
Potential for Sri Lankan
GREEN BEANS

In Selected Major World Markets

An SRD Market Intelligence Profile™

Prepared for
**Employment, Investment &
Enterprise Development Division**
Mahaweli Authority of Sri Lanka,
Colombo, Sri Lanka

Market Intelligence
Project Design/Evaluation
Technology Transfer/Training
Enterprise Development/Management
Horticulture, Agribusiness, Irrigation
Logan Utah, Colombo, Budapest, Guatemala City



**Research and
Development
Groups Inc.**

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I. General Vegetable Consumption & Green Bean Import Trends

A. The "Fresh Trend": Fresh vs. Processed

During the decade of the 80's consumers in the major importing countries in Europe and North America have become more conscious about nutrition and physical fitness. This trend has been gaining strength and is now beginning to exhibit itself strongly in the marketplace in the form of a shift in consumption in favor of fruits and vegetables and away from processed food products. At its inception, the trend was strong only among a small and relatively elite group of consumers, but its effect had spread sufficiently by the mid-80's that its effect can be seen even in overall consumption and import data. Figure 1 illustrates the recent effects of the "fresh trend" in the imports of the two largest importing nations, W. Germany and the U.S. during the mid 80's. One can see even in these macro level data, a fairly even trend for both processed and fresh vegetable imports, and then a sharp up-turn in fresh imports while processed ones increase only slightly. This trend strengthened itself during the later part of the 80's and is expected to continue during the foreseeable future.

Though this trend affects most processed forms of fruit and vegetables, it does not appear to have negatively affected those processed forms which are thought of as "additive free" such as frozen and fresh juices. Both fruit juices and frozen products have shown continuing strong demand.

B. The Anti-Cholesterol Trend

There is a similar consumption trend which has favorably affected the market for fresh produce which is related to the link between cholesterol and heart disease. Recent research has confirmed the link, and a significant proportion of the consuming population is now shifting diet in the direction of fruit and vegetable foods and away from meat and dairy products. Figure 2 is an example from a U.K. government campaign to support the trend.



Figure 1: U.K. Promotion (Fresh Produce Journal, Sept. 14, 1990 p. 19)

C. Off-Season Fresh Fruit & Vegetable Consumption Trend

Fresh fruits and vegetables have been transported thousands of miles from Southern located winter production sites to Northern consumption markets for more than one hundred years in the U.S. and Europe. In the distant past, however, this trade has been of limited dimension tapping only a few very high income households. Since World War II, the fresh trend has become a major industry, and recent data indicate that it is strengthening over time. In later sections of this document the dramatic recent expansion in imports into Europe is analyzed. Most of that growth in consumption is tapping the vast reservoir of off-season demand for fresh fruits and vegetables.

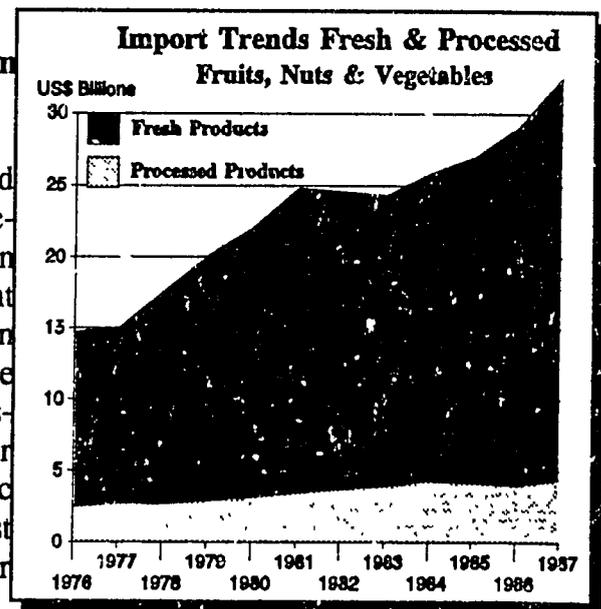


Figure 2: Fresh & Processed Imports

D. Fresh Vegetable Import Trends.

Figure 3 indicates the shares of major importing regions in total world fresh vegetable trade. Western Europe can be seen to be the dominant importer with two thirds of total world imports. North America is second with 11%. Pacific Rim countries account for approximately 7% of world imports. Figure 4 outlines the trend in fresh vegetable imports for these same regions. West European imports grew \$1B/yr from 84-87.

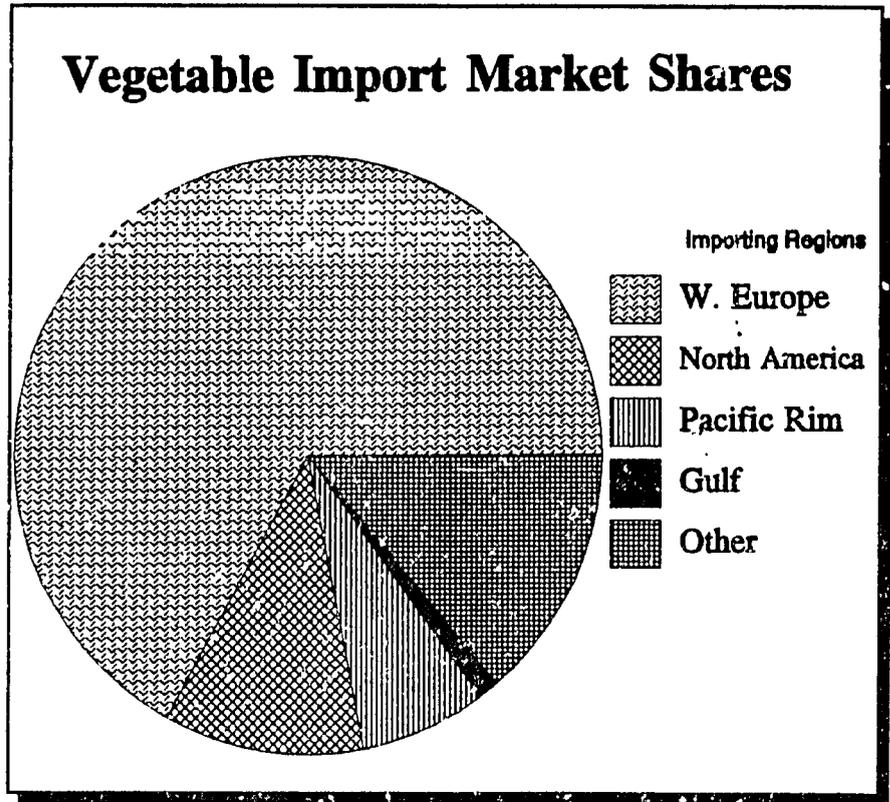


Figure 3: Fresh Vegetable Import Shares by Region 1987

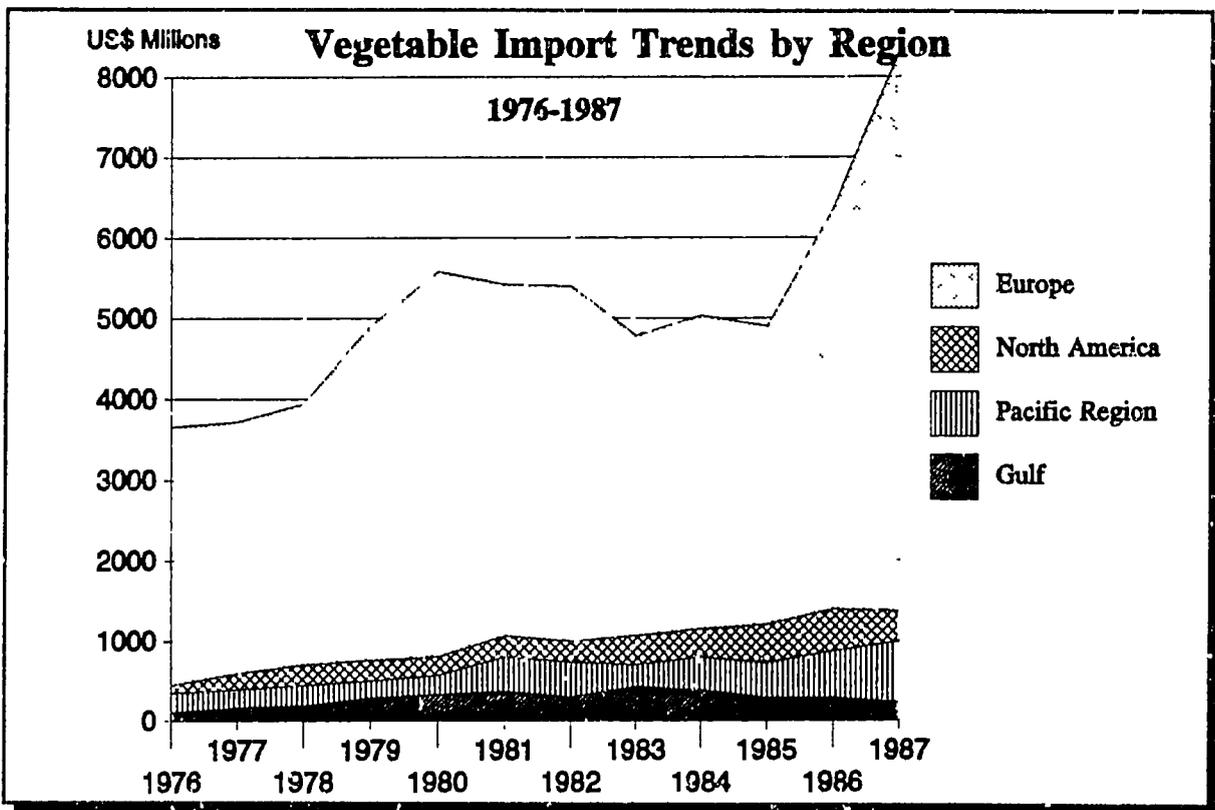


Figure 4: Regional Import Trends in Fresh Vegetable 1976-1987

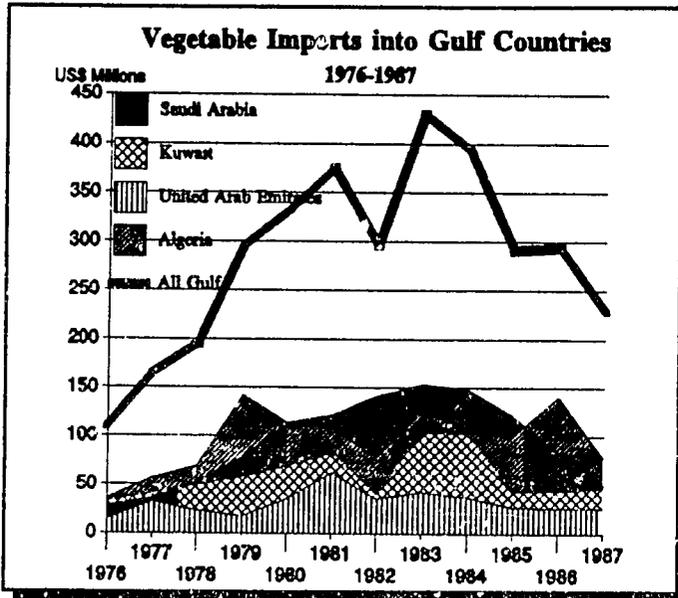


Figure 5: Gulf Imports

This growth trend strengthened in dollar terms as a result of the exchange rate shifts in the late 1980's. It is important to note that while European imports were growing so dramatically, those of the other large regions (North America and Pacific Rim) were relatively stable, and those of the Gulf decreased by roughly half. A significant part of the European increase was due to the incorporation into the EEC of Spain, Portugal and Greece, but the surge in imports indicates a vast reservoir of latent demand in Europe for off-season vegetables.

Figure 5 presents the individual country fruit import trends in the Gulf over the same period. The strongest decrease over this period is the drop in

Saudi imports from close to \$150M per year in the early 80's to less than \$75M per year in the late 80's. It should be noted that the *annual expansion* in the Western European market in imports in the late 80's was the equivalent of more than two complete Gulf markets each year. Figure 6 presents the largest twelve fresh vegetable importing countries in 1987.

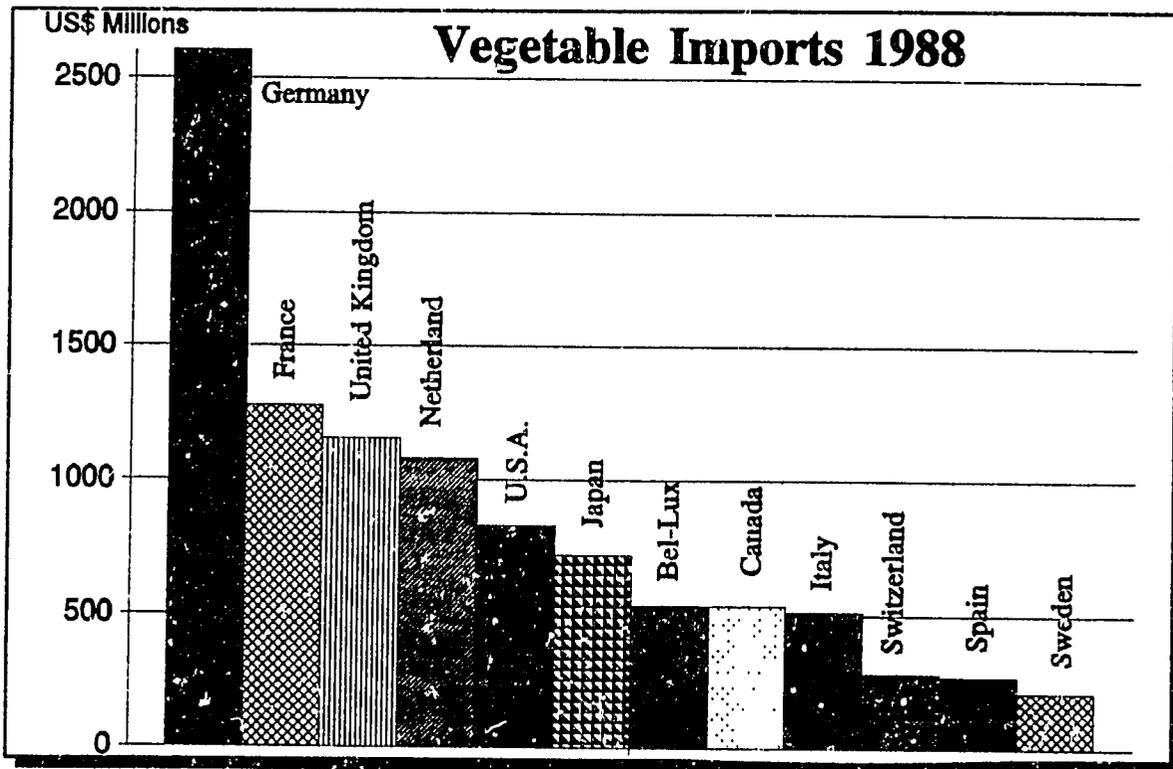


Figure 6: Major Vegetable Importing Countries

II. Timing & Depth of Market Window Opportunities for Green Beans from the Mahaweli

A. Market Opportunities

Markets for fresh green beans are large and generally growing in most West European Countries. To provide in-depth market analysis we have selected four country markets for analysis in this profile, three EEC markets, (the U.K., Netherlands and Germany), and one other Asian market (Japan). Figure 7 indicates total green bean supplies by week for 1990 in the four major markets in terms of tons entered per week. Major supply peaks are normally caused by coincidental arrivals of many boats during a particular customs data gathering period and do not indicate consumption peaks.

Figure 7 indicates that during the first three months of the year Japan imports very small amounts of green beans, while only about 100 to 500 tons are imported weekly into the three EEC markets. Around late May-early June green bean imports rise in the Netherlands to over 5,000 MT/Wk. (It should be noted that a significant portion of the supply into the Netherlands is actually re-exported to other European markets) The largest market, however, is Japan. Japanese imports surge in June, rising to over 7,000 tons per week for more than two months during the mid-summer. By late October Japanese bean imports fall to under 1,000 MT/Wk. German supplies peak at just over 1,000 MT/Wk in late June, while imports into the U.K. rise during the summer months of July, August, and September. Supply during October through December is often under 500 MT/Wk in the U.K. and Germany.

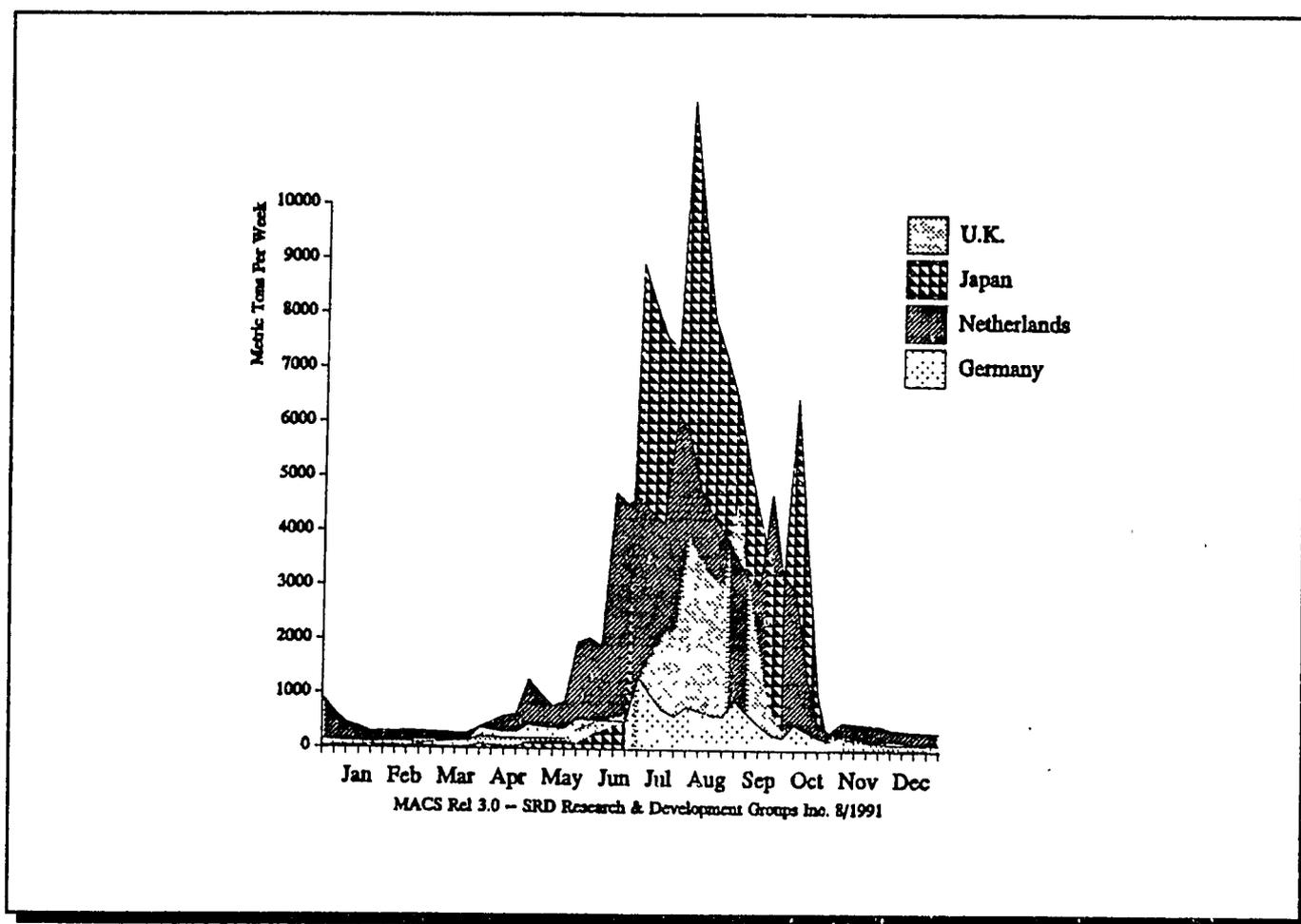


Figure 7: Weekly Supply of Green Beans in Germany, Japan, U.K., & the Netherlands, 1990

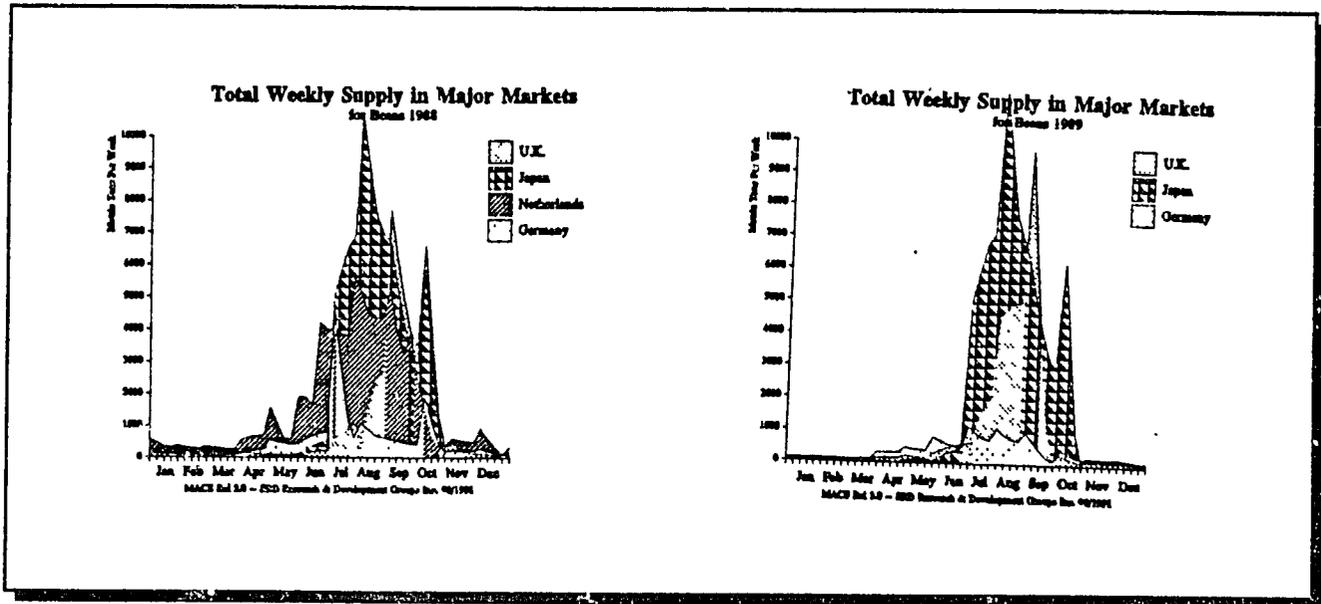


Figure 8: Weekly Green Bean Supply 1988 & 1989

Supplies in the Netherlands and Japan fall to below 1000MT/Wk during this same period. Thus, there is a clear on and off-season period in all of the markets studied here, a less pronounced one in Germany. There appears to be a large market window from late October to early May in all to the countries analyzed.

Figure 8 illustrates the bean import picture in the same four selected markets for 1989 and most of 1991. The patterns appear to be quite similar, with the bulk of annual supply coming in the months between June and late October. Sri Lanka's opportunity for exporting green beans to the targeted markets could conceivably consist of two types of strategies. The first could be to capture some existing market from a competitive supplier during a part of the year when the market is saturated. For example, Sri Lanka could compete "away" part of Spain or Italy's current supply to Germany, forcing these other suppliers to export their beans to other markets or reduce their exports. A second possibility could be for Sri Lanka to supply "additional" green beans to the market in excess of current supply during periods of the year when there is insufficient supply, i.e. when demand exceeds supply. Since free markets normally "clear" at all seasons (that is all available product is sold at some price), supply always equals demand at the "clearing" price. This is simply a way of saying that supply and demand are concepts related by prices, and it is impossible to speak of demand without at the same time addressing the price issue. If it were possible to have a full understanding of each market, it would be possible to estimate the quantity a particular market would "demand" or purchase at a specified price. Various methodologies could be used to analyze market supply and demand characteristics. This section describes the method SRD utilizes which is the basis of the analysis presented in this profile.

1. The Sri Lankan "Break-even" Wholesale Price.

Since the quantity demanded in the market of a particular city or country during a given week is assumed to be a function of price, we have chosen to cut into this circle by selecting a particular price

and ask the demand question as follows: "what quantity of beans would be demanded in the London (or other market) at or above the break-even price for an average Mahaweli producer?" It is an axiom of economics that the more a market is supplied the lower its "clearing" price will be. We wish therefore to know how many tons per week the London market, for example, could absorb before the price would drop below the point at which an average Sri Lankan producer/exporter would start losing money on his exports. This concept of "demand" is a very useful one in analyzing the size and timing of Sri Lanka's market opportunities since it asks and answers the "demand" question in terms directly relevant to a potential Mahaweli entrepreneur.

To implement this type of demand analysis one must start with an estimate of the average Sri Lankan producer/exporter "break even" price in each market to be analyzed. Before presenting an example, it should be made clear that the idea of an "average" Mahaweli green bean producer/exporter is a very hypothetical one. The costs of production will likely vary significantly between producers. Secondly, it is frequently true that production and export are activities undertaken by two different companies and the profits of the producer become costs to the exporter. To conduct the analysis of demand we "invent" a hypothetical Mahaweli producer who also exports his own produce through a wholesale agent on consignment in a wholesale market. The Sri Lankan "break-even" wholesale price is therefore the sum of the following costs:

- Farm production costs (labor, materials, annualized land, machinery etc.)
- Packing costs (labor, packaging, annualized plant, equipment etc.)
- Transport costs (farm to pack-house, pack-house to wholesale market in Europe)

- Tariffs, handling and marketing fees.

These costs are added together to form a total cost figure for delivering one kilo of green beans to the different markets. The break-even price will differ in the various market because of the difference in tariff and transportation costs.

The Sri Lanka break-even price for green beans we have estimated for the U.K. market is about \$2.40/Kg. This means that we estimate it will cost a Sri Lankan producer/exporter roughly \$2.40/Kg to grow, pack, transport, and market a kilo of export quality green beans in the U.K. market. Whenever the U.K. wholesale price is above \$2.40/kg this hypothetical Sri Lankan green bean grower/exporter would make profits, when the price is below \$2.40/kg he/she would lose money.

2. Sri Lanka Market Opportunities

The simplest analysis of demand is to use price data alone to identify if and when the price is above the Sri Lanka break-even price.

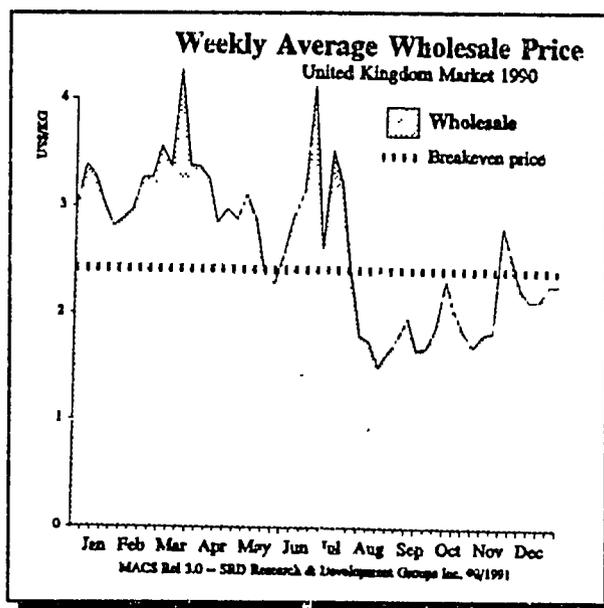


Figure 9: Green Bean Prices & Break Even

These weeks are termed the Sri Lanka Market Window.

Figures 9-11 display the average weekly wholesale market prices for all grades of green beans as a shaded background. The dotted black line is the approximate break-even price for an average green bean producer/exporter. The lines in the European markets are close to the same for this scale of graph. Differences in transport per kilo are very small, and tariffs are equal. All three of the example graphs are based on 1990 data.

Figure 9 shows that U.K. prices in 1990 were above the Sri Lankan break-even point for the first seven months of the year. Price fluctuations are quite erratic, however, ranging from between only \$.60 below the break-even price to almost \$1.50 above the \$2.40 dotted line. Prices reach their lowest levels during the late summer and fall. The price level is the highest during the first part of the year.

Figure 10 displays similar data for the German market in 1990, a fairly high price year in which the price was generally above the break-even point of \$2.35. German prices were strongest in the first five months of the year and during the last two months. July and August were the weakest price periods. Prices during this period remain well below the level needed by the Sri Lankan exporter.

Figure 11 shows that in Japan, prices in 1990 followed a pattern fairly similar to those in Germany. From a peak of over \$7.00/kilo, prices fell sharply for the next two months, reaching a low of under \$2.00 in March and April. The graph indicates that the C.I.F. prices remain below the breakeven price for much of the year. Of course, the wholesale price level would be much higher and would remain above the breakeven price.

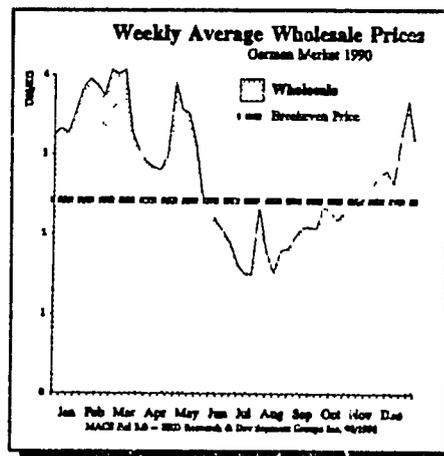


Figure 10: Germany Prices & Break-Even 1990

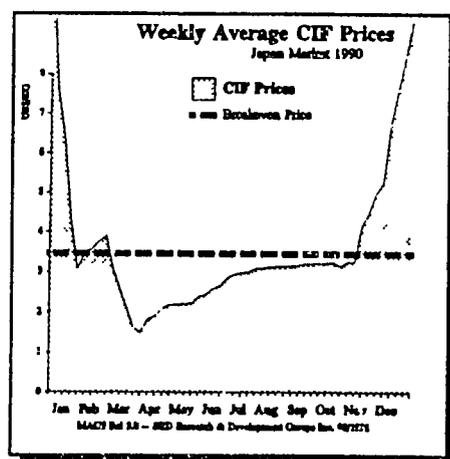


Figure 11: Japan Prices & Break-even 1990

B. SRD's "Profitable Demand" Concept.

To identify the depth and timing of market opportunity, SRD has developed a concept which we call "profitable demand". This is defined as the number of metric tons per week which a market can absorb before the price drops below the client grower-exporter's break-even point. SRD estimates the "profitable demand" level by the use of actual weekly market price and quantity data.

The SRD methodology is described in a separate paper entitled *Concept and Methodology for SRD's Profitable Demand™ Estimates*, (SRD 1990, 4p.) which is attached as Annex A.

1. Depth of Un-Met Profitable Demand™ in the German Market

The German Profitable Demand™ line is drawn at 500 metric tons per week. The overall shape of the weekly supply line during the last three years suggests that supplies are fairly stable in the German market. The period in which supply in 1990 exceeded the profitable demand line was roughly the same as in 1989. Supplies in 1990 exceeded 500 MT/Wk for about four months from June through September. In 1989 the weekly supply was over 500 MT/Wk for about the same period. Supplies in 1990 reached a peak of over 1200 MT/Wk in early July, slightly higher than the maximum weekly quantity reached in 1989.

Although 1991 data is incomplete, it is clear that the same pattern continued. As in the previous two years, the Profitable Demand level was not exceeded from January to June, usually staying at between 50 and 200 MT/Wk. Imports during the first four months of the year appear to be rising slightly, but appear to average about 100 MT/Wk.

Most significant for Sri Lankan exporters is that fact that over the last three years the Profitable Demand™ level was not exceeded during most weeks of the year. The German market is heavily supplied during summer months, but there is still ample market windows. The first part of the year is generally the least heavily supplied, though the last three months of the year also offer good opportunities.

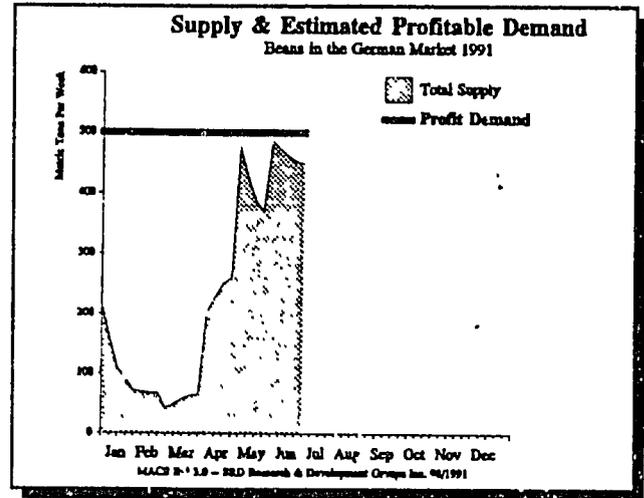


Figure 12: German Profitable Demand™ 1991

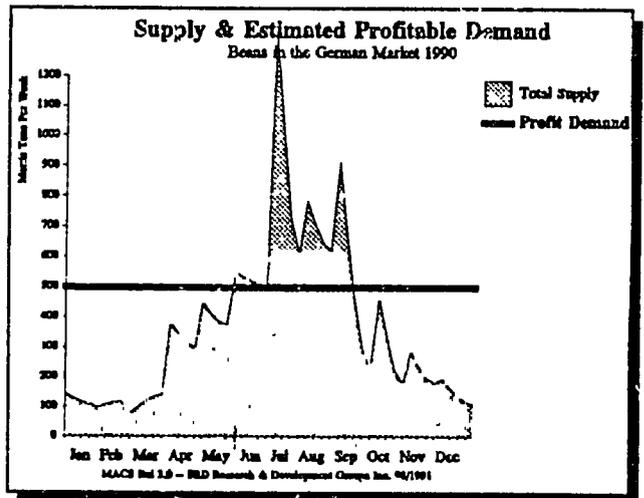


Figure 13: German Profitable Demand™ 1990

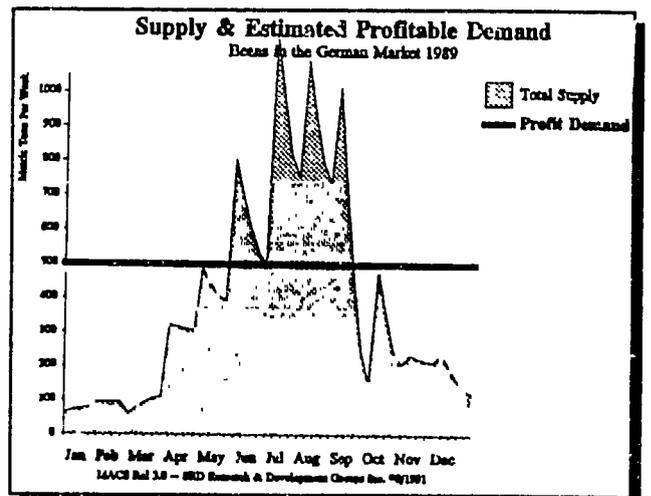


Figure 14: German Profitable Demand™ 1989

2. Depth of Un-Met Profitable Demand™ in the U.K. Market.

The United Kingdom market is much larger than the German market. The *Profitable Demand™* level is estimated at 3000 tons per week and was exceeded for about a two month period in each of the last three years. In 1991, for example, supply exceeded 3000 MT/Wk from about mid-July to the end of September, reaching a peak of over 4000 MT/Wk in September.

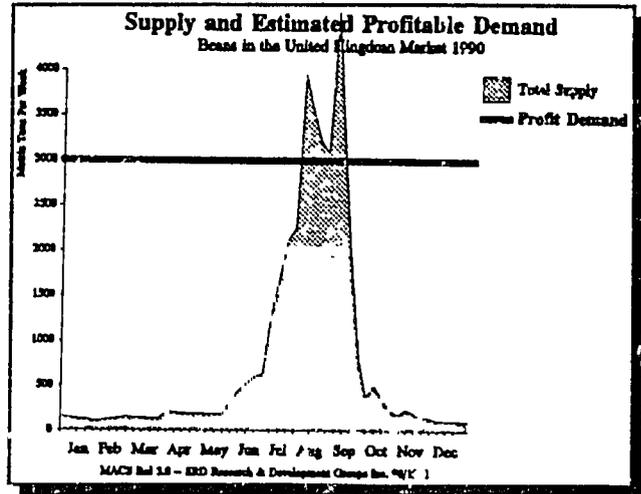


Figure 15: U.K. Profitable Demand™ 1990

The Sri Lankan window is open during most of the year, roughly from October through June. U.K. seasonal supply is very consistent, with very little supply in January through May and October through December. The depth of the market window appears to average about 2800 MT/Wk.

The U.K. is a fairly stable market in terms of total annual supply. There is a distinct on and off-season supply period, though in 1991 supply was a little more spread out, with a lower annual peak but a slightly longer period of supply over 2000 MT/Wk.

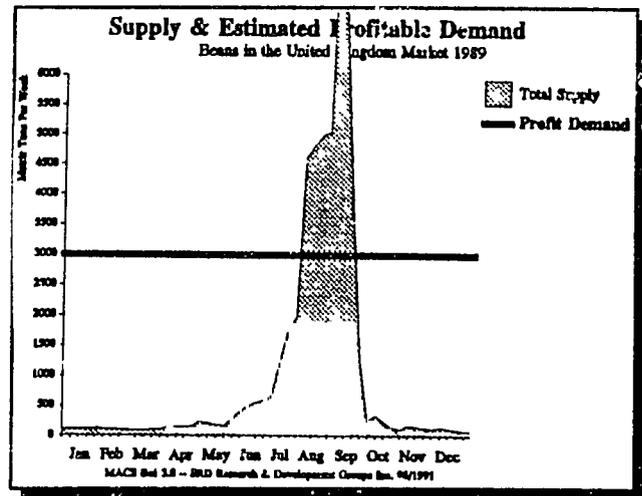


Figure 16: U.K. Profitable Demand™ 1989

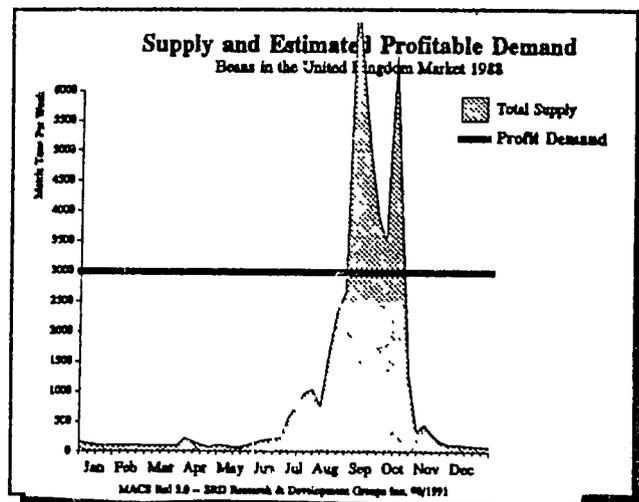


Figure 17: U.K. Profitable Demand™ 1988

3. Depth of Un-Met *Profitable Demand*[™] in the Japanese Market.

Profitable Demand[™] in the Japanese market is estimated at approximately 2000 metric tons per week, and it is the largest of the four markets in this profile. Much of the reason for the large size of the Japanese market is due to the size of the population. Japan, with about 120 million residents, is much larger than any of the European markets studied here. The Japanese market shows the most consistent volume pattern by week, with almost no green beans on the market from November through April and a weekly volume of over 2000 MT/Wk from July through October.

Total un-met *Profitable Demand*[™] in Japan totals approximately 55,000 metric tons. Supplies reach their peak usually during the month of August. Supplies during this period are above 6,000 MT/Wk. Green bean supplies start the year at a very low level of just a few hundred Mt/Wk or less and begin to increase usually by the middle of May. At about the end of June supply increases to over 5000 MT/Wk, but after October green bean supplies virtually disappear.

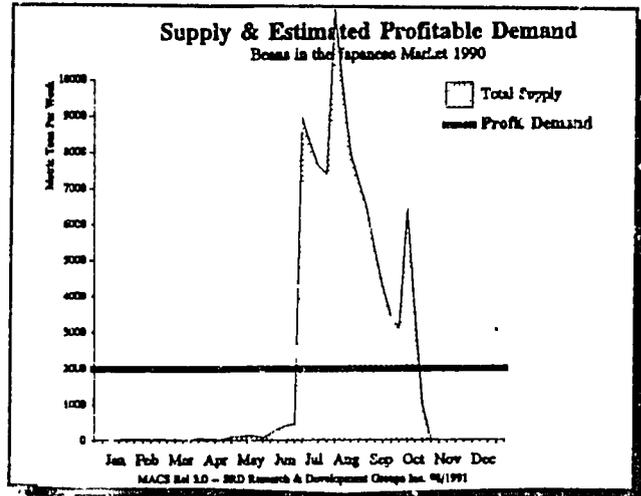


Figure 18: Japanese *Profitable Demand*[™] 1990

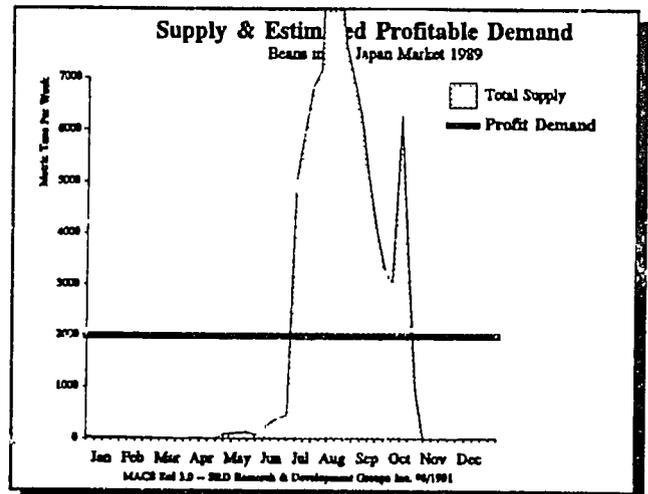


Figure 19: Japanese *Profitable Demand*[™] 1989

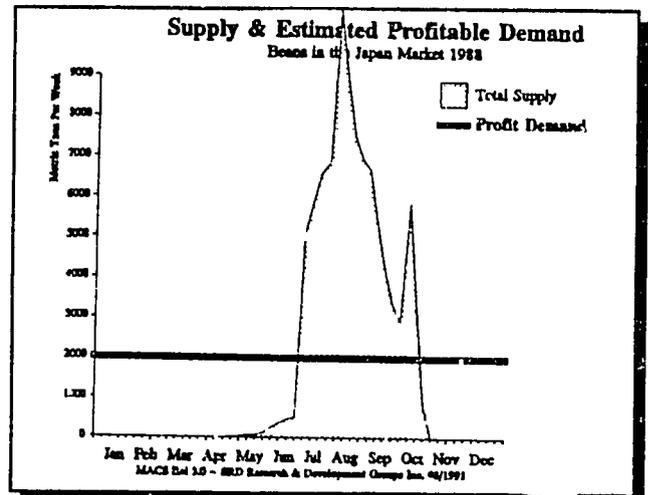


Figure 20: Japanese *Profitable Demand*[™] 1988

4. Depth of Un-Met *Profitable Demand*[™] in the Netherlands Market.

The Dutch market appears to have a pattern most similar to the U.K. market. Supply in the first few months of the year hovers well below the *Profitable Demand* line at about 300-500 MT/Wk before rising to a peak around July or August. After reaching a weekly level of over 5000 MT/Wk in mid-1990, for example, supply quickly dropped to about 500 MT/Wk by the end of October and stayed at that level for most of the rest of the year. Weekly supplies fluctuate from lows of about 200-400 tons to highs of over 5000 metric tons per week.

With the estimated *Profitable Demand* line drawn at 1500 MT/Wk, the total profitable demand in the market is about 78,000 metric tons. The total un-met depth of *Profitable Demand*[™] in the Dutch market is approximately 30,000 metric tons. There are only about four or five months in the summer when supply exceeds the *Profitable Demand* line.

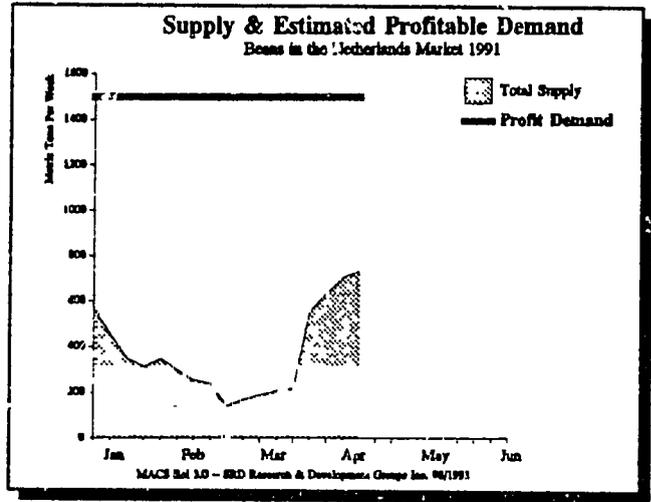


Figure 21: Nether. *Profitable Demand*[™] 1991

III. Competitive Suppliers & Comparative Costs

A. Competitive Suppliers of Green Beans to Major Markets

1. Competitors Supplying the German Market

Figures 24-26 outline the green bean supply by week for the German market during 1989, 1990, and 1991. The shaded dark area below the *Profitable Demand* line is representative of the weekly un-met *Profitable Demand*[™] which is not currently being supplied. Competing suppliers are ranked from top to bottom on the legend. The software used for graphics utilizes a rather sophisticated display which prevents obscuring any country trend. The dark area representing un-met *Profitable Demand*[™] appears on the graph even during the period when the market window is closed simply to show the viewer that the line and area are still continuing "behind" the supply lines. Domestic production is the largest single source of fresh green beans supplied to the German market. Locally produced green beans are concentrated during the summer months of June through September, reaching a peak in mid-July of over 600 MT/Wk. Spain is the largest supplier of imports into the German market, providing the bulk of supplies during the more off-season

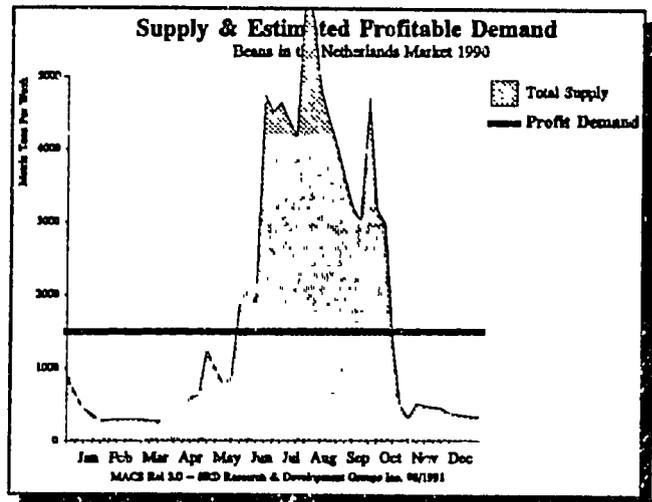


Figure 22: Nether. *Profitable Demand*[™] 1990

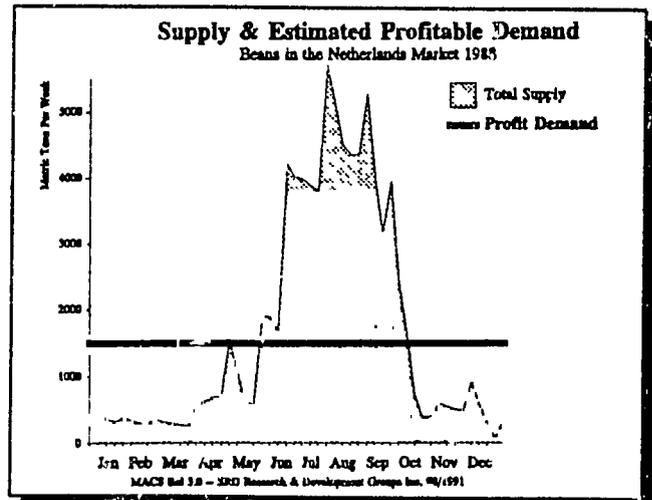


Figure 23: Nether. *Profitable Demand*[™] 1988

periods from January to May and October through December. Spanish supplies were over 200 MT/Wk during April and May of 1989, and over 300 MT/Wk during parts of April and May of 1990.

The next largest sources of imports are Italy and the Netherlands. Italy supplies the market mostly during May, June and July, though there are also Italian supplies from August to November. Dutch supplies come mostly in August through October, reaching over 300 MT/Wk at their height.

Egypt, Kenya, Ethiopia, Turkey and Belgium round out the top ten. Most of these countries supply less than 50 MT/Wk.

Total annual supply has been fairly stable over past few years, but there is ample room for off-season supplies before June and after September.

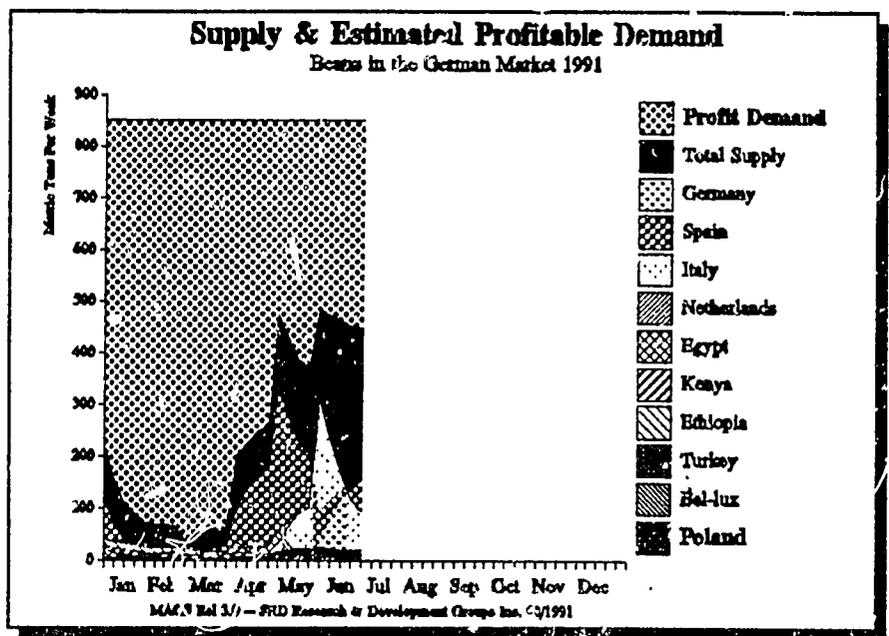


Figure 24

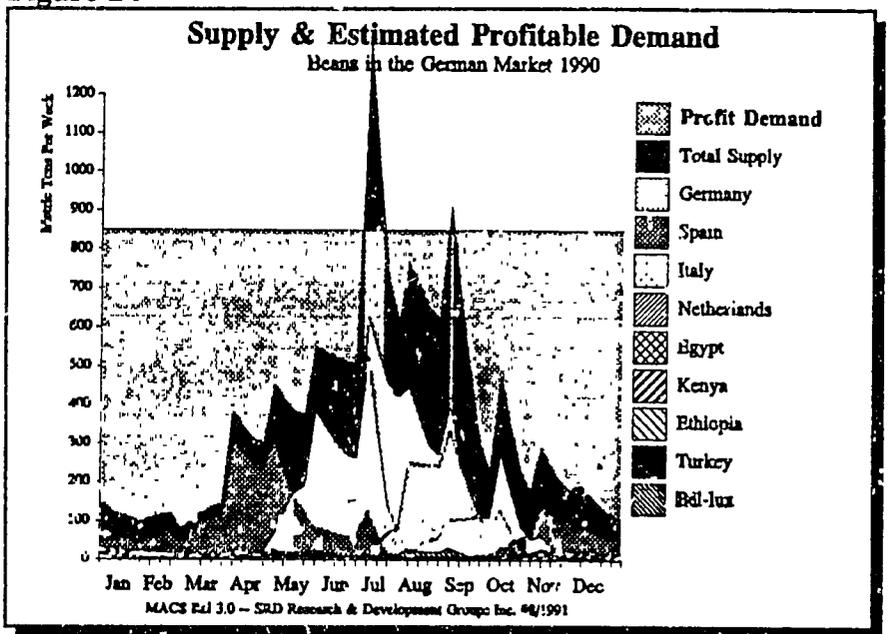


Figure 25

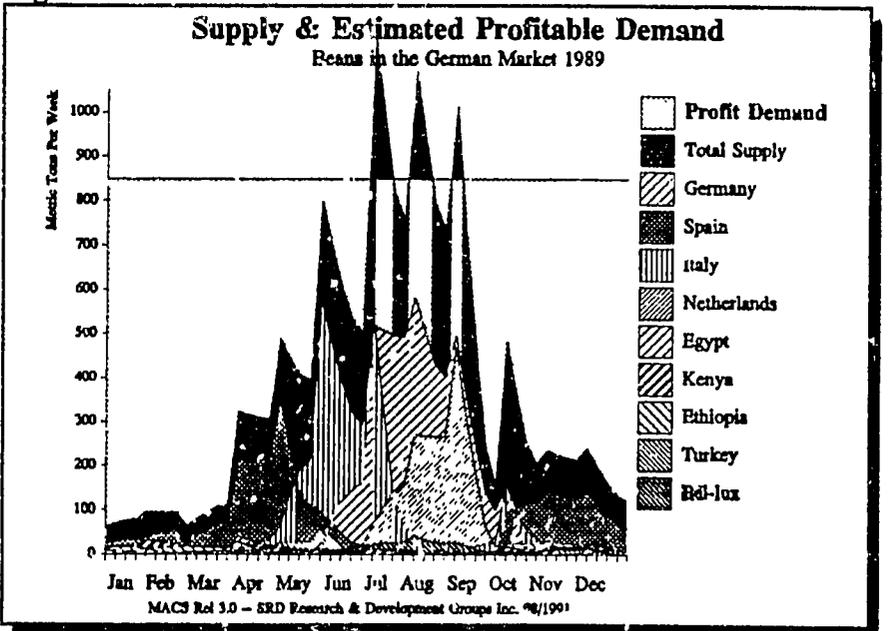


Figure 26

2. Competitors Supplying the U.K. Market

Like the German market, domestic supply in the U.K. is larger than imports from any single outside supplier. In the U.K., however, green beans supplied from domestic production account for almost 90% of total supply. During the distinct on-season period, domestic supply peaks at over 4,000 MT/Wk. In 1989 the peak was even higher, at over 6,000 MT/Wk, about double the 3,000 MT/Wk *Profitable Demand* line.

Imports of green beans into the U.K. come primarily from producers such as Kenya, Spain, the Canary Islands, Egypt and the Netherlands. None of these suppliers, however, account for more than 200 MT/Wk. They do, however, supply the market during the off-season months when there is no domestic production, which includes the period from late October through late May.

It appears that the total annual supply of green beans in the U.K. has decreased over the last three years. While the size of imports appears to be fairly stable, domestic supply was lower in 1990 than in 1989 by several thousand MT/Wk during the summer months. As illustrated clearly by preliminary 1991 data in Figure 27, however, current supply during the off-season is far short of the *Profitable Demand* line. Thus, during most of the year, the U.K. should be an excellent destination for Sri Lankan supply.

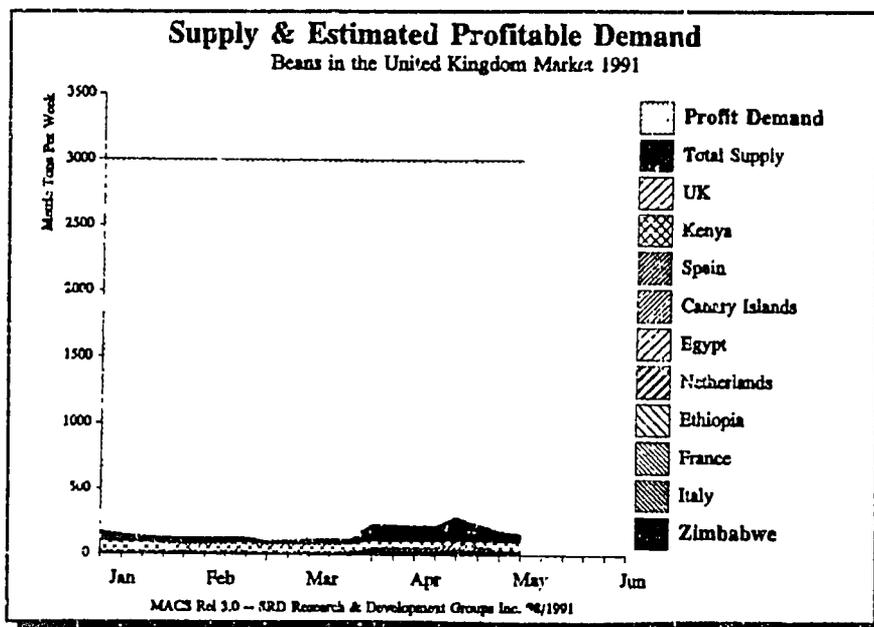


Figure 27

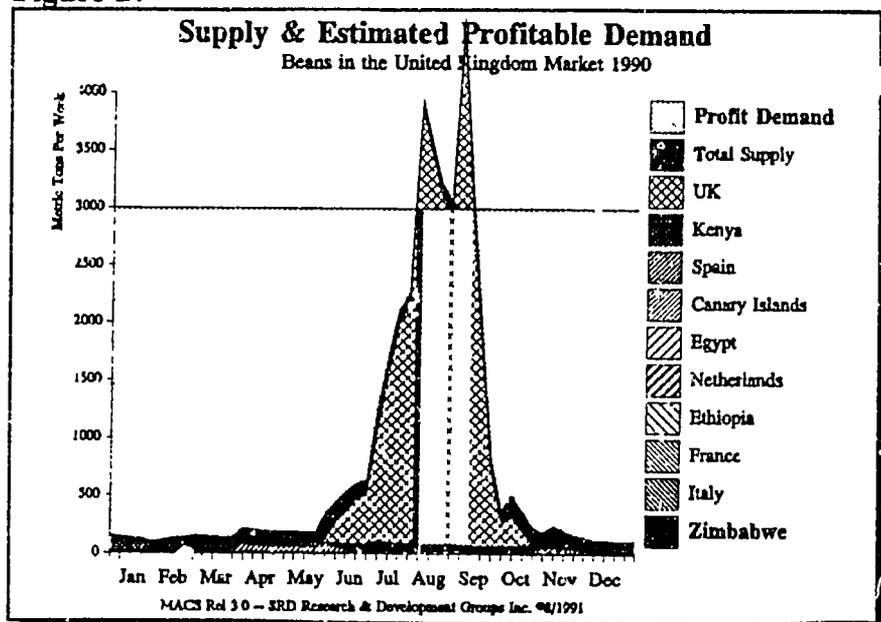


Figure 28

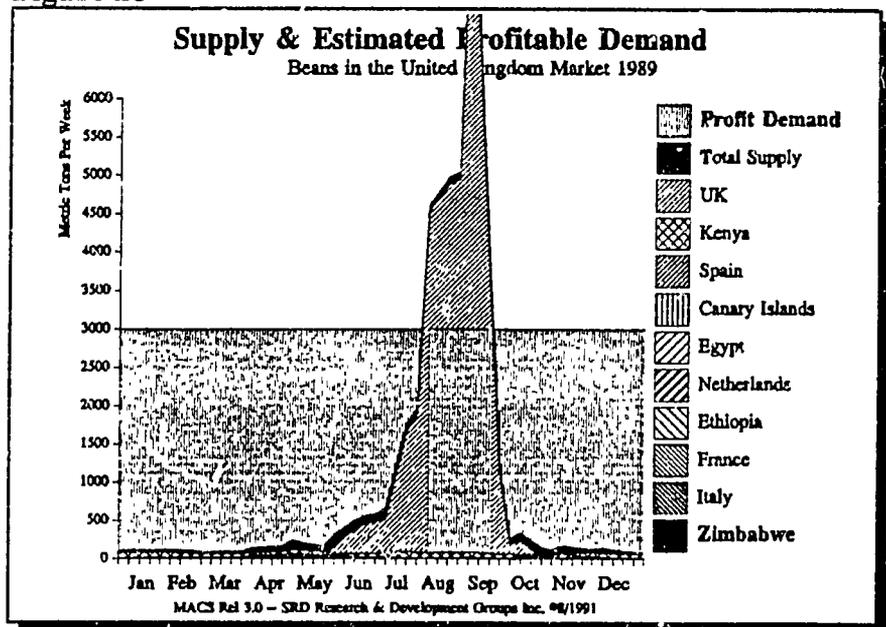


Figure 29

3. Competitors Supplying the Japanese Market

Figures 30 through 32 indicate the dominance of domestic supply in the Japanese market. Green beans supplied from within the country often accounts for more than 90 percent of the total supply. The Japanese supply consistently peaks during the months of June and July when volumes exceed 30,000 MT/Wk.

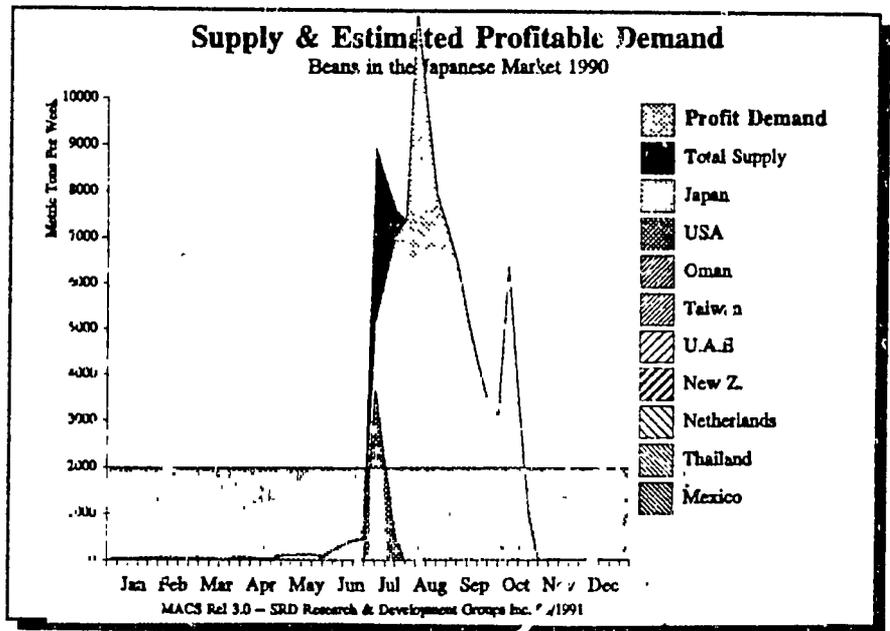


Figure 30

A review of the three years presented here (1988, 1989 and 1990) shows that the seasonal supply pattern is almost identical year to year. Imports are usually less than 100 MT/Wk in the first weeks of the year until Mexico begins supplying several hundred tons per week in February through April. At about the end of March domestic Japanese supply takes off and rises quickly to over 20,000 MT/Wk, which is where we have estimated the *Profitable Demand* line to be. The weekly increase slows somewhat before peaking in two separate periods, roughly late June and early August. By early October domestic supply usually ceases.

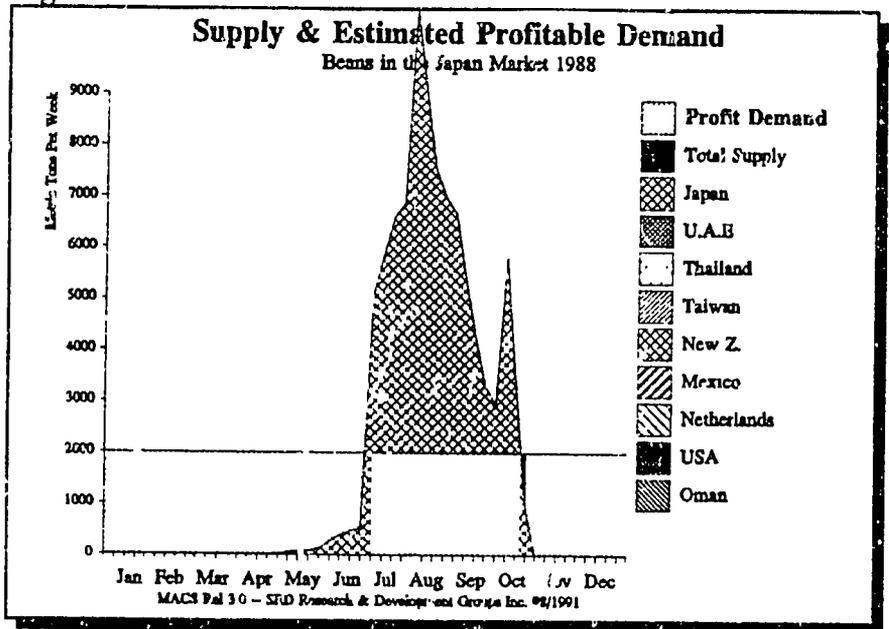


Figure 31

There are also some imports from other countries, notably the U.S. which supplies the market from early July to about mid-November, reaching almost 1500 MT/Wk at the highest level. Supplying much less significant quantities are New Zealand, China, Republic of Korea, Iran, Australia and Tonga.

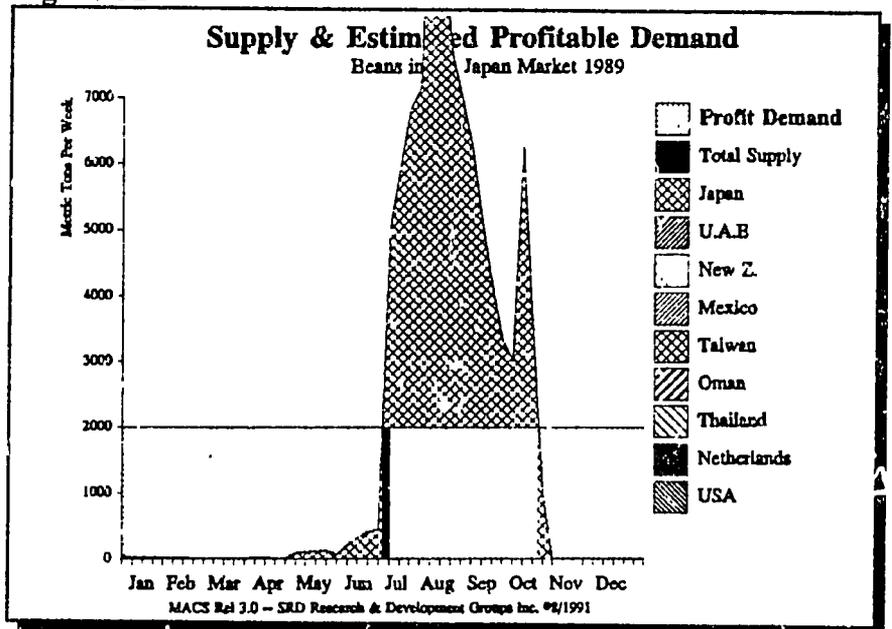


Figure 32

4. Competitors Supplying the Netherlands Market

The Netherlands also supplies its own market heavily. Weekly supply during the peak summer and fall months of June through October, which usually exceeds 3,000 MT/Wk, is predominantly supplied domestically. The *Profitable Demand* level, estimated 1,500 MT/Wk, was exceeded during most of this period.

Imports into the Netherlands are fairly spread out, with at least some imports coming during all weeks of the year. Egypt is the largest non-domestic supplier, coming mostly during the months of January-February, April-May, and October-December. Germany supplies the Dutch market from August through October, reaching a peak of over 1,000 MT/Wk in mid-October. Imports were also reported from Bel-Lux, France, Italy, Ethiopia, the Canary Islands and Kenya.

It appears that fresh green bean supply in the Netherlands is fairly stable, though there is still a large amount of un-met profitable demand during the off-season months from November through April.

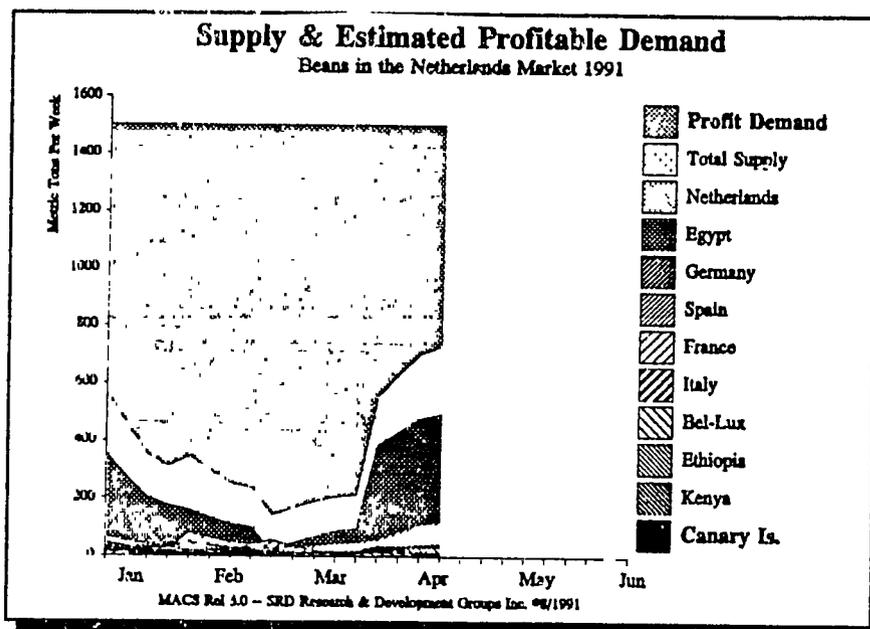


Figure 33

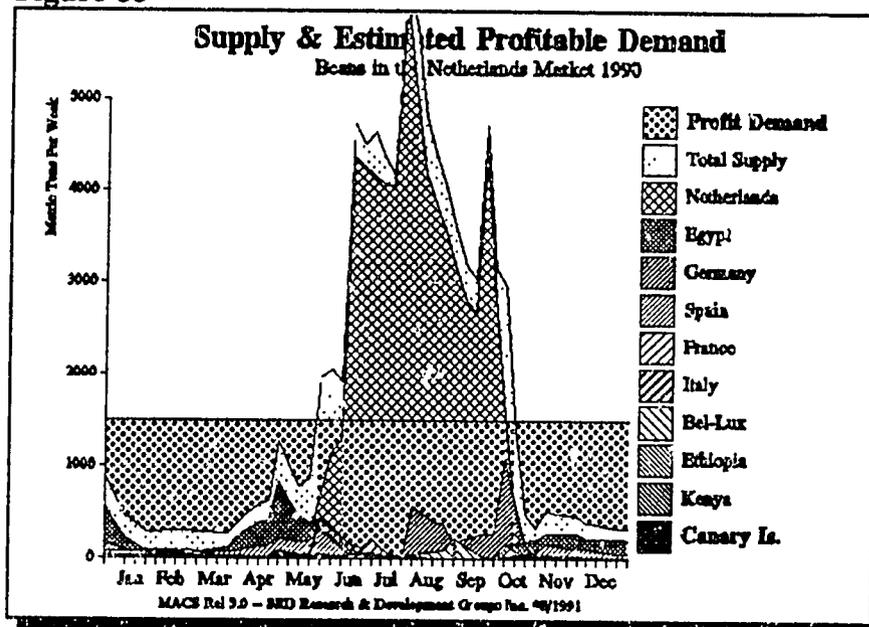


Figure 34

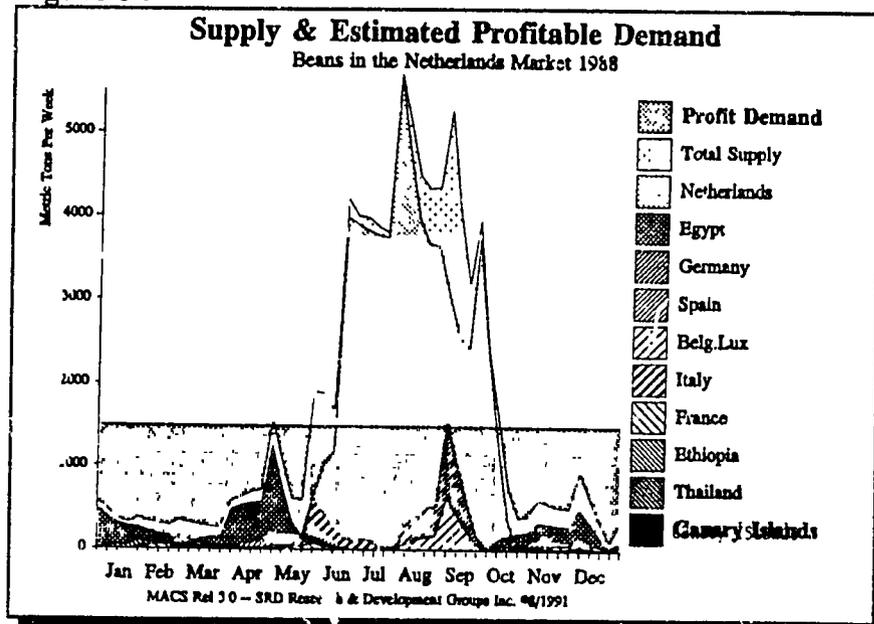


Figure 35

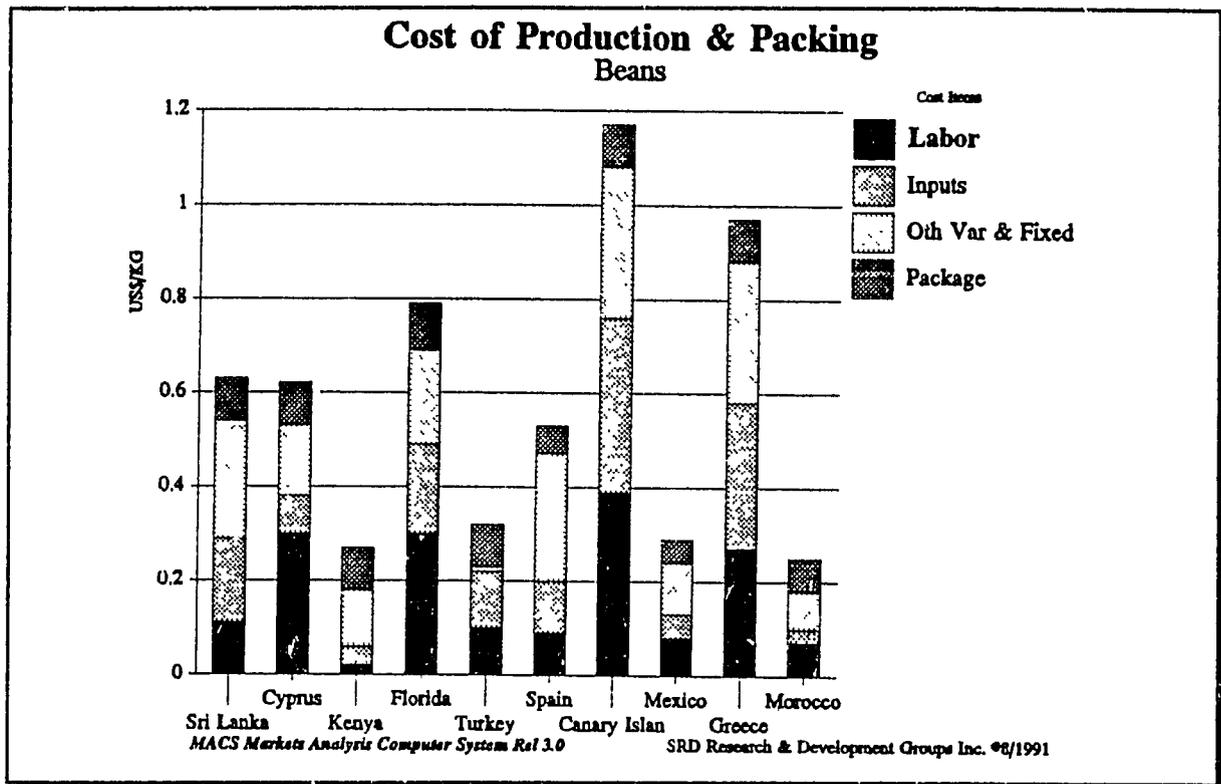


Figure 36: Estimated Costs of Production & Packing for Sri Lanka & Selected Competitors

B. Comparative Cost for Sri Lanka and Competitors.

1. Estimated Average Costs for Sri - Lankan Production & Packing

Figure 36 outlines SRD's estimates of the costs of production and packing for a reasonably efficient Sri Lankan producer of green beans and for selected competitors. Sri Lankan costs for production are represented by the first column labeled Sri Lanka. The data gathered in Sri Lanka indicated that it would cost about \$.63/Kg. to produce and pack one kilo of market green beans under open-field conditions. Four cost components are estimated in the figure including (1) labor, (2) physical inputs, (3) other variable and fixed costs, and (4) packaging.

2. Comparative Costs of Production

The competitive countries included in Figure 36 were chosen to represent the major competitive regions during the Sri Lanka market window. Of the import markets studied

here, Morocco and Kenya have the greatest cost advantage in production and packing. Turkey and Mexico also have very low costs of production at under \$.30/Kg. Spain has the advantage of full EEC membership and a close location to the importing markets, and its total cost of production per kilo is just over \$.50.

Greece and the Canary Islands also have the advantage of EEC membership, but their costs are the very high; almost \$1.20/Kg in the Canary Islands and about \$.98/Kg is Greece. Greek producers have experienced significantly higher labor, fixed and variable costs. Packaging costs are close to the same for all producers.

At about \$.63/Kg, the Sri Lankan cost of production for green beans is very close to the total cost for Cyprus and lower than three other producers. There are, however, six producers with costs lower than Sri Lanka.

While domestic production is significant in all the markets studied here, Spain, the Canary Islands, Egypt, Kenya and Turkey, among others, constitute some of the major exporters to EEC and Asian markets.

Sri Lanka probably has the best advantage in transportation costs to Asian markets and can be competitive with the other major producers in export to European markets.

3. Delivered Cost Competition in Europe.

Figures 37-40 outline SRD's estimates of delivered costs for one Kg. of green beans in the four country markets included in this profile. The local costs for production and packing included in Figure 36 are added together in the delivered cost graphs as "local costs". The new costs added in these graphs include freight, tariffs and handling costs.

Though there is a considerable difference between Japan in the East and Europe in the West, the delivered cost position for Sri Lanka is not nearly as large as for other producers. It costs Sri Lanka about \$.90 less to ship to European markets instead of Asian markets. The Sri Lankan delivered cost is estimated at about \$2.20/Kg for all three of the European markets and about \$3.10./Kg in Japan.

Florida and Mexico are the highest cost suppliers to the European markets. This is primarily due to high freight costs, since fresh green beans must be air freighted from these destinations. Costs to other producers for supplying the European markets range from \$.50 or less for Morocco and Turkey, to over \$2.00/Kg for Sri Lanka. Costs for supplying the Japanese market are much higher because of the high cost of air freighting. Total delivered cost to Japan ranges from just over \$3.00 for Sri Lanka to over \$8.00 per kilo for Cyprus green beans. Sri Lanka has a relatively poor competitive position in the European markets, but the best position in the Japan market.

Morocco has the greatest competitive advantage in the European markets, but has no real advantage in the Japanese market. The cost of supplying green beans to Japan is over \$6.00 per kilo for Moroccan producers, which is almost double the Sri Lankan cost.

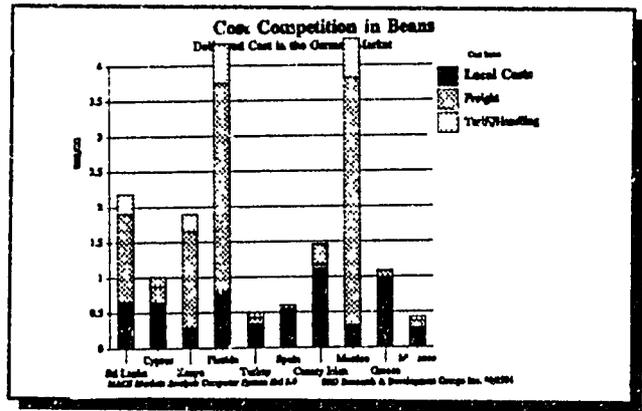


Figure 37: Delivered Cost in Germany

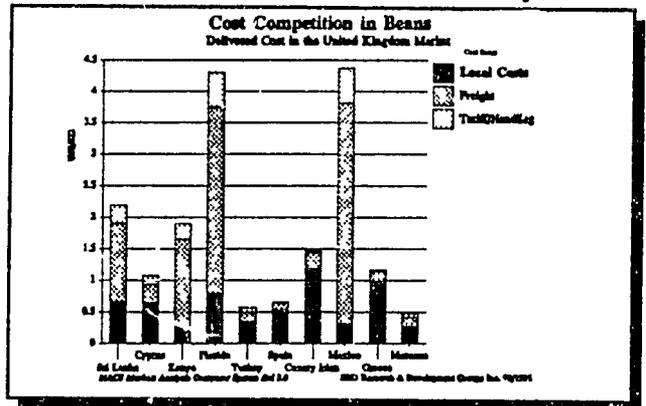


Figure 38: Delivered Cost in the U.K.

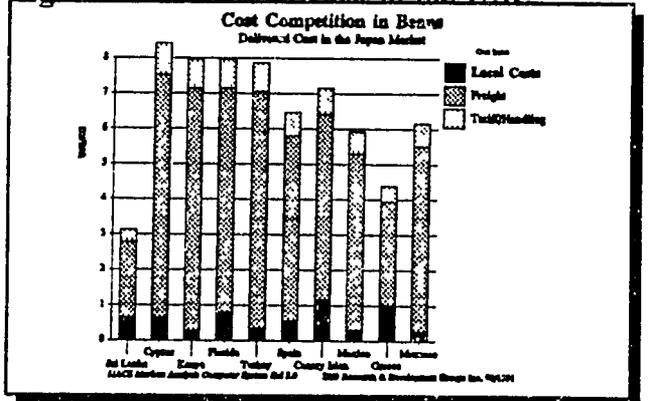


Figure 39: Delivered Cost in Japan

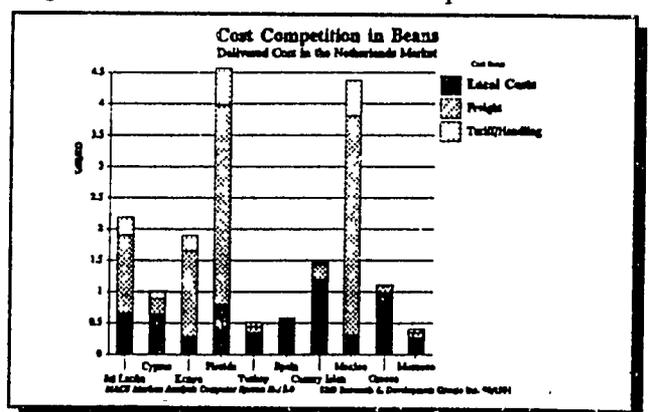


Figure 40: Delivered Cost in the Netherlands

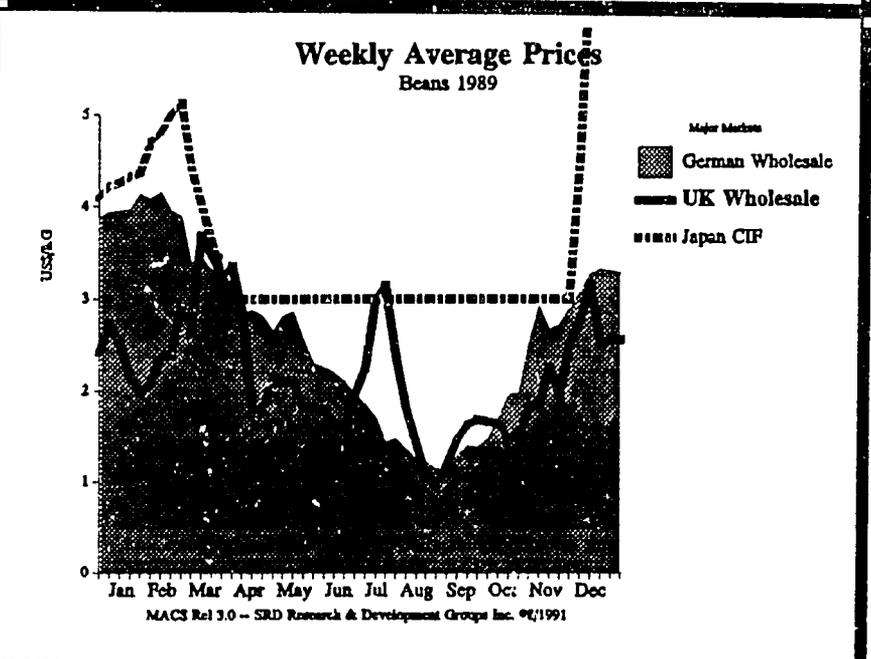
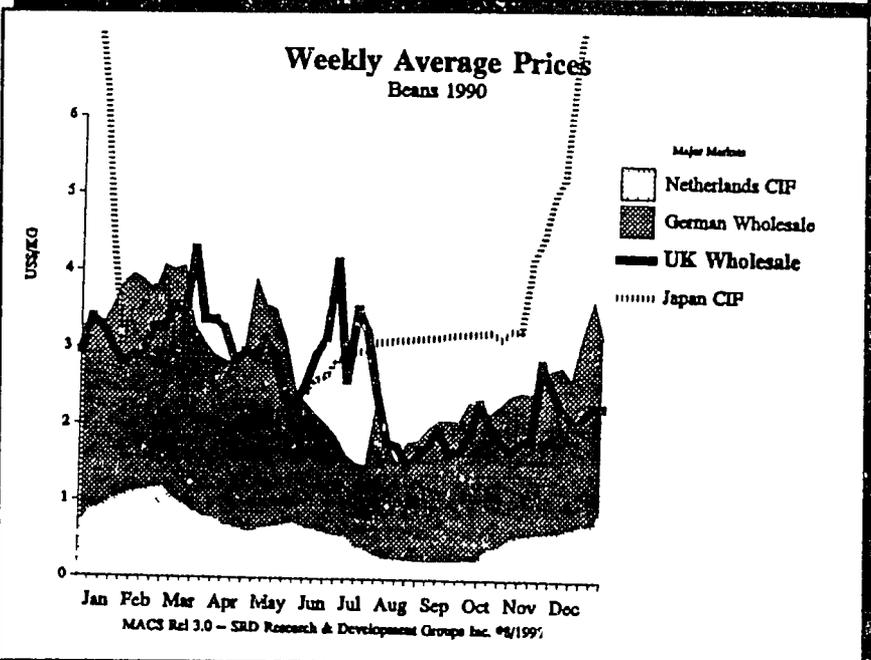
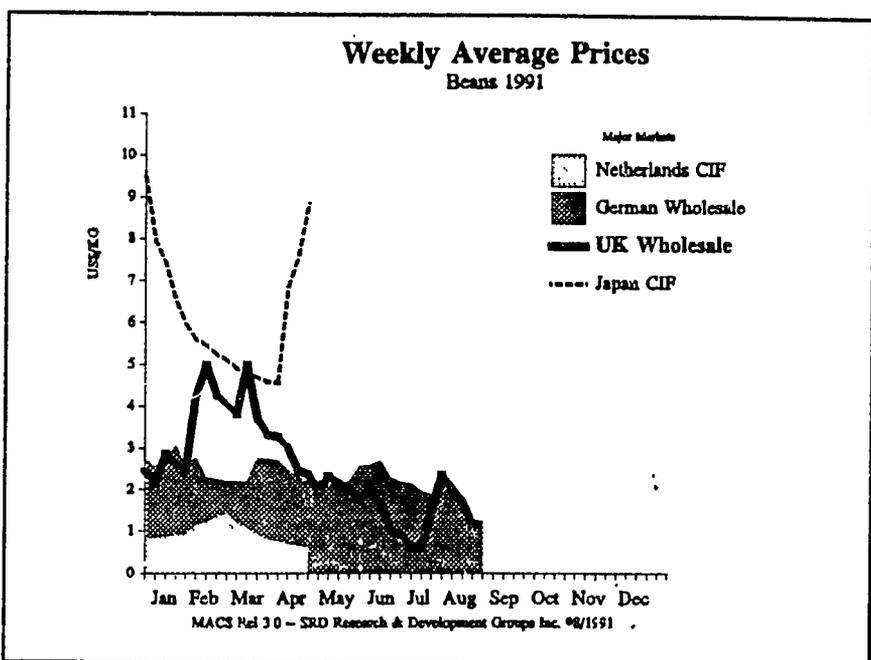
Figure 41

IV. Weekly Wholesale Price Patterns

A. Weekly Wholesale Price Overview for all Four Country Markets.

Figures 41-43 outline the average wholesale or CIF price patterns on a weekly basis for all four markets during the three year period from 1989-1991. These prices were gathered from wholesale markets on a weekly basis or from trade statistics in the case of Japan and the Netherlands. CIF prices have been utilized where wholesale prices are unavailable. CIF prices are lower than the wholesale level because it is a reported price when the product enters the market country. CIF prices are also a more consistent price because they are not subject to the same market forces as the wholesale price. In the case of green beans in the Netherlands, for example, the CIF price was \$.50-1.20/Kg. in 1990. This was probably at least \$.50-\$1.00/Kg lower than the wholesale price. When the difference in the two prices is considered the Netherlands actually has only a slightly lower price level as the other European markets.

It appears that the market with the highest wholesale price varies according to the season. In 1990, Japan's prices were highest in the earliest weeks of the year and the last five months of so (August through December). During the months of February through July, however, German and U.K. prices were highest. Dutch prices, when adjusted to estimate wholesale prices, still appear to be the lowest, between \$.75-\$2.00/Kg.



B. Weekly Wholesale Price Details for Each Market Country.

1. Germany

German wholesale prices have exhibited a fairly steady pattern during the four years analyzed. Wholesale prices generally begin the year at a relatively high level, over \$4.00/Kg in 1989, and gradually fall through late August. Except for 1990, prices in the last four years have bottomed out at about \$1.25/Kg.

Prices have stayed over \$2.00/Kg for the first six months of the year during all four years studied. The best prices years appear to have been 1989 and 1990. 1991 statistics point to lower prices in the first five months until May, though they were more similar to 1990 levels in June and July.

2. United Kingdom

U.K. weekly price patterns have been more erratic during the last four years, with seasonal changes in price from \$.60 to over \$4.50/Kg. 1991 saw the most variation in price, while 1988 and 1989 followed an almost identical pattern. The wholesale price during the first six months of the year usually ranges from \$1.50 to \$3.50/Kg. Prices reach their lowest level in the late summer, though 1991 was an exception to

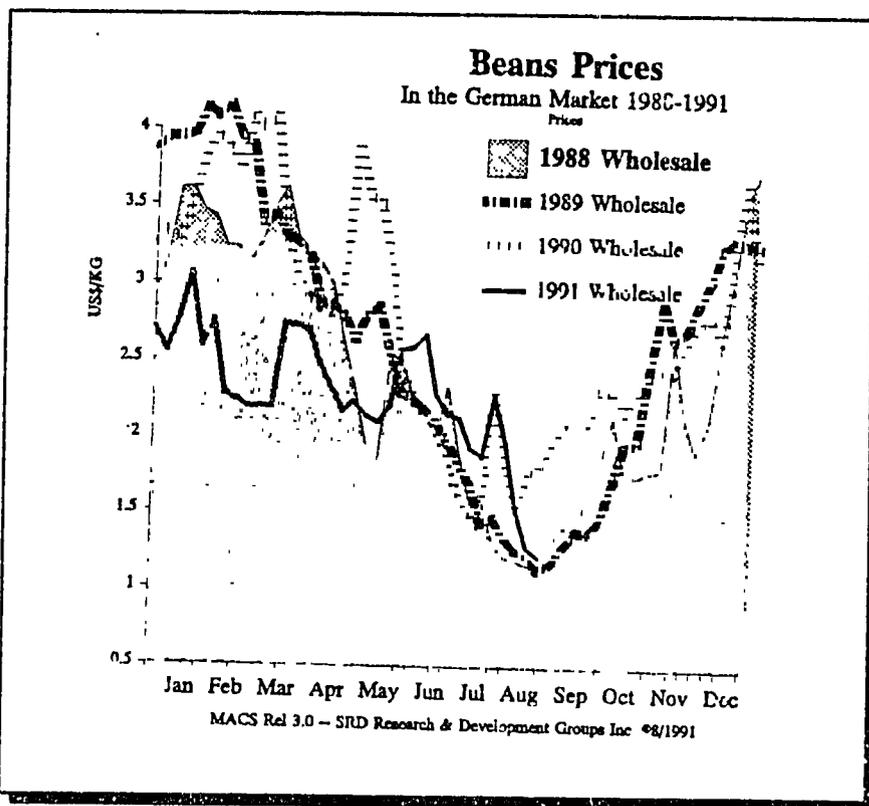


Figure 44: Wholesale Prices in the German Market 1988-91

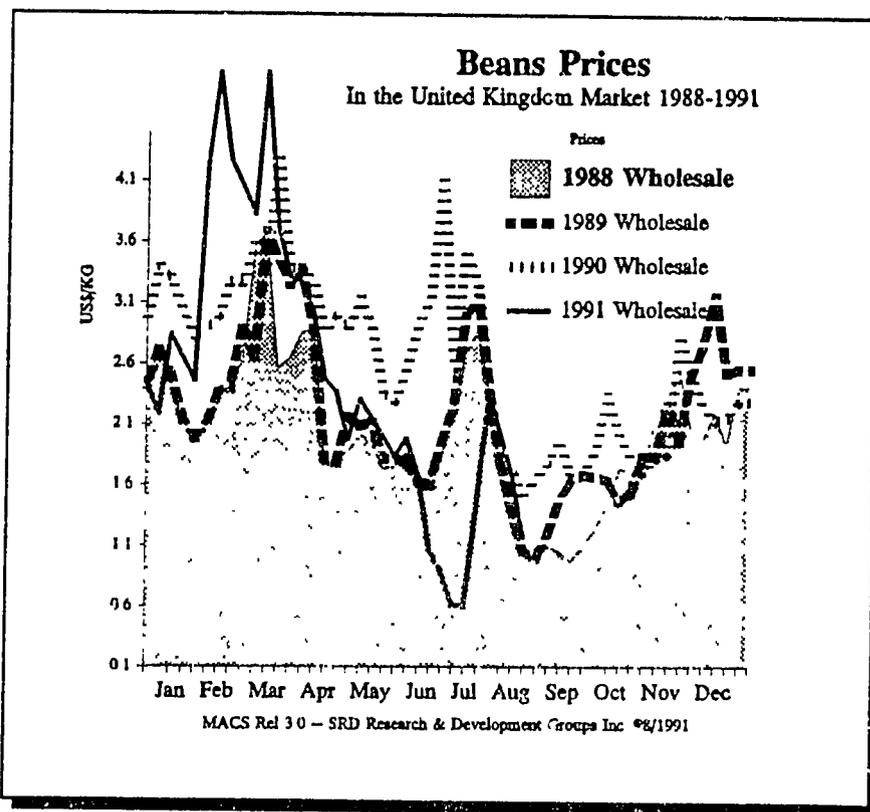


Figure 45: Weekly Wholesale Prices in the U.K. 1988-91

this. Prices then gradually climb during the last three months of the year.

3. Japan

The Japanese market has displayed a seasonal pattern of very high CIF prices from late November through January. After the first weeks of January, prices quickly fall until stabilizing from about May to November. The level at which prices stabilize, however, has increased since 1988. From a level of about \$1.25/Kg in 1988, prices during the summer and fall months rose to about \$3.00/Kg in 1989 and 1990. Wholesale prices would be even higher. Food prices in Japan are generally high, but green bean prices are relatively low because of the size of the domestic supply (at least during the peak summer months).

4. The Netherlands

Dutch CIF prices appear to follow a consistent seasonal trend. They rise to between \$1.20 and \$1.40/Kg in early March before falling to lows in late August of about \$.30/Kg. Prices usually rise between September and December. Like the prices quoted for Japan, the prices displayed for the Netherlands are CIF prices (wholesale prices could be expected to be about \$.50- \$1.00/Kg higher). The Dutch market receives a large quantity of green beans which are re-exported to other areas of Europe. These large shipments do have an effect on the market price level.

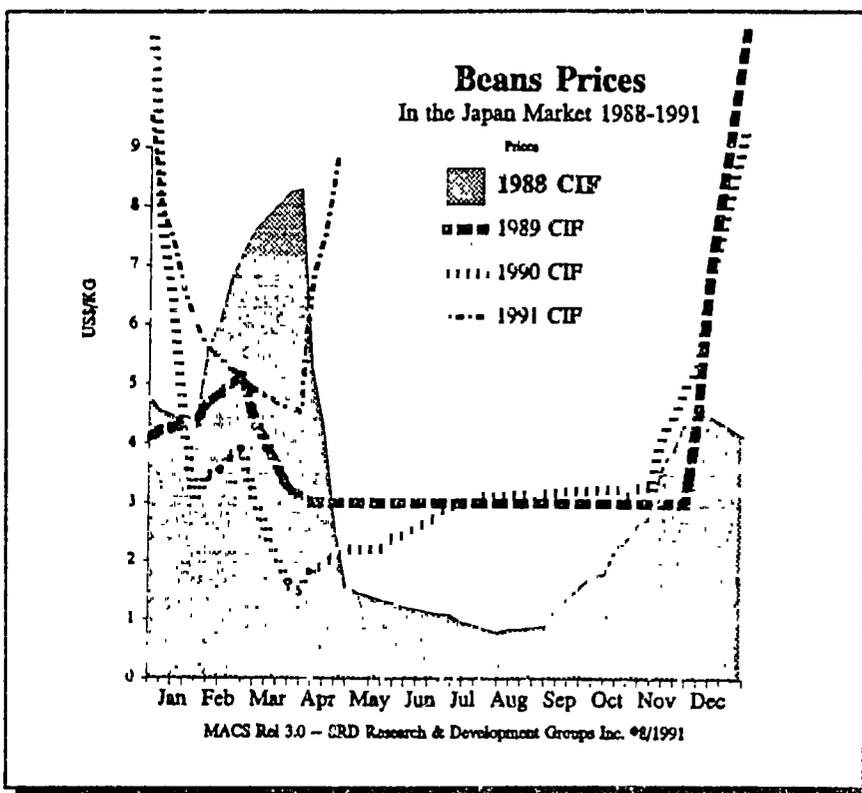


Figure 46: Weekly CIF Prices in the Japanese Market 1988-91

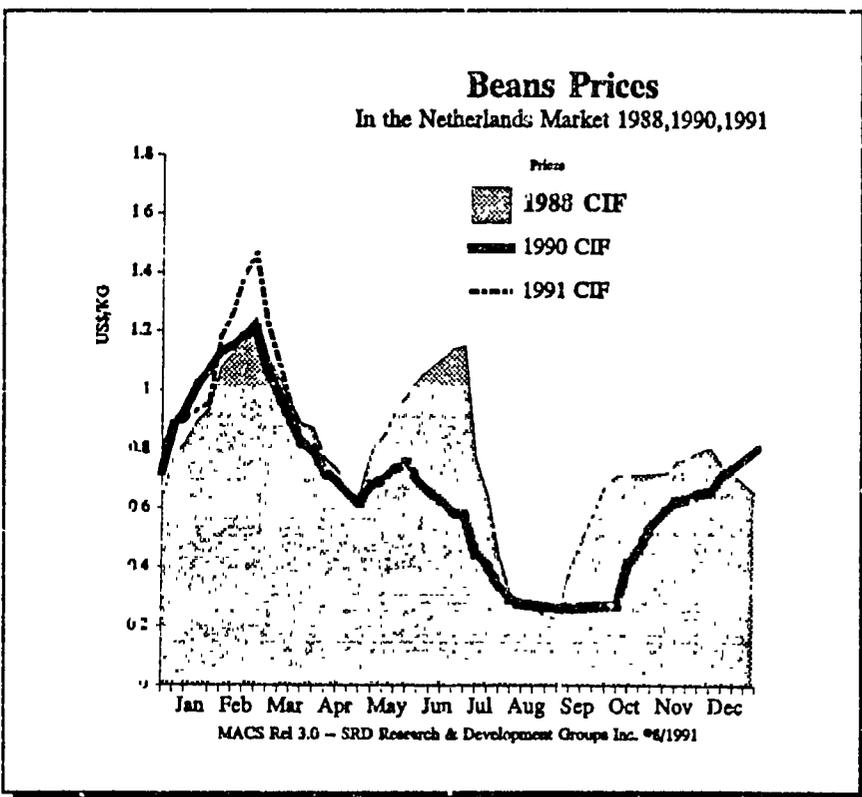


Figure 47: Weekly CIF Prices in the Netherlands 1988-91

V. Seasonal Profit Potentials & Competition

A. Seasonal Profitability Potentials & Competition in the German Market.

1. Weekly Profit or Loss Potentials for Sri Lankan Green bean Exports

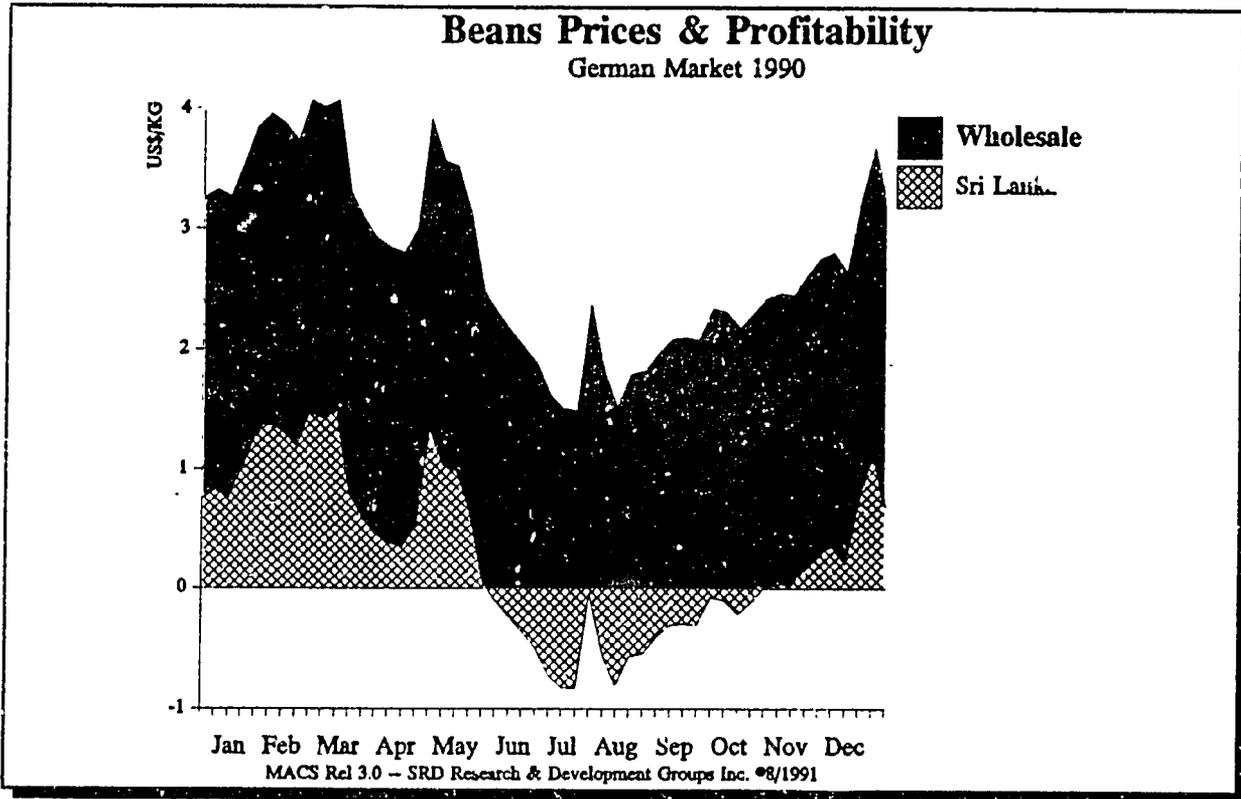


Figure 48: Seasonal Profitability in the German Market 1991

Figures 48 & 49 outline the weekly profitability potential of Sri Lankan green bean production. The top line indicates the wholesale price, the top dark shaded area indicates the profit potential per kilo of green beans. The line below the zero line indicates periods when Sri Lankan exporters would experience losses instead of profits (in the case of 1990, prices fell below this line for about five months, from June through October).

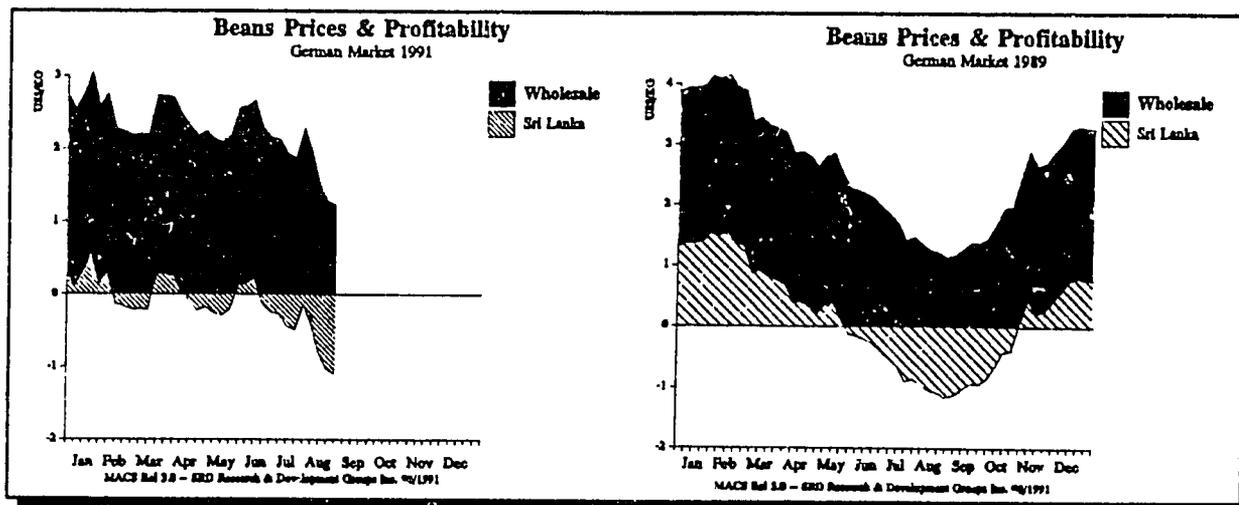


Figure 49: Seasonal Profitability in the German Market 1989-90

A review of Figures 48-49 shows that in 1989 and 1990 Sri Lanka exporters could have made profits during a little more than half the year. Only during the peak supply period from May or June through October would prices have been too low for profitability. The German market seems to be becoming a less desirable export destination for Sri Lankan exporters. In 1991 prices hovered right around the break-even point for Sri Lankan exporters.

Figures 50-52 add Sri Lanka's competitors into the weekly profit graphs so that the profit competition patterns can be analyzed. Sri Lanka has a relatively poor competitive position with many of the suppliers and potential suppliers to the German market.

Sri Lanka's moderate production costs coupled with high transport costs create a high total cost for the delivered product. Producers like Morocco, Turkey and Spain are much closer to the markets and thus have a lower delivered cost.

Potential profits for Sri Lankan exporters in 1990 could have ranged from over \$1.00/Kg. in March to losses in the summer months. The prices in 1991 would have allowed for only marginal profits during certain periods.

Cyprus, Greece, the Canary Islands and Kenya are also ahead of Sri Lanka in terms of potential profitability. Except for Kenya, none of these countries export a sizeable amount of green beans to the German market. Florida and Mexico are the only producers with higher costs and consequently lower potential profitability margins in the German market.

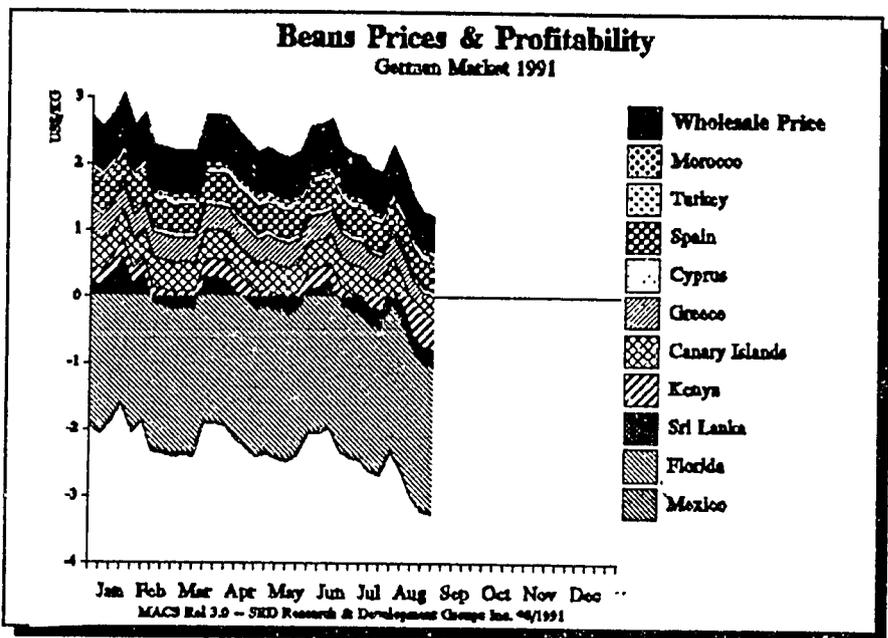


Figure 50

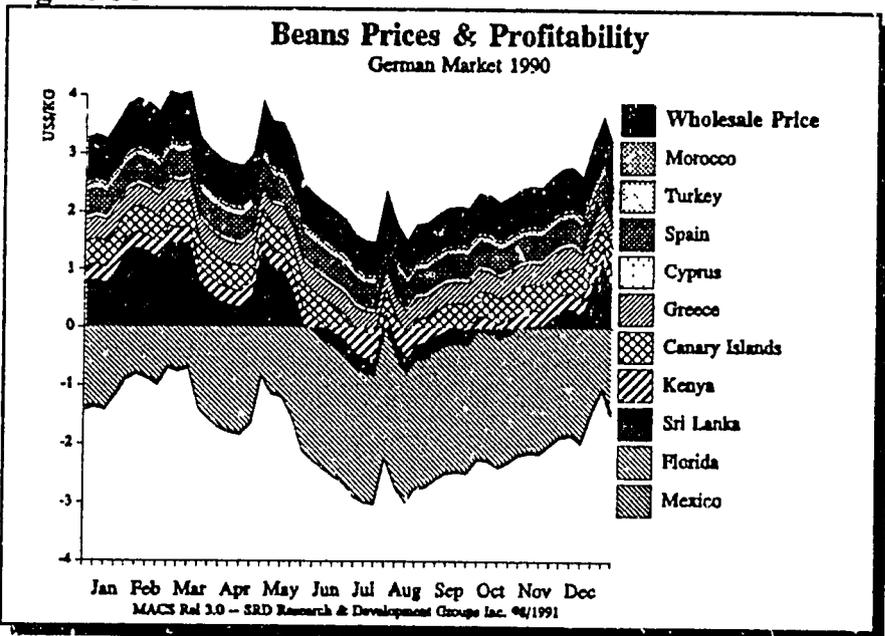


Figure 51

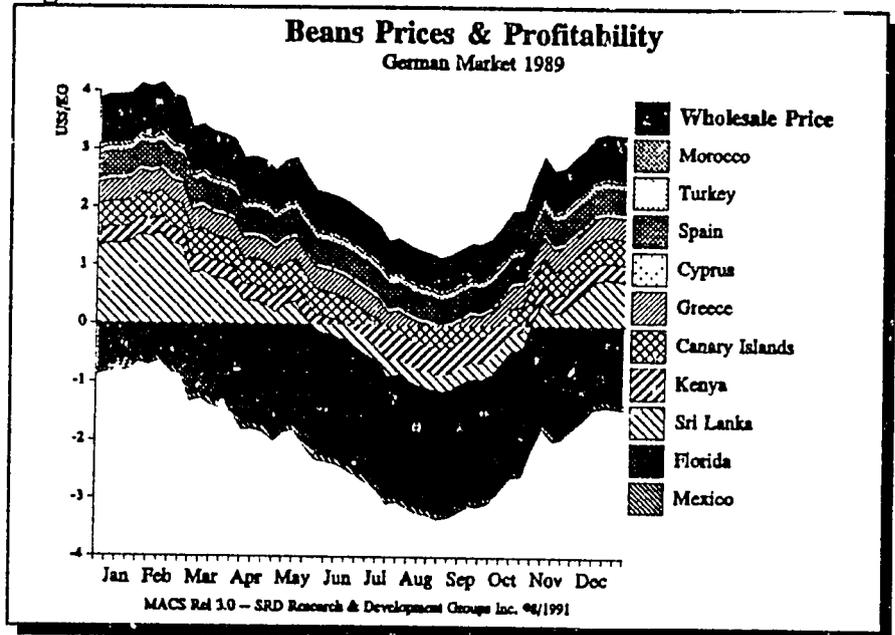


Figure 52

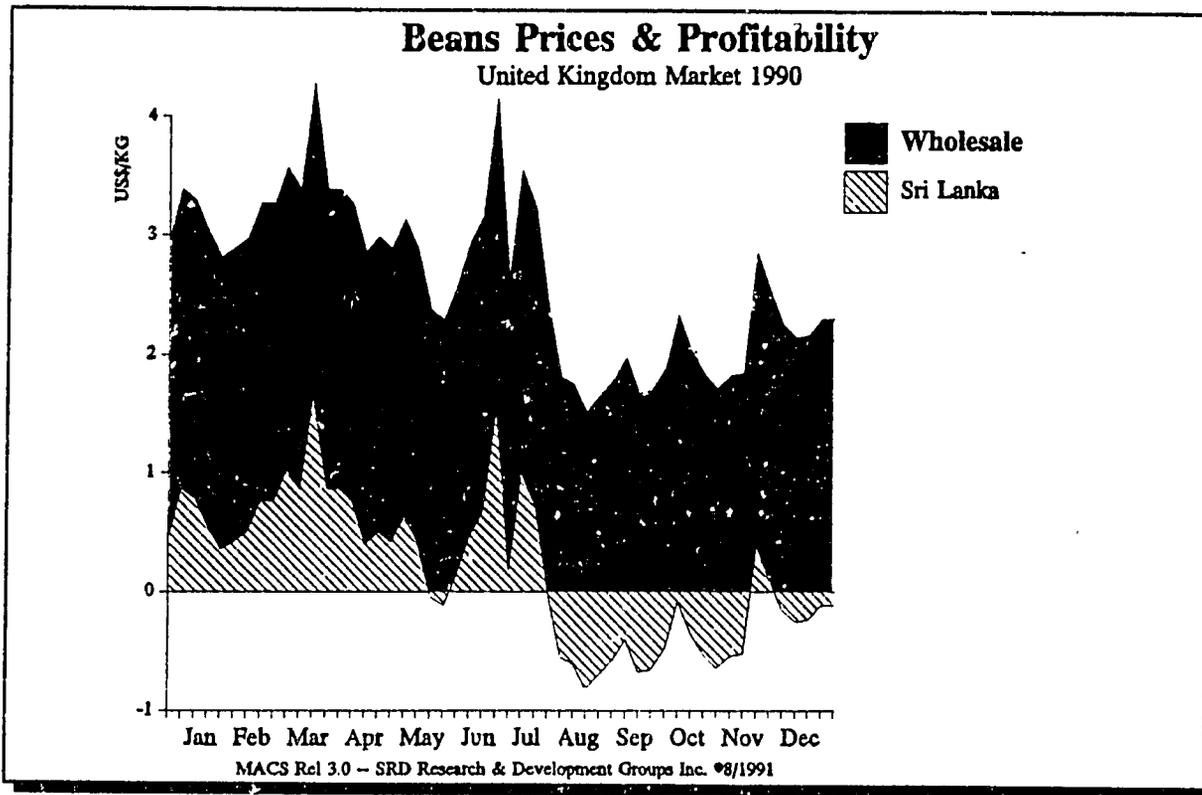


Figure 53: Seasonal Profitability in the U.K. Market 1991

B. Seasonal Profitability Potentials & Competition in the U.K. Market.

1. Weekly Profit or Loss Potentials for Sri Lankan Exports to the U.K.

Figures 53 and 54 show that the U.K. market has an erratic pattern of wholesale prices, often falling below levels profitable to Sri Lanka. Potential Sri Lankan profits in 1991 could have reached over \$2.00/Kg during February and March. In 1989, 1990 and again in 1991 there were a several months when prices fell below the profitability line. It appears that prices have reached the highest and lowest levels of the last three years in 1991. Seasonal prices do not display much of a consistent pattern, though it may be said generally that the safest periods for targeting exports would be during the first three or four months of the year.

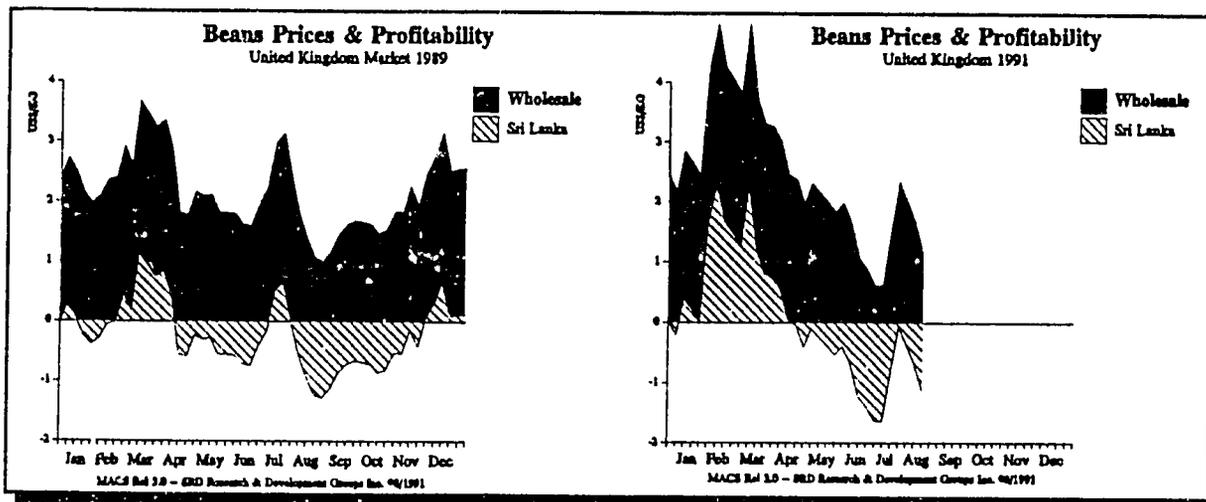


Figure 54: Seasonal Profitability in the U.K Market 1989-90

Figures 55-67 indicate Sri Lanka's competitive position with other suppliers in the United Kingdom. Sri Lanka has a poor competitive position with respect to the other producers studied in this profile. The proximity and low costs of production for Turkey and Morocco give them the best overall competitive advantage. Both could make profits over \$1.00/Kg during much of the year. Sri Lanka competitive position is the same as in Germany, with seven producing countries in a better competitive position and two in a worse position.

1990 appears to have been the best price year of the three studied here. Only Mexico and Florida could not have made profits during some period of the year. Sri Lankan producers could have made profits over \$1.00/Kg during March and parts of June. Losses, however, would have been experienced from July through December except for a short period in November. Prices in 1991 were quite high in February and March but fell to unprofitable levels for all producers by July.

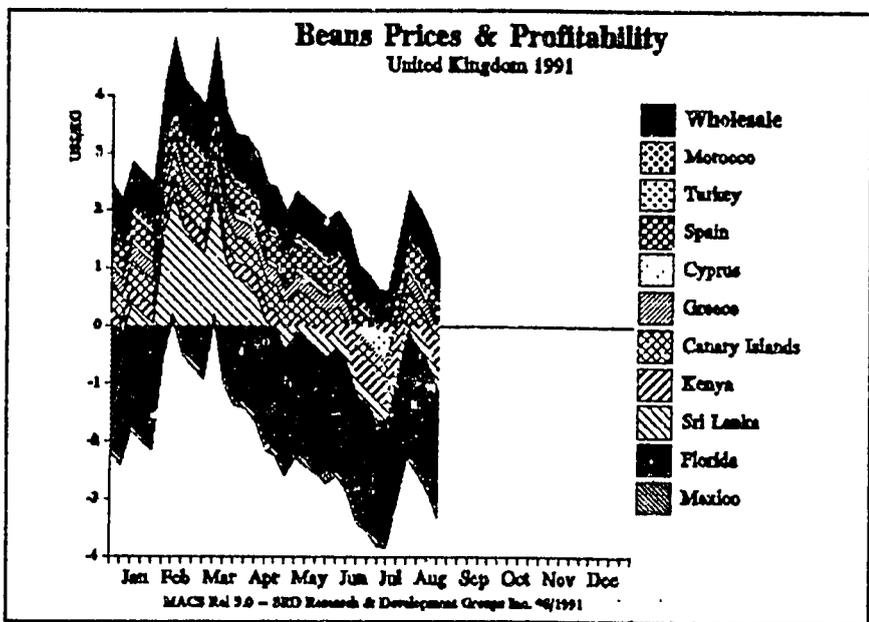


Figure 55

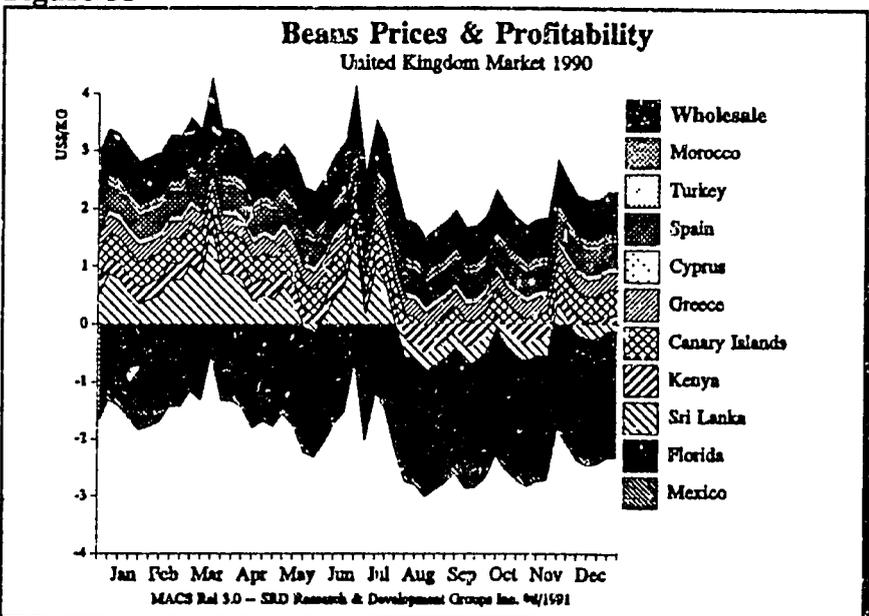


Figure 56

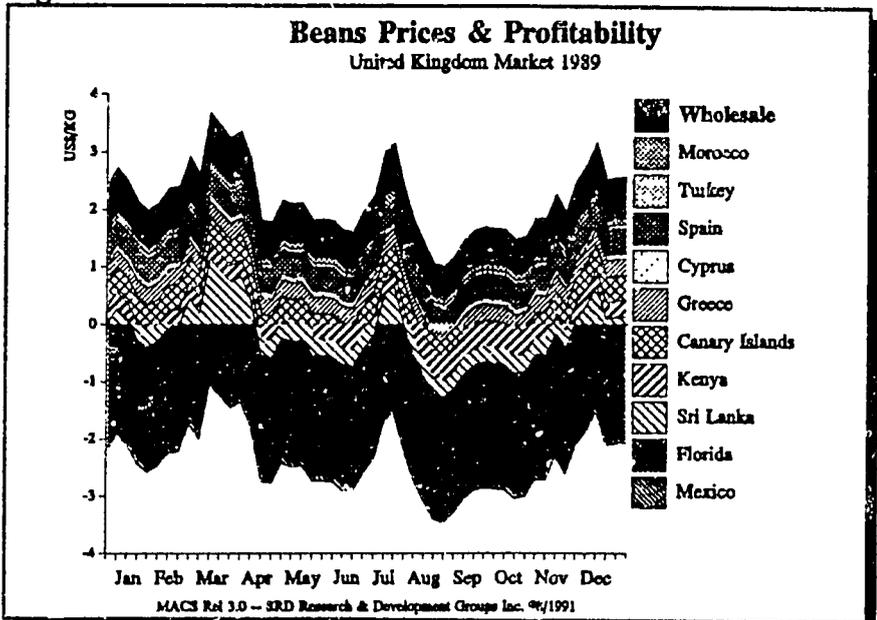


Figure 57

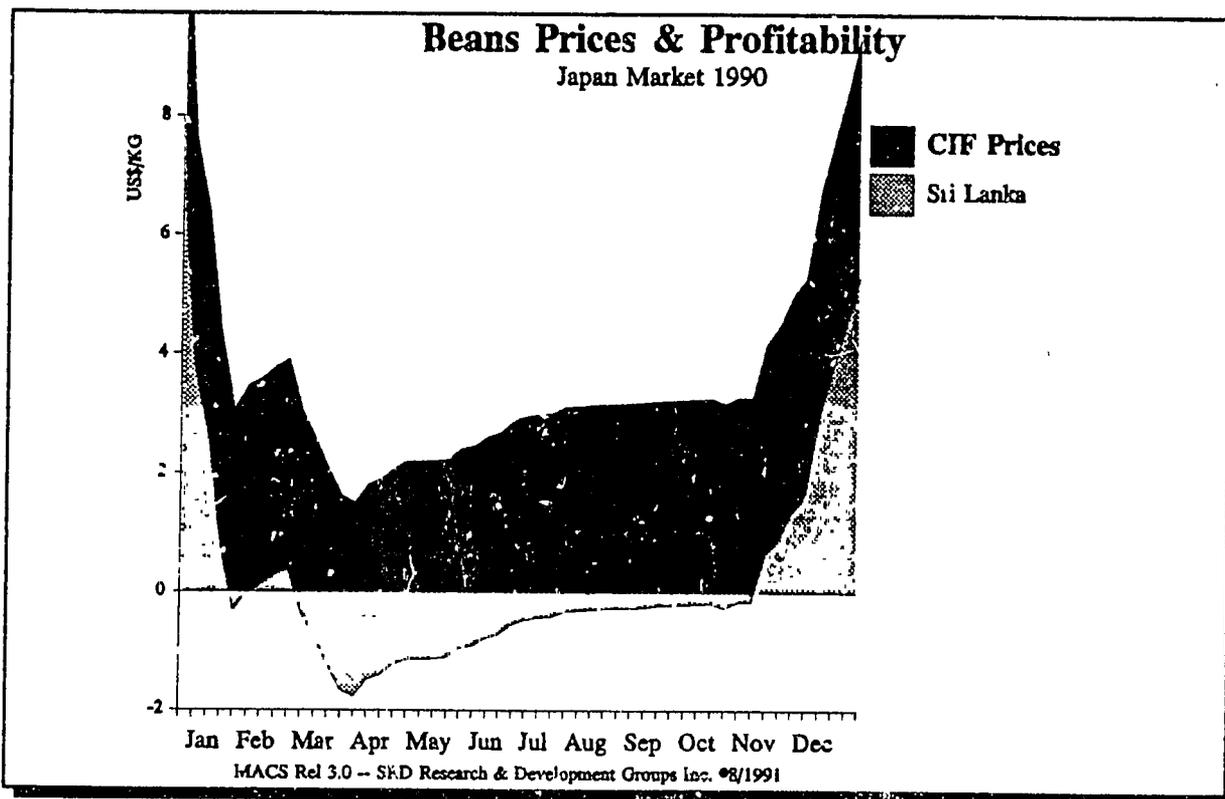


Figure 58: Seasonal Profitability in the Japanese Market 1990

C. Seasonal Profitability Potentials & Competition in the Japanese Market

1. Weekly Profit or Loss Potentials for Sri Lankan Exports to Japan

The Japanese market presents a much more stable and consistent price pattern than the European markets studied. The CIF prices displayed here are probably \$.50-\$1.00/Kg lower than actual wholesale prices. Consequently, it appears that Japan offers good opportunities for the Sri Lankan exporter. Though 1991 prices are incomplete, it is clear that Sri Lankan

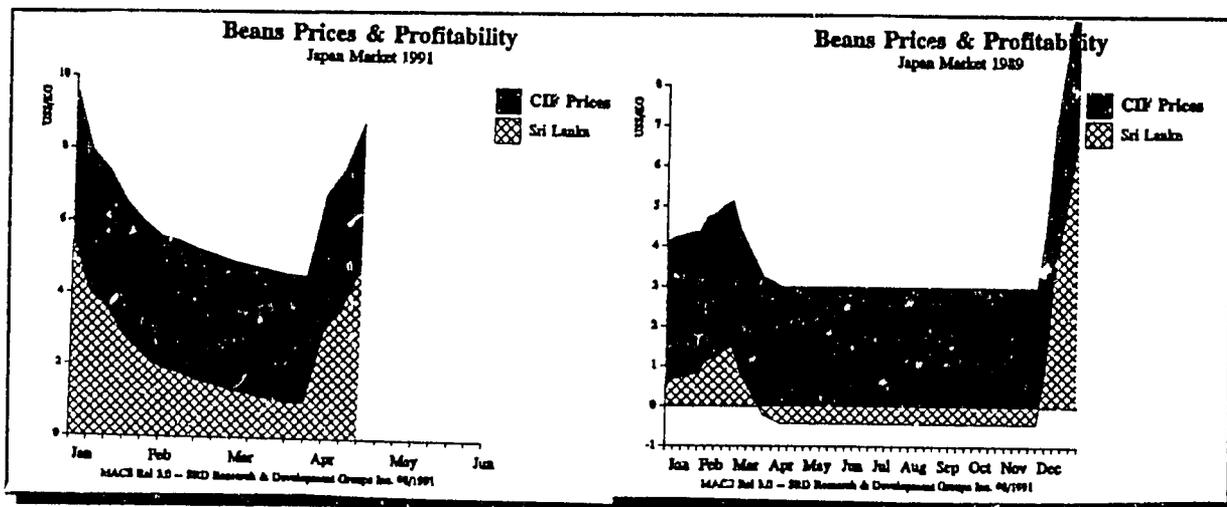


Figure 59: Seasonal Profitability in the Japanese Market 1988-89

exporters could make profits during the first few months of the year. Profits could range from over \$4.00/Kg in early January and December to a narrow margin in March and April. Prices in Japan appear to vary little during the summer, with most variation coming at the beginning and end of the year.

Figures 60-62 show the profit potential of Sri Lanka and the other competitors in the Japanese market. The graphs show that the order of profitability is much different for countries such as Turkey and Spain in this market because of the difference in transportation costs. Sri Lanka has a clear advantage in this major Asian market. Considering the probable level of wholesale prices, Sri Lankan exporters could probably make profits throughout the year, with the possible exception of the period in late March-early April.

Cyprus has the worst cost position in the Japanese market. It's freight costs are very high and during all but perhaps one or two weeks of the year Cyprus would probably experience losses in the Japan market.

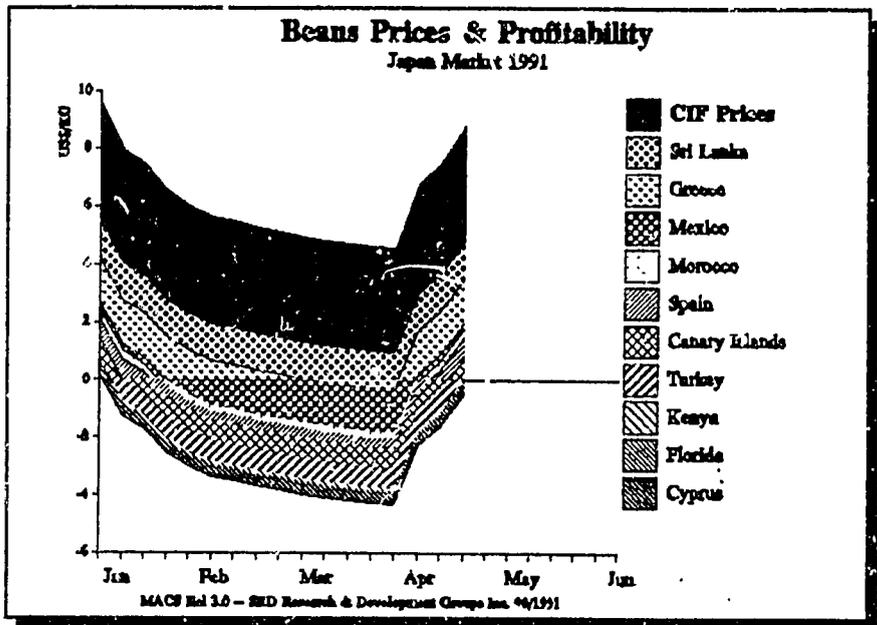


Figure 60

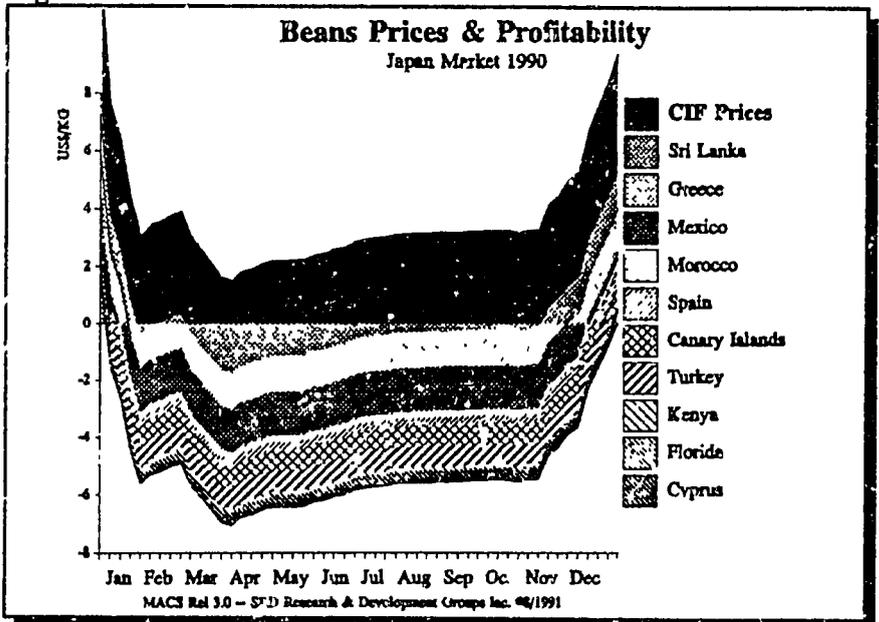


Figure 61

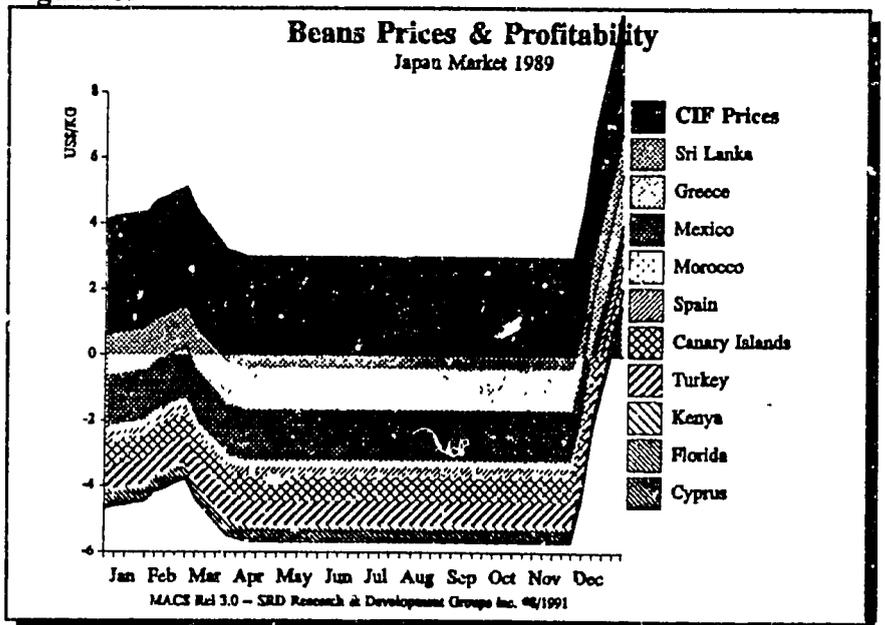


Figure 62

D. Seasonal Profitability Potentials and Competition in the Netherlands.

1. Weekly Profit or Loss Potentials for Sri Lankan Exports to the Netherlands.

For the Dutch market, the graphs are created using C.I.F. prices instead of wholesale prices. CIF prices are lower than the wholesale level because they are the reported price when the product enters the

market country. In the case of green beans the CIF price was \$.40-1.20/Kg. in 1990. This was probably \$.50-1.00/Kg lower than the wholesale price. Still, it appears that the price and profitability levels for Sri Lanka appear to be lower than the other markets analyzed in this profile. The CIF price is also a more consistent price because it is not subject to the same market forces as the wholesale price. Figures 63 and 64 indicate no potential profitability for the average Sri Lankan producer. Assuming a wholesale price \$.50/Kg higher, it is clear that Sri Lankan exports would not attain profitability during the year. Prices appear to be highest in the first two or three and last two months of the year, though seasonal differences seem to be stabilizing. Because of a lack of data, only 1988, 1990 and part of 1991 could be analyzed in this report.

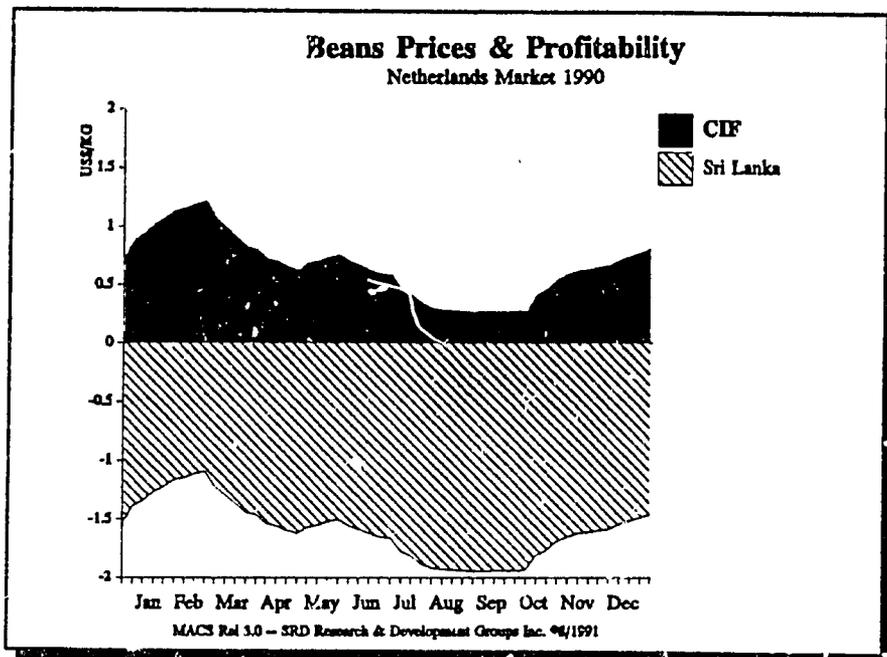


Figure 63: Seasonal Profitability in the Netherlands Market 1990

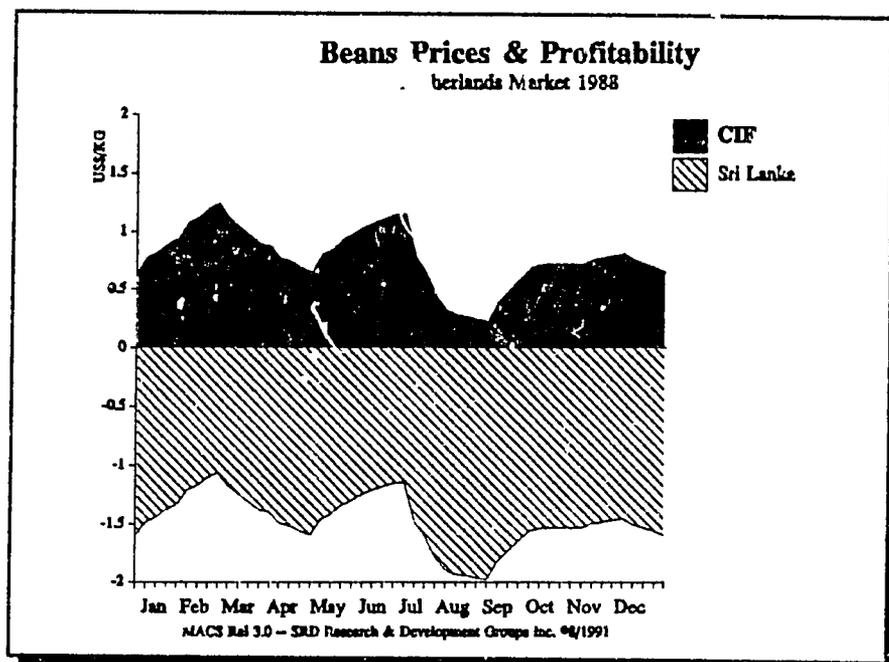


Figure 64: Seasonal Profitability in the Netherlands Market 1988

Figures 65-67 show the profitability potential for the competitor countries in the Dutch market. Like in the other European markets, Sri Lanka has a poor competitive position, mostly because of high transport costs. Morocco, Turkey, Spain, Cyprus, Greece and the Canary Islands have the best possibility of making profits in this market. If wholesale prices were used, all these producers appear to be profitable during much of the year, though profits would not be as high as in other European markets.

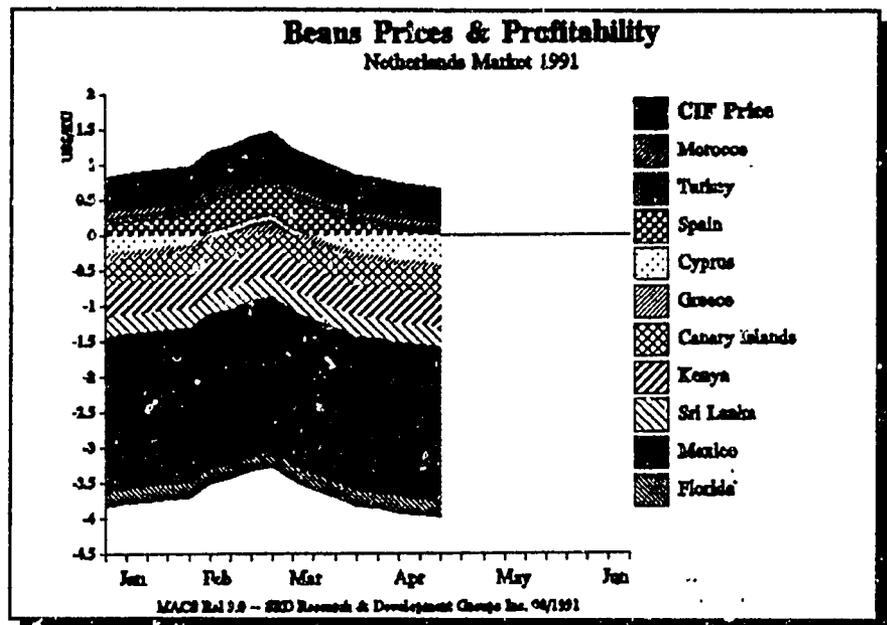


Figure 65

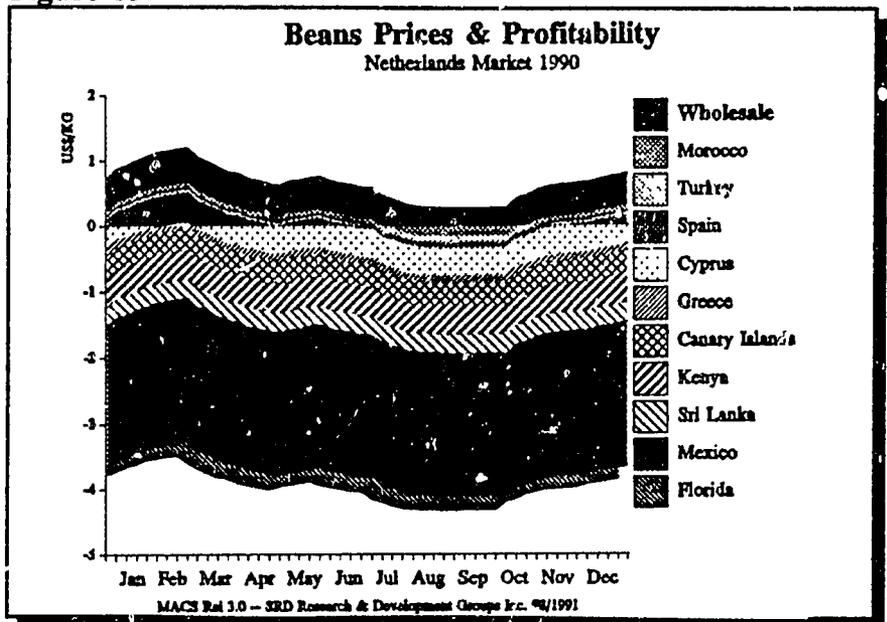


Figure 66

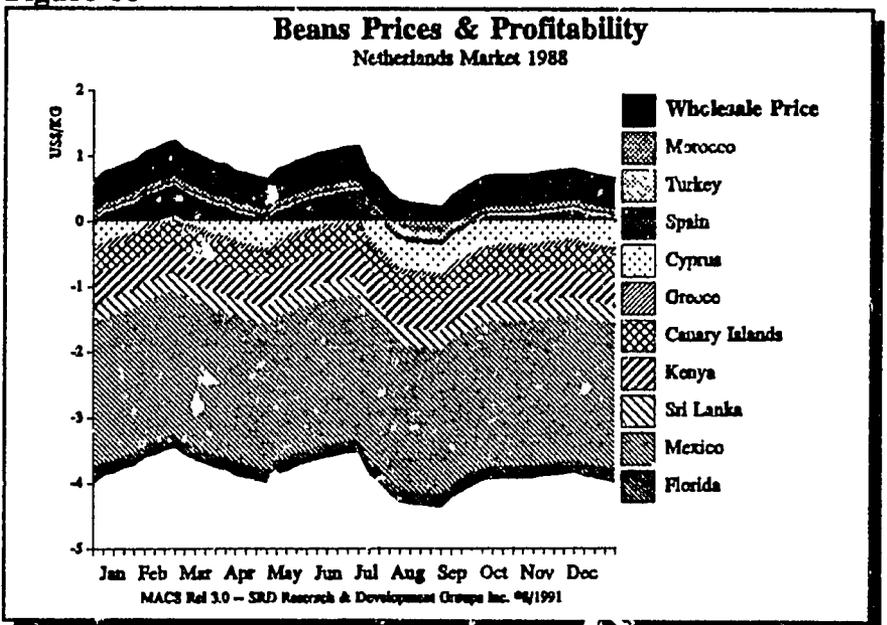


Figure 67

Depth of Market Window Opportunities

1. Profitable Demand™ Concept and Estimation Methodology.

Knowing when the market window of opportunity occurs in a given market is much simpler than knowing the depth or magnitude of the window. To estimate the depth of the market at the Sri Lankan break-even price requires additional logic and analytical effort. In order to understand the results of this additional analysis, it is necessary to understand some of the underlying methodology and evidence of its soundness. This explanation of the concept and methodology used for estimation presents a case study using data for Sri Lankan strawberries in the German market and Chilean asparagus in the New York market. This case study illustrates the SRD methodology used for all products and markets except for a few special cases mentioned below. SRD has developed a new and uniquely practical way of estimating weekly market window depth which we have called *Profitable Demand™*. To estimate the "depth" of the market window requires not only weekly wholesale *price* data for a particular market, but also weekly marketed *quantities*.

Weekly Supply. Figure 68 outlines total weekly supply quantities available in the German market from domestic and imported sources. Weekly supplies are very small during the first eight weeks of the year and then increase to about 2,000 metric tons per week in March. By April supply rates have increased to about 5,000 MT/week and then reach a peak of over 20,000 MT/week in May and June. There was a sharp drop in supply in July and by August the supplies are again very low. Since strawberries will spoil in less than one week, this supply must be consumed or processed rapidly. The type of weekly quantity supply data displayed in Figure 68 is necessary for making the *Profitable Demand™* estimates used in this document.

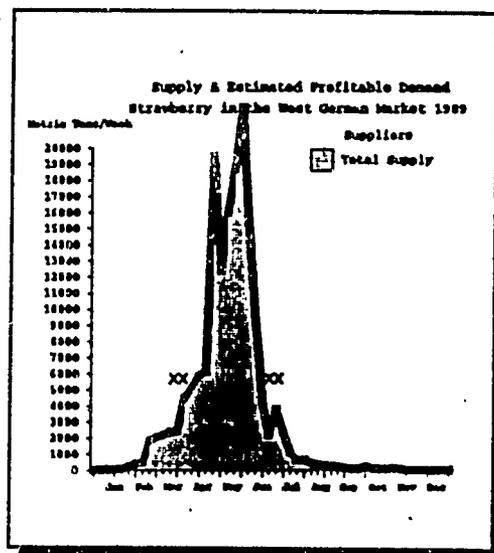


Figure 68: Total Weekly Supply of Strawberries in Germany 1989

Supply & Break-even Price Intercept Points.

Figure 68 also illustrates the first step in estimating *Profitable Demand™* which is to identify the points during the year when the wholesale price is equal to the Sri Lankan break-even price. The Sri Lankan break-even price is the total cost of production, packing, transport, tariffs and handling to place one kilo of strawberries in a German wholesale market.¹ In the case of Sri Lankan Strawberries in the German

¹ The concept and methodology for estimating the break-even price is explained above at pages 6-7.

market the break-even price is approximately \$1.50 per kilo for open field and \$2.75/Kg for greenhouse product. In order to take a conservative point of view, we have used the higher greenhouse break-even price for the analysis. The average wholesale price in 11 German wholesale markets in 1989 was \$2.75/kg during the 15th and 25th weeks of the year. The double XX in Figures 68-71 indicate the quantities marketed in Germany in the 15th and 25th weeks. These points are called the *break-even quantity intercept points* and represent the quantities marketed at the Sri Lankan break-even price. From Figure 69 we can see that this quantity is approximately 5,100 metric tons per week. This is a very important strategic fact for a potential Sri Lankan exporter to know about each market since it tells him *the quantity that market can absorb each week at or above prices which will give him a profit*. The more important question, however, is how strong or deep demand would be during the "window" period after the 25th week and before the 15th week (roughly from July to March). A review of price and volume patterns for the last three years indicates that these points are acceptably consistent. It is clear therefore that German consumers in the 15th and 25th weeks will pay retail prices supporting a wholesale price of around \$2.75/kg for approximately 5,100 kilos per week. If volumes increase (as they do from the 15th to the 25th weeks) the prices will drop below the breakeven point. What the Sri Lankan grower/exporter needs to know about the market is what quantity will be absorbed per week at or above \$2.75/kg. in the period from July to March. Figures 69-71 present *Profitable Demand™* levels as a horizontal line whose shape is drawn on the basis of three alternative demand theories or hypotheses.

Reduced Off-Season Demand due to Cultural Diet Patterns. One possible seasonal demand hypothesis is that German consumers have an *on-season* preference for consuming strawberries in their diet which is based on historical custom. Under German climatic conditions fresh strawberries have been produced for centuries mostly in June. This hypothesis argues that Germans therefore have customarily prepared meals during that season that include strawberries and therefore have a high customary preference for fresh strawberries during that season. This argument would suggest that if the same quantity of strawberries were offered to them in January their demand would be reduced and hence the price they would be willing to pay for an equal quantity would be less. Conversely, the quantity they would be willing to consume, assuming this on-season preference, would have to be less in January than in April. Since the quantity they were willing to consume in April at the break-even price of \$2.75/kg was 5,100 tons, the quantity demanded in January would have to be less. The Reduced Off-Season Demand hypothesis would give rise to a *Profitable Demand™* line shaped like Figure 69 where the quantity demanded drops on both sides of the intercept points.

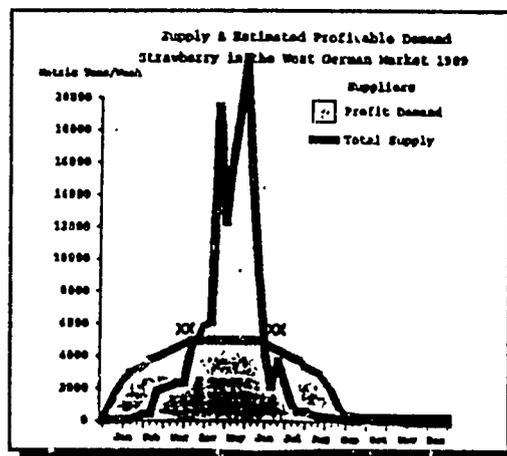


Figure 69: *Profitable Demand™* Assuming the Reduced Off-Season Demand Hypothesis

Increased Off-Season Demand due to Cross Elasticities. The second possible theory or hypothesis about off-season demand is just the opposite of the first and argues that the demand for fresh strawberries is actually higher during the off-season when they have not historically been available from domestic sources. This argument is based on a well known economic theory called *cross elasticity of demand*. This theory argues that the demand for any single product is determined in part by the availability or supply of competing products. In our case this theory would argue that during the summer months from May to July German households are faced with an abundance of fresh berries (raspberries, blackberries etc.) and with many other fresh fruits such as cherries, peaches etc. Demand for any single one of these fresh fruits will be depressed because so many of their logical competing substitutes are available. Thus, this theory argues, housewives would pay more for the same quantity of berries offered in January when the available substitutes are scarce. If the *Profitable Demand™* line were drawn based on the cross-elasticity theory it would have the same illustrated in Figure 70 where a larger quantity would be demanded at or above the break-even price as one moved further off-season from the intercept points.

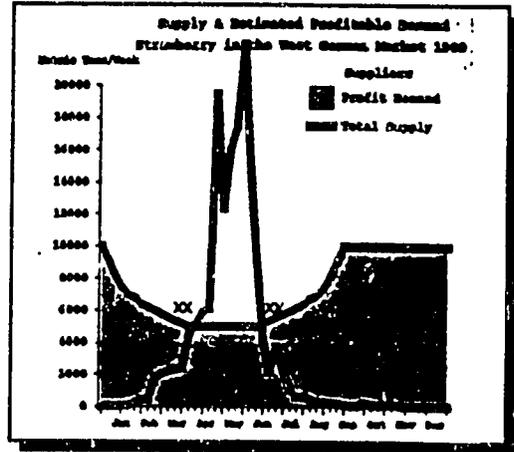


Figure 70: *Profitable Demand™* Assuming Cross-Elasticity Hypothesis

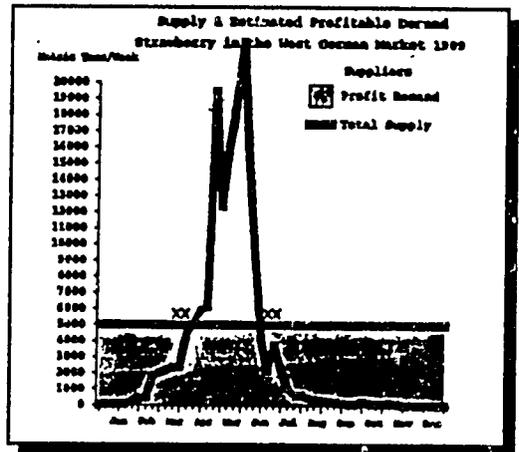


Figure 71: *Profitable Demand™* based on Constant Year-round Diet

Flat Seasonal Demand due to Constant Seasonal Diet Preference. A final argument can be made for a flat *Profitable Demand™* line based on the hypothesis that households would eat the same basic weekly diet year round if faced with the same prices for the same quantities of a particular product. This hypothesis argues that people do not have strong seasonal diet preferences. This hypothesis would produce a flat *Profitable Demand™* line similar to the one shown in Figure 71.

Empirical Evidence. The three alternative hypotheses give the full range of alternative conclusions about the level of off-season *Profitable Demand™*, only one of them can be correct for a particular product and market. There are some cases where one can be rather certain that there are important seasonal consumption preferences such as November demand for cranberries to coincide with the American Thanksgiving holiday, and February/May demand for flowers due to American Valentines and Memorial Day holidays. In Japan, for example, early summer meals traditionally include fresh cherries. In other countries similar patterns exist which affect demand. Since our Sri Lanka analysis

does not include any of these obvious seasonal preference items, the question is how the markets will behave for the other Sri Lankan products. The only way to practically test these hypotheses would be to have a case situation in a substantial market where off-season supply was equal to or greater than on-season supply and observe what happens to the prices. Such an unusual situation occurred in the case of fresh asparagus in the New York market in 1986. The discussion which follows summarizes the findings and implications of this real-world experiment for the appropriate shape of the *Profitable Demand*[™] line. These findings may be reviewed in greater detail in an analytical paper by SRD².

Figure 72 presents a typical year (1985) for asparagus supply in the New York market in the 1980's. Supply during the on-season from February to May

ranged from 600-800 metric tons per month. Imported supplies during the main off-season peaked at between 200-300 metric tons per month, or about one third the on-season peak. During the unusual year of 1986, illustrated in Figure 72, off-season supplies reached approximately 850 tons per month and actually exceeded the on-season peak. Prices during the peak off-season month of November during normal years like 1984 and 1985 ranged between \$4.00-7.00/kg.. The on-season price during the peak supply month of May ranged from \$1.60-3.00/kg. during 1984 and 1985. During the unusual year of 1986 with similar on-season volumes but more tripled off-season supplies all prices stayed inside the same price ranges as 1984-85. Although off-season volumes tripled and exceeded on-season volume, the off-season price more than doubled the on-season price.

This evidence strongly supports the economist's cross-elasticity of demand theory. Demand was clearly stronger off-season than on-season.

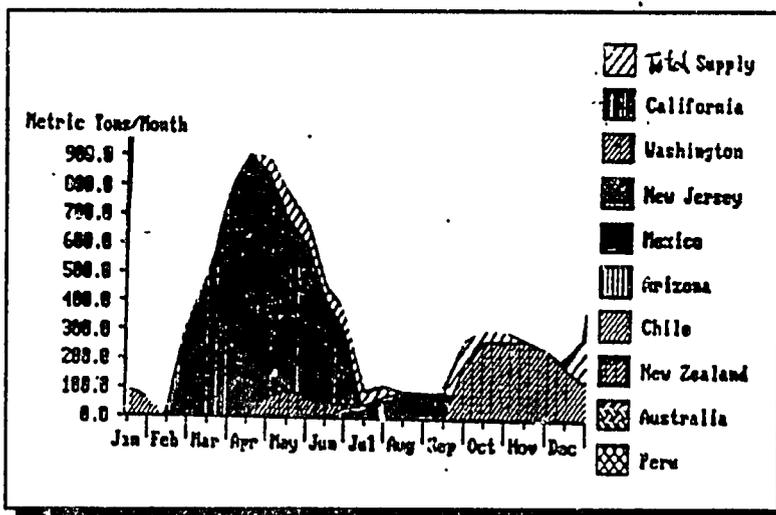


Figure 72: Monthly Fresh Asparagus Supply to the New York Market by Location of Origin in 1985

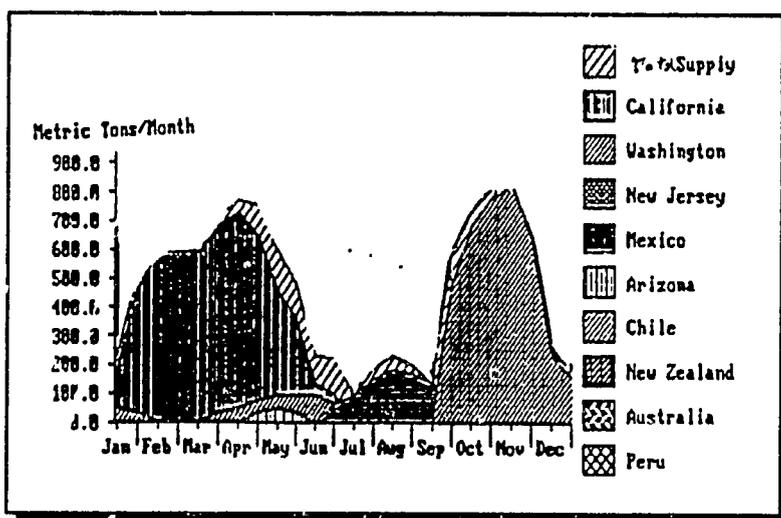


Figure 73: Monthly Supply of Fresh Asparagus to the New York Market by Location of Origin in 1986

² S. Daines & M. Thorpe, *Supply, Demand, and Price Trends for Asparagus in the New York Market 1984-1987*, SRD Research Group, Logan, Utah 1988 p.10.

Not only is the evidence consistent with the theory of cross-elasticity, it also helps to explain the rather dramatic annual growth in imports of fresh product outlined in pages 2-4 of this profile. The massive growth in imports is not the result of substitution for domestic product on-season, nor the result of extra consumption demand for fresh product during the regular season. The growth is largely the result of extending the season of availability of fresh product which taps vast un-met off-season demand.

Even though the best evidence available indicates that the off season *Profitable Demand™* line should be shaped so that it rises off-season, SRD has chosen to draw it flat. We have two reasons for this choice. The first reason is that a flat *Profitable Demand™* line is a safer and more conservative view of off-season market potential. Even though the consumer may have the latent demand and willingness to pay indicated by cross-elasticity theory, wholesale and retail marketing managers may not yet be ready to take the risks involved in making the supply available and a producer/exporter could find it impossible to sell all the product that a cross-elasticity line would imply. The second reason is that in the long run the curve should theoretically "flatten" due to the gradually increasing availability of all fresh produce substitutes. A flat *Profitable Demand™* line is safer in the short run and theoretically sound in the long run.

ANNEX B - List of buyers in major markets.

UNITED KINGDOM

Geest
Fyffes
Mack

GERMANY

Scipio Group
Durbeck
Trofi
Harder, Meiser & Co.
Olf, Koepke & Co.
Afrikanische Frucht Kompagine GmbH
Pacific Fruit Co.
Velleman and Tas
Astheimer
International Frucht Import gesellschaft
Weichert & Co.

THE NETHERLANDS

FTK

MAJOR EUROPEAN BUYERS

Chiquita
Dole
Del Monte
Turbana

JAPAN

This is a list of the major buyers in the European & Japanese markets. Chiquita, Dole, Del Monte, and Turbana market throughout Europe and can be located in most countries. Specialty green beans can be handled through a variety of specialty product groups.

The Mahaweli Enterprise Development Project

The Government of Sri Lanka as well as the international donor community has given high priority over the last several decades to the development of the resources of the Mahaweli river basin. The Accelerated Mahaweli Development Program was launched in 1978. The first phase of this program, the construction of major capital infrastructure, is complete. The second phase, developing the land for settlement and forming an agricultural production base, is well under way. The third phase, just beginning, seeks to build on the agricultural base to create a diverse and dynamic regional economy, improving employment and income prospects for settlers and their families. It is in this phase that the private sector has to play a leading role in enterprise development.

The Mahaweli Enterprise Development Project (MED) is a five year USAID-supported initiative of the Mahaweli Authority of Sri Lanka(MASL) to foster private enterprise development in the Mahaweli areas. MED assists small, medium and large-scale investors to develop new ventures in the Mahaweli and expand existing ones. This is to be accomplished by a three-pronged approach: 1) investment promotion, technical assistance and marketing support to medium and large scale investors; 2) advisory services, training and improved access to credit for small scale enterprises; 3) policy assistance to improve access to resources, such as land and water, and the legal and institutional framework for enterprise development in the Mahaweli settlement areas.

The Employment, Investment and Enterprise Development Division of MASL is the MED implementing agency. The main technical consultancy is provided by a consortium led by the International Science and Technology Institute (ISTI), but marketing consulting is provided by the SRD Research Group Inc. Other firms in the MED consortium are Development Alternatives, Sparks Commodities, High Value Horticulture and Two Sri Lankan firms, Agroskills and Ernst and Young. This significant array of organizations and expertise is ready to assist private sector firms in the Mahaweli areas.

For further information please contact the Director of EIED (Tel: 502327/8/9), or James Finucane (Tel: 508683/4) the Chief of Party of MED, or K.Kodituwakku (Tel: 502327/9) the Local Representative of SRD.

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