.

Because the reference price system is usually not applied during the winter months and because tariffs and other restrictions on tropical fruit imports are lower or non-existent, the "off season" and tropical fruit markets are most attractive for Colombia. However, Colombia will be at a disadvantage in competing for these markets with the Mediterranean countries and certain African states which have been granted preferential entry into the Common Market. Also, Colombia will find it more difficult to export fresh fruits and vegetables to the United Kingdom now that it has entered the Common Market because, in general, its individual rates were set at a lower level than the Common External Tariff rates which will now be adopted.

2) Processed Fruits and Vegetables

Barriers to processed fruits and vegetables are also demanding. The U.S. restraints to trade in processed fruits and vegetables include tariffs, mandatory minimum standards of quality, sanitation, product identity, and labeling. Again quantitative restrictions are not generally used, nor are preferential arrangements entered into. Tariff rates are moderate to moderately high, ranging from 3 percent ad valorem for jellies, jams, and marmalades made from berries to 20 percent for canned peaches and 17.5 percent for canned asparagus and other canned vegetables (NES). Besides tariffs, the major barrier to Colombian processed fruits and vegetables entering the United States is the Food, Drug, and Cosmetic Act. All imported as well as domestically produced foods are subject to these regulations. Inspections are conducted by the Food and Drug Administration (FDA) at the time goods pass through customs, and shipments not in compliance may be destroyed or prohibited from entering the United States.

A basic purpose of this Act is to protect the U.S. consumer from unclean or unsanitary food. The Act prohibits foods which may cause disease, foods containing repulsive or offensive matter which would not be knowingly eaten, and food manufactured under unsanitary conditions. Although the Pure Food Act does not authorize "tolerances" for filth or decomposition in foods, this does not mean that a food is necessarily condemned because foreign matter is present. In practice, the Food and Drug Administration has established acceptable "levels" for natural or unavoidable defects in food for human use. According to the FDA these "levels" (1) are not harmful to humans and (2) can not be avoided even when following good manufacturing practices.

The Act also authorizes regulations establishing standards of identity (what the particular food is), quality (whether above or below standard), and container fill (how full the package must be). Under this Act, only one minimum standard of quality is established for each food standardized, and food falling below this minimum must bear a special substandard label. These standards of quality must not be confused with "standards for grades" established by the U.S. Department of Agriculture (USDA). Although not mandatory, USDA grades are used throughout the U.S. market. These grade differences give rise to price differentials in the U.S. market, and prices are almost universally quoted in terms of these standards. All foods, including those for which specific standards of identity, quality, and fill have not been established, must meet the basic FDA requirements for wholesomeness and purity. The Act also establishes specific labeling requirements.

Conditions for access to the EEC are just as demanding. Generally, the Common External Tariff rates for processed fruits and vegetables are higher than the rates applied to similar products by the United States or the United Kingdom. Ad valorem duties applied to canned fruits range from 20 to 24 percent compared to 6 percent charged by the United Kingdom before it entered the Common Market. Ad valorem duties applied to fruit purees, pastes, jams, and jellies range from 27 to 30 percent, to fruit juices from 18 to 25 percent, and to canned vegetables from 18 to 24 percent.

In the case of processed fruits, the EEC also imposes a levy on any sugar which has been artificially added to the product during the manufacturing process. This tax is designed to compensate for the price difference between sugar on the EEC and on the world markets. The funds raised by this procedure are supposed to be used to subsidize EEC exports of such sugar-containing products to third countries. In practice, products differ in the amount of natural sugar they contain, making it difficult to estimate added sugar content in individual cases.

Members of the Community are permitted to maintain whatever quantitative restrictions they desire on all processed fruits and vegetables. They have also established individual rules to regulate the purity, hygiene, weights and measures, maximum limits for food additives, contaminants, tolerance for pesticide residues, and proper labelling of foods. Unsatisfied with this maze of regulations which must be understood to produce for the entire Community market, the packing industries within the member countries have been promoting the standardization of fruit and vegetable products. Several such standards

have been developed, but not yet approved. Once approved, however, they will become mandatory and only products meeting these standards will be authorized for sale within the Common Market. This will simplify the process of manufacturing for and marketing within the European Common Market, for third country suppliers as well as for their domestic producers.

Meanwhile, the situation at present requires that third country exporters to the Common Market (like Colombia) have a detailed knowledge of the requirements in each separate market. From the technical and economic viewpoint it may even be impossible for a country like Colombia to satisfy the requirements of more than one or two markets. Obviously, it is in Colombia's interests that the members of the Common Market harmonize their food regulations. Since the United States is also a potential market, a more complete harmonization of food regulations throughout the world would also be desirable from Colombia's point of view. Of course, neither the U.S. nor Western European requirements are insurmountable, but there is a cost involved in determining each country's requirements in detail, and then in making the necessary technical adjustments so that Colombian industries can make the required product.

3) Wood Products

Tariff and other legal restrictions seem to be less important as barriers to Colombia's exports of tropical hardwoods than the internal factors that give rise to higher costs, low quality, and unreliable deliveries. The four major markets—the United States, Japan, the EEC, and the United Kingdom—allow most tropical logs to enter duty free and apply relatively low rates to the major processed wood products most relevant to the tropical hardwood exporters. In addition, all four markets have made offers under the UNCTAD (United Nations Conference on Trade and Development) scheme of general preference to liberalize imports of manufactured and semi-manufactured products (including wood products) originating in developing countries.

4) Sugar

In a free market, Colombia could increase its share of the world market by becoming more competitive—selling at a lower price, increasing the efficiency of its marketing system (adopting bulk handling, for example), and filling export orders on a timely basis. Conversely, Colombia could lose its share of the world sugar market if its prices rose regardless of whether this was a cost rise specific to the sugar industry or due to increased production and marketing costs due to general inflationary conditions in the country not compensated for by changes in the exchange rate. Colombia could also lose its share of the world market if domestic consumption increased more rapidly than production.

However, world sugar trade is, and will probably continue to be, characterized by special marketing arrangements. More than half of total world exports enter international trade channels under preferential arrangements. Much of the remainder is now traded under the provisions of the International Sugar Agreement. Under these conditions, a country's ability to increase its exports depends not only on price competitiveness but also the status of its relationships with the preferential importers, its ability to negotiate quotas, and its ability to fill quotas once negotiated. Colombia has membership in two of the important marketing arrangements—the U.S. market and the International Sugar Agreement.

Colombia's opportunities to export sugar are fairly well defined, both in the U.S. law and in the International Agreement. Its basic quotas are established for several years at a time, although its actual exports can rise above these levels on a year-to-year basis depending on whether other countries fall short in supplying their allotments. This does not mean, however, that the market is an unattractive one. Nor do these arrangements mean that the market can be exploited to its fullest without some positive commitment on the part of the government and private export groups to do so. If the behavior elicited by such arrangements is to look for greener pastures—faster growing markets with fewer constraints—it is likely that the export opportunities that are available will not be exploited to their fullest.

To maximize foreign exchange earnings under the constraints imposed by the world market, shortfalls such as occurred under the International Agreement in 1969 and 1970 should be avoided. Instead, Colombia should explore the possibility of adopting a production and stock management program designed to take advantage of other countries' shortfalls. Such shortfalls will continue to occur, both in the U.S. market (Puerto Rico, for example) and under the International Agreement. In the past, when stocks were limited, Colombia's first priority was to supply the U.S. market (1) because if basic quotas were not filled, next year's quotas would be reduced, and (2) because prices in the protected U.S. market were higher than those on the free market. This price differential is not likely to be as large in the future, at least for the next several years and longer, if the Agreement continues to work.

In the past, then, Colombia followed a strategy of maximizing its foreign exchange earnings from sugar exports subject to the constraints imposed by its own stock situation. The alternative is for Colombia to plan for production and stocks to be large enough

to enable it to supply all of its basic quotas plus any deficits prorated to it. Good performance in supplying other countries' deficits can also provide a strong bargaining point to help Colombia increase its basic quotas during subsequent negotiating sessions.

There are costs involved in following such a strategy, however. One is the cost of maintaining larger carryover stocks than Colombia has maintained in the past. Year-end stocks, for example, have consistently fallen below the levels considered adequate (a 2 months supply, for example). Since cane sugar has a longer gestation period than annuals and stores well, stock manipulation is the most feasible way of responding to short-run yearly changes in the sugar market. The costs of storing larger sugar stocks can be compared with the benefits (using different price assumptions) to develop a rational storage policy.

All of this assumes, of course, that sugar production is the most profitable alternative available to the private sugar producers, and that adequate quantities (enough to supply both domestic consumption and exports) will be produced. Domestic price policies should be reviewed to determine whether this is the case. If, as FAO and other sources indicate, Colombia is a low-cost producer and has adequate land on which to expand production, Colombia should be able to find a domestic price level which will draw forth adequate production and still allow producers to make a profit when selling to the international as well as the U.S. market.

5) Latin American Markets

Latin American countries, themselves, probably have the highest and most complicated legal barriers to the entry of each others' products. The exception to this rule occurs among countries that are members of the same regional organization, such as the Caribbean Free Trade Association (CARIFTA), the Central American Common Market (CACM), the Latin American Free Trade Association (LAFTA), and the Andean Common Market (ACM). Colombia is a member of the last two groups. However, the extent to which these groups have already succeeded in lowering their barriers to each others' products varies considerably from group to group and, within these groups, from commodity to commodity.

Most Latin American countries have designed their trade policies to protect and encourage domestic industries as well as to secure revenue for the government. In most countries, this goal is achieved by setting up high import duties and import controls on the entry of non-essential goods and services and goods similar to those produced locally. At the same time, very low duties are imposed on

items used for industrial or agricultural production not produced locally. Commodities which usually fall into the second category are raw materials, fertilizers, agricultural and industrial machinery, construction materials, spare parts, and chemicals. Processed food and textile imports are likely to be subject to high duties, however, since these industries are among the first established in developing countries.

These measures are characteristic of a trade-industrialization policy referred to as "import substitution." This combination of tariffs makes imported inputs cheaper and raises the price at which the final product can be sold and still compete against foreign imports, gives the domestic industrialist the opportunity (1) to earn higher profits or (2) to produce his product at higher costs. Unfortunately, experience indicates that the latter has often happened, leaving country after country with a group of high cost domestic industries. A siphoning of resources out of export-oriented industries has been another unintended consequence of this import substitution policy.

Most Latin American countries use a series of regulations to control imports, not just tariffs. If so, the main barrier may be the complexity of the system which must be understood and manipulated by the potential exporter. This system may also completely prohibit certain imports. Examples of other types of barriers to imports include: surcharges (Ecuador, Peru, Guyana, Jamaica, Panama, Venezuela, Brazil), exchange controls (Ecuador), import licenses (Ecuador, Guyana, Trinidad and Tobago, Panama, Jamaica, Peru, Venezuela), import deposits (Ecuador), lists of prohibited commodities (Peru until 1969, Venezuela, Trinidad and Tobago), quotas (Panama), sanitary regulations (Panama, Peru, Venezuela), and internal taxes (Jamaica, Venezuela, Brazil). This complex system of tariff and non-tariff barriers and preferential arrangements necessitates a detailed analysis of the conditions of entry in each potential market.

d. Cost of Market Entry

Traditional export commodities such as grain, coffee, cotton, and sugar are homogeneous, have well determined quality specifications, and are traded at established prices in world markets. This means the exporter only has to put such products at the threshold of market awareness where well-established channels gather the product and move it to the ultimate consumer. For example, when exporting sugar, Colombia is part of a well-organized, operating international market system and most of the internal costs required to link Colombia with this system have already been incurred.

On the other hand, the markets for processed foods are characterized by substantial product differentiation. In addition to the natural differences among commodities and type of processing, firms often try to further differentiate their product as a means of competing. By getting consumers to identify their product as something distinct, firms hope to create a less elastic demand for their product, giving them greater freedom to raise prices without losing markets. The prevalence of this means of competition makes marketing practices within these markets completely different. Demand might have to be "created" or "discovered" for a processed product, and the product pushed through channels in order to penetrate the market. This takes marketing these types of products very complicated, expensive, and risky.

The conditions of market entry facing fresh fruit and vegetable and tropical hardwood exports are more like the conditions for processed foods than the conditions applicable to traditional exports like sugar. There is no established "world price" for these commodities because there is no "world market." Specifications differ from market to market, and producers do attempt to differentiate their products by brand.

To successfully penetrate these external markets, the potential exporter must have a thorough knowledge of consumer preferences and behavior in each of these markets and adapt himself to them. He must know, in detail, the types and varieties of produce required, the quality standards demanded, the timing of shipments to suit market needs, and the manner of market penetration required. Second, the producer must develop the capability to produce the products required in the external markets, grade these products according to the importers' standards, and then be able to adhere to these standards by developing a system of quality control. Finally, to be successful, the potential exporter must know and comply with the commercial practices of the import markets and their subsequent distribution channels.

These market requirements are not completely inflexible, however, and exporters can take more active measures to increase their penetration of given markets. Exporters can become more aggressive in their sales policies, employing their own sales representatives, for example. Quantities shipped or prices at which shipments are offered can be deliberately manipulated. Also, consumer preferences can be influenced through advertising.

There is a cost associated with each of these steps, however, which must be kept in mind when determining the comparative attractiveness of two or more potential markets. For example, in the case of both fresh and processed fruits and vegetables, costs will have to be incurred by private producers and/or the government to develop the marketing structure needed to move these products out of Colombia and into the external markets. Moreover, in the case of both fresh and processed fruits and vegetables, there is no well-organized international marketing structure to link into, making the costs of developing these markets much higher and the success of doing so quite uncertain. On the other hand, the costs of entering the sugar market have already been incurred and, therefore, would not have to be subtracted from any export benefits which might be obtained from a more rational stock management program.

A similar thought process should be followed when comparing two types of markets for fresh fruits and vegetables: (1) seasonal and counter-seasonal markets in the American and European markets where the products are produced domestically and (2) the market for tropical fruit. In supplying seasonal and counter-seasonal markets, the big problem is to get the produce to the market at the right time, at the right price. Once there, consumers do not need extra persuasion to buy the product or education in how to use it. In fact, in most cases the only thing holding back high levels of consumption during the counter-season is the lack of supply. This ready market does not exist for tropical fruits, however. An extra effort to stimulate demand and to educate the consumer is required to develop these markets. The extra expenditures required for these advertising campaigns must be subtracted from the value of expected sales to gain an accurate picture of the value of this market to Colombia. Often these markets suffer from a type of "vicious circle" syndrome, where consumer demand is low because the product is unknown, its price is too high to encourage experimentation, and the quantities entering the market are small and prices high because consumer demand is so low.

There are two points to this discussion: (1) developing markets for fresh tropical fruit in the temperate countries requires more money and more sophisticated techniques than supplying their counter-seasonal markets and (2) the returns for these expenditures are less certain, will take much longer to materialize, and may not be any larger than the returns to expenditures spent to increase exports to the "off-season" markets. This is not to say that efforts should not be made to develop markets for fresh mangoes in the United States and Western Europe, for example, but I would argue that it

would be better to begin this effort after some success has already been achieved in other parts of the export program. A similar argument could be made with respect to the desirability of exporting processed exotic fruits compared to the major line fruits.

This type of cost benefit analysis should be used throughout the process of developing an export program, first as an aid in selecting potential commodities and second as a guide to selecting the appropriate development strategy. A simple variant of this approach was used in this study itself. Markets were excluded, for example, if levels of demand were low, and commodities were excluded if import levels were small and showed limited promise of growth. This strategy grew out of a recognition that the costs required to evaluate, establish, and promote a million dollar export business may be just as great as the costs required for a \$10 million business. Therefore, the procedure followed in this study was to concentrate on the larger markets where the probability of finding export opportunities with high benefits to costs should be greater. The same procedure is recommended to the Colombians.