

IICA
E71
48



Agriculture in Barbados



110A

E71

48

00006265



Preface

Mindful of its technical cooperation responsibilities, IICA identified the critical need for improved information on the agricultural sector of member countries to assist them to more rapidly integrate with the global marketplace. The identification of the challenges and opportunities for the agri-food sector of constituent member countries, along with the development of a compendium of the best available comparative statistics for agriculture, was identified as a starting point.

*Carlos E. Aquino G.,
Director General, IICA*

Unlike many other Caribbean countries, the agricultural data collection and analysis information system in Barbados is very well organised. Agricultural information and analysis are documented in annual publications of the Ministry of Agriculture and Rural Development (MARD), "AGRIVIEW, prepared by the Agricultural Planning Unit. This effort is complemented by the sectoral analysis of performance presented in the annual Barbados Economic Reports prepared by the Ministry of Finance and Economic Affairs as well as in the annual Central Bank of Barbados Annual Reports. The information contained herein draws heavily on these national reports

This working document represents one in a series of 13 working documents prepared for the IICA Caribbean member states, compiled for the specific purpose of preparing the document titled "Performance and Prospects for Caribbean Agriculture". The preparation of this working document constitutes another step towards the goal of improving access to information on the agricultural sector.

This working document was prepared by Mr. Michael Henry of the IICA Caribbean Regional Centre (CaRC), with assistance from the Barbados Technical Cooperation Agency (TCA) Office. The information and analysis are based on statistics and descriptive information extracted from various national sources, as well as from reports generated by regional and international counterpart institutions. It is anticipated that the information will be useful,

not only to individuals and institutions working in agricultural development in Barbados, but also to other parties interested in information on the agricultural sector in general.

The guidance of Dr. Patrick Antoine Head, Socioeconomic Policy, Trade and Investment Programme in the preparation of this working document is acknowledged. This report would not have been possible without the full commitment of the IICA Director General, Carlos E. Aquino G. and the Caribbean Regional Centre (CaRC) Director, H. Arlington D. Chesney.

This exercise will be undertaken every two years. We welcome comments aimed at improving subsequent reports. All errors and omissions are the responsibility of the authors.

Working Document, #2 of 13, December 1997
Socioeconomic Policy, Trade and Investment Programme

INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE
CARIBBEAN REGIONAL CENTRE (CaRC)
OFFICE IN TRINIDAD AND TOBAGO

P.O.Box 1318, Port of Spain, Republic of Trinidad & Tobago, W.I.
#3 Herbert Street, Newtown, Port of Spain, Republic of Trinidad & Tobago:
Tel: (868) 628 4403; 628-4078; 628-4079; 622-7093. Fax: (868) 628-4562. email: iica@iicacarc.org

Table of Contents

Preface.....	1
Table of Contents.....	2
Country Profile	3
Agriculture in Barbados ~ Sector Profile	4
Socio-Economic Role	4
Organizational Characteristics.....	5
Agriculture in Barbados ~ Performance Indicators, 1991-1995	6
Socio-Economic Performance.....	6
Agricultural Diversification.....	8
Commodity and Sub-Sector Performance	9
Cane and Sugar	9
Non-Sugar ~ Cotton	10
Non-Sugar ~ Fruits	11
Root Crops	11
Vegetables.....	12
Cut Flower and Foliage.....	13
Livestock	13
Fish.....	14
Agro-Processing.....	14
Constraints to Agriculture.....	15
Agriculture in Barbados ~ Prospects.....	17
International Environment	17
International - Domestic Economy Link	18
Commodity Market Trends.....	18
Sugar.....	18
Cotton.....	19
Non-Traditional Fruits	20
Cut flowers	20
Domestic Food production	21
Agro-Industry.....	21
Marketing and Distribution	22
Guidelines for Policy Formulation	22
Additional Statistics.....	24

Country Profile

Barbados, the most easterly of the Lesser Antilles chain of Caribbean islands, is located at 13° 10'N latitude and 59° 35'W longitude. Total land area is 431 sq.km. (166.4 sq.mi). The climate is tropical and relatively humid with annual temperatures averaging 26°C. Barbados is a dry island, with very limited surface water. Annual rainfall ranges between 1,254mm at sea level to 1,650mm at the highest point, which is Mt. Hillaby (1,104ft above sea level). However, during periods of unusually high rainfall (July-November), flooding is a common occurrence, resulting in damage to infrastructure and agriculture. Although Barbados lies within the hurricane belt, the island is less vulnerable to hurricane strikes than the other islands of the Eastern and Northern Caribbean.

Arable land is a relatively scarce resource and the generally dry conditions and limited surface water create additional difficulties for agricultural production, particularly in the dry season. The country's most significant natural (physical) resource is its large expanses of white sandy beaches, which forms the foundation of Barbados' predominantly tourist economy. Limited amounts of natural gas deposits are also exploited for commercial use.

The 1996 population of Barbados was estimated at 263,000, with an average annual growth rate of 0.3%. The majority of the population reside in urban and sub-urban areas, with the balance scattered among the semi-rural areas. With a population density of approximately 610.2 persons per sq. km, Barbados is the most densely populated Caribbean state and ranks as one of the world's most densely populated countries.

Between 1990-1992, the Barbados economy experienced serious imbalances in its domestic and external accounts. This was a continuation of the economic recession of the previous seven-year (1983-1989) period. The poor performance of the export sectors (particularly sugar and manufacturing) and slow growth in

tourism contributed to the economic recession. Gross agricultural output declined steadily between 1991-1994, improving somewhat in 1995. The sector's performance was largely a reflection of the difficulties experienced in the sugar industry. Declines were also recorded for the manufacturing sector between 1990-1993. This sector rebounded in 1994 and 1995, (particularly export manufacturing), recording growth of 7.3% and 7.5%, respectively. Expansion in the food processing, beverages and chemical industries accounted for the larger share of the sector's growth. Following a contraction in activity between 1991-1992, the tourism sector (proxied by hotels and restaurants) recorded moderate growth in 1993. In 1994, growth of 10% reflected the highest level of activity in the sector since 1988. Growth in this sector however, slowed considerably in 1995 to an estimated 1.5%.

Much of the improvement in the Barbados economy in the post-1993 period can be linked to the implementation of a mix of strict macro-economic, micro-economic and commercial policies. This favourable performance continued through to 1995, and was fueled largely by recovery in the manufacturing and tourism sectors. With the restoration of balance in the internal and external accounts, and the continued adherence to sound macro-economic policies, the prospects for long term economic growth in Barbados appear favourable.

Table 1 ~ Barbados

Key Economic Indicators	1991	1992	1993	1994	1995
<i>Bds - US Exchange</i>	2.0	2.0	2.0	2.0	2.0
<i>GDP Bds(1974)</i>	844.6	796.1	802.7	834.6	858.7
<i>Agriculture</i>	62.1	56.1	53.8	53.3	53.3
<i>Manufacturing</i>	83.8	75.9	73.8	78.8	85.0
<i>Tourism</i>	115.5	113.2	117.7	129.0	130.3
<i>Fiscal Balance</i>	-229	-52.0	51.9	-68.1	-38.5
US\$M					
<i>Visible Trade Bal</i>	-415	-279	-332	-357	-446
<i>B.O.P</i>	-52.3	18.3	24.8	88.5	35.3
<i>Ext. Debt</i>	466.7	400.1	448	442	479

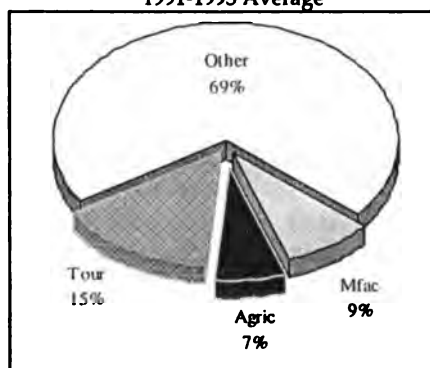
Source: CSO, Ministry of Finance

Agriculture in Barbados - Sector Profile

Socio-Economic Role

The Barbados economy has long been transformed from an agricultural-based, to a tourism and services led economy. In 1975, the agricultural sector accounted for 13% of GDP, compared to a contribution of 10% for manufacturing and 9% for tourism. Structural transformation, however, was accompanied by the decline in the economic significance of agriculture in national economic growth. By 1995, agriculture's contribution to GDP, was halved, to roughly 6.7%. In contrast, tourism's contribution increased to 14% in 1994; an indication of the sector's internal dynamism and the shift in focus on the development of the services sector (Fig 1)

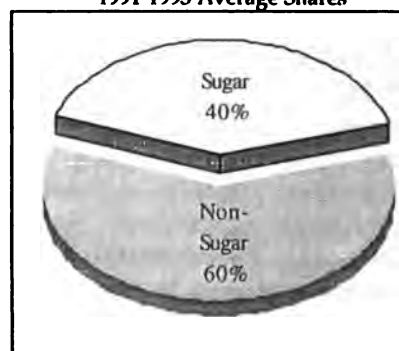
Fig.1. Barbados, Composition of Real GDP, 1991-1995 Average



In Barbados, the agricultural sector is differentiated between sugar and the non-sugar production. This differentiation is derived from the dominance of sugar production in agricultural exports (Fig. 2). While maintaining the status as the single-largest contributor to agricultural GDP, the share of the sugar industry declined from 45.1% in 1991, to 33.1% in 1995. This resulted in a decline in the contribution of the sugar industry to real economic growth. Non-sugar agriculture encompasses other crop production, livestock, fisheries and forestry. Other crops include cotton production, which is also an important export crop for Barbados, albeit to a much lesser extent, and a range of short-term crops, mainly, sweet potatoes, yams, onions, string beans, carrot and tomatoes. The production of corn has been a

more recent feature of the Barbados's agricultural production landscape.

Fig. 2: Barbados, Composition of Agricultural Sector 1991-1995 Average Shares



Food crops accounted for the larger share of non-sugar agriculture's contribution to agricultural gross value-added. The share of forestry was very negligible. Over the 1991-1995 period, the share of non-sugar agriculture in real agricultural GDP hovered between 55% and 65%, with a tendency towards increase at the end of the period. However, the increased contribution of non-sugar agriculture to agricultural GDP was generally insufficient to compensate for the decline in the sugar industry. This notwithstanding, non-sugar agriculture has made marked progress over the last three decades, particularly in terms of the linkages established with the tourism and manufacturing sectors.

Less success was achieved, however, in making agriculture an attractive employment option. This indicates the preference of the youthful population towards non-agricultural employment. The average age of the farming community is above 45 years. Employment in the sector has declined from 6.6 thousand in 1992, to 5.1 thousand in 1995 (Table 1). Consequently, the share of agricultural employment in total employment fell from 6.6% to 4.6% over the same period. It should also be noted that agricultural employment is not undertaken on a full-time basis. Most of the agricultural labour force are also

simultaneously engaged in other occupations, with farm work, secondary to other activity. This situation has resulted in agricultural labour being a scarce and expensive input.

Table 1:

Barbados: Total and Agricultural Labour Force

'000 persons	1991	1992	1993	1994	1995
Total Employed	107.1	101.7	100.5	105.5	109.9
Agriculture ¹	6.1	6.6	5.7	5.6	5.1

1. Agriculture comprises both sugar, non-sugar and fishing.

Source: Barbados Economic Report 1995.

The 1989 Barbados Agricultural Census indicated that small farms accounted for a greater proportion of farm holdings. In fact, the typical farmer in Barbados is small, generally operating holdings less than 2 ha. in size. The majority of these farmers are engaged in the cultivation of non-traditional crops mainly for domestic consumption. On the other hand, the few large estate owners tend to be engaged in the cultivation of sugarcane for export. In fact, in 1993, 80% of the arable land in Barbados was controlled by less than 1% of the landowners.

Organizational Characteristics

Agriculture in Barbados is very public sector driven, with the main agricultural crop, sugarcane, cultivated mostly on large government owned estates. These estates accounted for the largest share of the employed labour force in agriculture. The involvement of the private sector in agriculture tends to be concentrated in produce trading and agro-processing activities. Over the years, efforts have been made by the government to encourage increased private sector involvement in all aspects of the agri-food sector. While achieving some success at the level of primary production, the success was limited in terms of expanding agro-processing activities.

Development policies for agriculture over the review period were aimed at improving the long term viability of the agricultural sector through the following:

- improving the productivity and competitiveness of sugar production;
- agricultural diversification around sugar;
- increasing agricultural export earnings and reducing food imports;
- creating and strengthening inter-sectoral linkages among agriculture, agro-industry and tourism;
- increasing employment opportunities in agriculture to increase its contribution to employment generation.

Consequently, increased importance was attached to:

- achieving sustainable agriculture development;
- land reform, including the rehabilitation of idle lands and land re-distribution programmes;
- enhancing food self-sufficiency and the nutritional status of the population.

The Ministry of Agriculture and Rural Development (MARD) is the main institution implementing government's agricultural policy. This is effected through the administration of the incentive and support system and the provision of basic services, including research and extension. Other quasi-state agencies, farmer organisations, regional and international non-governmental organisations also play an important role. The collaborative efforts of regional and international organisations are evident in the areas of plant and animal health, research and development and rural development.

The Barbados Agricultural Society (BAS), a state-owned enterprise, was the largest organization representing farmers interests. In addition to providing basic production advisory and technical services to its members, the trading arm, the Agricultural Commodity Trading Company (ATCO), played a pivotal role in developing the local distribution channels for local fruits and vegetables.

Agriculture in Barbados - Performance Indicators, 1991-1995

Socio-Economic Performance

The performance of the agricultural sector between 1991-1995 was disappointing: negative growth was recorded every year between 1991-1994, with no change in the level of gross agricultural output in 1995. The problems affecting agriculture were largely a reflection of the deteriorating performance in the sugar industry and slow progress in agricultural diversification. As shown in Table 2, the sugar industry experienced negative growth for all, but one year over the 1991-1995 period, culminating with a dramatic decline of 25.2% in the real growth rate in 1995.

Table 2:
Barbados, Agricultural Growth Rates 1991-1995

	1991	1992	1993	1994	1995
GDP	-3.9	-5.7	0.8	4.0	2.9
Agriculture	-3.4	-9.7	-4.1	-0.9	0.0
Sugar	-5.1	-17.8	-10.0	7.2	-25.2
Non-Sugar	-4.2	-2.0	-5.0	-1.5	17.6

Source: Barbados Statistical Digest

The depressed performance of cane and sugar production between 1991-1995 was a continuation of the protracted decline in production levels which characterised the industry over the last decade. The contraction was reflected in the industry's reduced contribution to both real agricultural and national GDP. Non-sugar agriculture experienced similarly disappointing growth throughout the 1991-1994 period. The strong growth recorded in 1995 may be attributed to the general economic recovery in Barbados following the implementation of macro-economic stabilisation measures. A surge in food crop production appeared to have been responsible for the turnaround in non-sugar agriculture compared to relatively constant output levels in livestock and fisheries.

The lacklustre performance of the agricultural sector between 1991-1995 may also be reflective of the general lack of investment in agricultural development. Investment in agriculture is very reliant upon public-sector resources. Over the 1991-1995 period, agriculture accounted for a relatively low, 2.6% share of the national public sector expenditure

(current and capital, Table 3). Of this total, current expenditure accounted for 65% of total expenditure in the MARD, with the balance of 35% allocated to the implementation of developmental projects. The bulk of the MARD's current expenditure was allocated to general support services, which complemented and supported the activities of the extension services. The annual levels of public sector expenditure on agriculture fluctuated over the period. However, the general increase in the overall level of expenditures in the 1994/95 period was due to the implementation of a new Rural Development Programme in 1995. The aim of the project was to develop rural areas, improve the livelihood of residents, engender sustainable development in agriculture and increase output of agricultural products. A total of \$2.9 million (or 7.4% of total expenditure) was allocated for the first year of project implementation.

Table 3:
Barbados, Government Expenditure on Agriculture

Fiscal Year (BDS\$M.)	1990-91	1991-92	1992-93	1993-94	1994-95
National	1,289	1,350	1,247	1,262	1,307
MARD of which					
Current	35.9	42.8	33.4	25.4	28.1
Capital	20.8	27.0	22.4	20.4	21.4
	15.1	15.8	11.0	5.0	6.7

Source: Barbados Economic Report 1995, Ministry of Finance & Economic Affairs

It was anticipated that the project would lead to an increase in food production in the post-1995 period. Positive impacts on agricultural trade, through the export of surplus production were also expected. Although agriculture constitutes a relatively small share of the Barbadian economy, agricultural exports make an important contribution to foreign exchange earnings. Sugar exports continued to dominate agricultural exports. However, there was some growth in exports of selected food crops, such as breadfruit and sweet potato.

Over the 1991-1995 period, agricultural export earnings accounted for a relatively high 30% share of total merchandise export earnings.¹

¹ Total of the SITC 0, 1 & 4 categories.

Earnings from sugar exports accounted for roughly half of total agricultural export earnings. In spite of the increased emphasis placed on food crop production, Barbados continued to rely heavily on food imports. Consequently, the food import bill averaged Bds\$ 242 million per annum over the 1991-1995 period (Table 4). Food import expenditures, which consistently exceeded the value of agricultural exports, have earned Barbados the status of a net-food importer. However, this does not suggest that Barbados suffered from critically high levels in-sufficient and insecure food supplies. On the contrary, the country experienced fairly high levels of food self-sufficiency, in spite of the persistent agricultural trade deficits. The high food import bill is also largely a factor of the high levels of raw material imported for the agro-industrial sector.

Table 4
Barbados: Agricultural Trade Balance 1991-1995

BDS\$M	1991	1992	1993	1994	1995
Agri-Trade Bal	-144	-100	-109	-135	-123
Agri-Exports	106	123	114	107	138
Agri-Imports:	250	223	224	243	264
0 - Food..	205	186	189	208	226
1 - Bev/Tob.	30	24	21	28	29
4 - O&F	14	12	13	6	9

0 - Food & Live Animals; 1 - Beverages & Tobacco;
4 - Oils & Fats

Source: Barbados Statistical Office

The high food import bill is also a direct outcome of the relatively large tourist population. However, quite a substantial proportion of domestically produced foods are consumed in the tourist industry, including fresh vegetables, poultry meat, eggs, fresh pork, beef, fish, and fruit. Overall, about 40% of total food consumed in the tourism sector is produced in Barbados. Locally produced vegetables accounted for an estimated 60 - 70% of total vegetable consumption in the tourism industry.

The linkage to the tourism sector was facilitated by private sector distribution companies and/or associations, such as the Agricultural Commodity Trading Company Limited which acts as a broker/distributor of fresh produce between farm producers farmers and the hotels, restaurants and supermarkets.

Similar efforts to forge such links for processed food were being undertaken by Systems Caribbean United, in collaboration with the Caribbean Tourism Organization.

Over the 1991-1995 period, approximately 25% of the food import bill was covered by earnings from sugar exports. This represented a decline from 30% in 1991, to 20% in 1995. The food import bill increased from Bds\$195.9 million (or 13.9% of total merchandise imports) in 1990 to Bds\$226.1 million (or 14.6%) in 1995. For the period 1990-1995 as a whole, expenditure on food imports averaged 15.7% per annum of total imports. Cereals (maize, rice, wheat, meslin) and livestock and dairy products, generally accounted for the largest share of expenditure on agricultural imports. Other major food imports included fresh fruits, oil, fats, lard and tallow as a group, and white potatoes.

Over the 1991-1995 period, the rate of growth of export earnings averaged 4.5% per annum. The sharp increase in agricultural export earnings in 1992 was due largely to of the significant growth in sugar exports that year. In contrast, the surge in cotton exports, an increase in food and root crops (sweet potatoes, yams), and to a lesser extent, vegetables, largely explained the sharp increase in export earning sin 1995. Expenditures on imports, on the other hand, grew more slowly, averaging 2% per annum over the same period. The agricultural trade deficit averaged Bds\$122.7 million per annum between 1991-1995.

Although domestic food production in Barbados has shown marked improvements, the country continues to rely on food imports to meet the bulk of the requirements of the tourist industry. The rapid decline in the availability of arable land to meet the incremental demand for food in the tourism and domestic households will force Barbados to remain reliant on imports as its main source of food. Given the declining trend in agricultural exports and trade liberalization, the agricultural trade deficit seems set to continue.

Agricultural Diversification

Given the continued heavy dependence on a single commodity (sugar), in the mid-1980s, Barbados accelerated efforts at agricultural diversification. Diversifying the agricultural production base was considered a critical component of structural transformation. Agricultural diversification programmes were designed to enhance the food security status of the country, as well as to generate foreign exchange savings, earnings and employment opportunities, and to stimulate economic linkages among the agriculture, industry and tourism sectors. Positive impacts on farm efficiency, and hence, competitiveness of farm products, were also anticipated.

Since the prospects for sugar and non-sugar agriculture were inextricably linked, sugar cane cultivation and production remained at the centrepiece of agricultural diversification programmes. Consequently, measures aimed at improving productivity in the sugar cane sector constituted an essential strategy of the agricultural diversification programmes. It was felt that a stronger sugar industry would enhance the success rate of non-sugar crop production, as well as ensure that a minimum of 19,200 hectares of arable land consistently remained in productive agriculture.

Agricultural diversification initiatives of the pre-1988 period encouraged domestic food production, notably of yams and sweet potatoes and meat products. However, there were mixed successes, with food crop production generally declining while livestock and dairy farming tended to increase. The agricultural diversification programmes implemented between 1988-1993 broadened the scope of previous efforts. A wider basket of crops deemed to be agronomically feasible and appropriate, and complementary to sugar cultivation, was selected. In addition to the traditional food crops, emphasis was also placed on fruits, cut flowers and cotton for export. Mutton and beef production were promoted as a means of replacing a sizeable proportion of the meat and meat preparations imports.

In addition to the emphasis on the technical aspects of field production, equal emphasis was placed on improving the policy environment for agriculture. This strategy explicitly recognised the need for attaining an appropriate balance between the sugar and non-sugar sub-sectors. In 1989, a range of incentives were provided to stimulate production. These took the form of the removal of stamp duties, custom duties and consumption taxes on inputs and the operation of a minimum farm-gate guaranteed price scheme for sweet potatoes, yams, eddoes, hot peppers, sweet peppers, pumpkins, peanuts and squash.

These incentives contributed to a 16.2% increase in the level of vegetables and root crops production in 1990. In addition to the export promotions activities of the Barbados Marketing Company (BMC) and the Caribbean Agricultural Trading Company (CATCO), export volumes of fresh produce, mainly sweet pepper and to a lesser extent egg plant, breadfruit and melon, showed marked increases. The export performance of ginger lilies and foliage to North America and Europe was also favourable. Additional support to expand non-sugar crop production was provided under the Integrated Rural Development Programme (IRDP) which undertook infrastructural developments, provided in-service training, access to irrigation and marketing facilities and improved post-harvest and marketing techniques.

The revival of cotton as an export crop in 1983 represented another significant development in Barbados' agricultural diversification thrust. Since 1983, there was a steady increase in the area planted. Cotton was expected to develop into a major foreign exchange earner in the near future.

The development of the livestock sub-sector also featured prominently in the agricultural diversification programmes for many reasons. One, was that the soil geology and arid conditions of Barbados did not facilitate large scale tree crop production. In addition, the decline in lands allocated to sugar cane

production offered increased opportunities for livestock rearing. The further development of the Barbados black belly sheep was afforded high priority. To facilitate the development of the livestock industry, an increased level of resources were channeled into developing livestock feeds based on local ingredients, including animal offal, sugar cane and by-products, and root crops. Increased resources were also allocated in order to improve the quality of pastures and pasture management.

Agri-industrial development was a critical element of agricultural diversification. It was generally well accepted, that successful agricultural diversification must include the development of the local agro-processing industry which, apart from helping to save foreign exchange, also had the advantage of providing an expanded market for locally produced agricultural produce²

In spite of the above efforts, the pace of agricultural diversification, particularly in non-sugar crop production, has been slow and overall success moderate. This may be explained by the fact that growth in the non-sugar crop sub-sector relied heavily on growth in the sugar industry. The declining fortunes of sugar production thus exerted a negative influence on non-sugar crop production. The high incidence of praedial larceny also proved to be a major deterrent to the production of certain commodities. The performance of the livestock sub-sector was generally more encouraging.

Commodity and Sub-Sector Performance

□ Cane and Sugar

Sugarcane cultivation occupies approximately 70% of total arable land. Raw sugar is Barbados's leading agricultural export, averaging 51.8% of total agricultural exports between 1990-1995. This share fell from 58% in 1991, to 38% in 1995. Barbados's sugar exports to the UK market has traditionally, been guided by the Sugar Protocol of the Lomé Convention.

² Ethelbert Haynes, "Agricultural Diversification in Barbados", MARD, Barbados 1997.

Sugarcane cultivation is undertaken on both large government estates and on small private farms. Since the 1980s, both estate and small farmer production, have declined. The effects of the decline in cultivated cane area are shown in Table 5. Table % indicates a generally downward trend in the productivity indicators, and consequently, a decline in output. Declining productivity has been a persistent problem in the Barbados sugar industry. The high incidence of cane fires, which also rendered the crop more susceptible to pests, contributed to the low level of the productivity indicators.

Table 5

Barbados: Sugar Production & Exports

	1991	1992	1993	1994	1995
<i>Productivity Indicators</i>					
Cane/hectare mt	57.2	57.2	55.9	56.3	47.6
Sugar/ hectare mt	6.4	5.9	6.1	6.7	5.2
TC/TS	8.9	9.8	9.1	8.5	9.3
<i>Production:</i>					
Area reaped 000ha	10.3	9.2	7.9	7.8	7.5
Cane milled 000mt	587	528	441	439	357
Area Burnt ha.	855	707	618	647	65
Production 000mt	65.7	54.0	48.5	51.9	38.8
<i>Exports:</i>					
Sugar' 000 mt	52.6	52.3	48.4	50.3	38.6
Bds.\$M	62.2	66.	56.8	59.5	52.5
Molasses: '000 mt	5.5	-	-	0.6	0.9
Bds.\$M	5.2	-	-	0.3	0.7

Source Barbados Economic Review; AGRIVIEW

With the exception of 1994, sugar cane production declined sharply from 65.7 thousand mt, in 1991 to 38.8 thousand mt. in 1995, representing a decline of 44% (Table 5). The quantity of cane harvested in 1995 was the lowest ever recorded in the history of the Barbados sugar industry. However, this was due largely to prolonged drought in 1994 which reduced the quality of the cane. Periodic reductions in industry employment, to minimum levels, have also contributed to the unfavourable position of the industry over the 1991-1995 period.³ Financial instability and delays in wage payments prompted labour unrests in the industry. These actions were usually undertaken at critical times of

³ Reductions in the industry labour force were in response to the enactment of the Minimum Wage and Guaranteed Employment Act (1968) and subsequent amendments (1971).

harvesting thus increasing harvest losses due to the extension of the harvest window into the rainy season.

The inability to contain costs of production in both sugar cane cultivation and sugar processing was symptomatic of production inefficiencies. The situation was also exacerbated by the steady decline in nominal export prices over the 1975-1985 period. Falling prices resulted from an appreciation of the US dollar against the ECU, in which sugar prices under the Lomé Sugar Protocol are denominated. The nominal export price fluctuated from \$628 in 1986, to \$1,181.1 in 1991. However, the more rapid increases in production costs, from \$1,251 per mt. in 1986 to \$1,637 in 1991, continued to have a debilitating effect on the industry.

As a consequence of falling prices and escalating costs, the industry experienced a 'price-cost squeeze', during the first half of the 1990s. Accumulated debt outstanding increased from \$178.2 million in 1991, to \$201.8 million, at the end of 1993. The precarious financial position of the industry prompted the State to assume direct control of the heavily indebted estates and factories. An industry rehabilitation programme was implemented which brought temporary relief from escalating production costs. In 1994, production costs per tonne sugar, declined to \$1,345.2, compared with a nominal average export price of \$1,181.1. The benefits of the restructuring programme, which included financial assistance and the introduction of productivity-enhancing measures, were however, short run. A severe drought in 1994, and subsequent reduction in production, adversely impacted the industry's sustained recovery, particularly since sugar prices increase in 1995.

As was to be expected, over the 1993-1995 period, Barbados experienced difficulties in satisfying the Lomé sugar quota of 54,300 tons. With the successful pleading of "*force majeure*" in 1993, the Barbados sugar quota was not reduced, but maintained at the current level. Notwithstanding, that sugar exports as a percentage of total agricultural exports have

declined steadily over the years, sugar continued to be the leading agricultural export foreign exchange earner.

Given the advances available in biotechnology (improved cane varieties), plant and equipment, the continued decline in sugar industry productivity and competitiveness into the 1990s was symptomatic of the deep seated inefficiencies in sugar cane production, sugar processing and industry management. Sugar cane is still considered to be one of the most suitable crops for Barbados, this is in terms of agronomic suitability, its role in the crop rotation production system, as well as in terms of its ability to generate foreign exchange. However, further progress in global agricultural trade liberalisation is likely to increase pressures for a more WTO-consistent sugar trade regime in the EEC. The removal of preferential market access, and the consequent fall in prices, may adversely influence the industry's future.

□ *Non-Sugar ~ Cotton*

Cotton production has had mixed success since its introduction within the agricultural diversification programme of the early 1980s. Following a slump in production in the late-1980s to early 1990s, production expanded in the 1992/93-1995 period. Cultivated cotton acreage expanded from 106 ha. in the 1992/93 crop season to 302.3 ha in 1994/95 crop season. In 1995, a total of 39 growers were involved in cotton production, of which 28% was cultivated by private farmers and the balance on Government and/or BAMC estates.

Cotton production, as was the case with most other crops, exhibited fluctuating output levels between 1990-1995 (Table 6). The significant growth production in 1995 resulted from a combination of favourable climatic conditions and good industry management. The industry recorded its highest level of cotton production since 1987 - 147.4 tons. Between 1992/93 and 1994/95, the industry also experienced improvements in the yield of cotton planted and in the yield of lint. With respect to the former, an increase from 902 kg/ha in 1992/93 to 1608.1 kg/ha in 1994/95 was realized. In the latter, the yield improved by a remarkable

77.6% from 275 kg/ha to 488.3 kg/ha over the same period. These improved yields were partially linked to the achievement of a reasonable level of control of the cotton pest, the Pink Boll Worm, during the 1994/95 season.

Cotton export earnings declined from \$2.2million in 1987, to \$0.73million in 1992. This decline continued in 1994, to \$0.55. The significant growth in output in 1995, thus facilitated higher export earnings of \$2.5 million that year.

Table 6
Barbados: Cotton Production and Exports

	1991	1992	1993	1994	1995
Production mt	34.7	45.9	29.1	49.9	147.4
Exports mt	-	-	29.1	36.6	267.8
BDS \$M	-	0.73	-	0.55	2.46

Source: MARD

The difficulties experienced in the agricultural sector in general, have affected the viability of the cotton industry. These difficulties include the lack of re-investment in the industry, due to high levels of indebtedness. In addition, the industry was also affected by the inadequacy of marketing arrangements. Industry deficiencies, were manifested in low producer price levels, poor seed germination, pest infestation, as well serious ineffective industry management. Management problems were identified as the single most important obstacle to progress in the industry and one which absorbed substantial resources in litigation.

□ Non-Sugar - Fruits

Fruit crops, particularly tree fruits, has been neither an extensive nor intensive activity within the Barbados agricultural sector. This derived mainly from soil and land constraints. Limited quantities of banana, plantains and figs are grown, with a total cultivated area estimated at 41ha in 1995. Banana accounting for 65.8% of this total area, and plantains, 29%.

Concerted efforts were, however, made to expand fruit production. These efforts were targeted towards the limited expansion of paw paw, mango, avocado, West Indian cherry and passion fruit. In 1994, a total of 23.4ha of fruits were established, comprising 8.5 ha of paw

paw, 3.8ha of mango, 2.1ha of avocado, 7.8ha mixed fruits, dominated by West Indian cherry, with some citrus, and 1.1ha of passion fruit. By the end of December 1994, this total increased to 211.3 ha, representing a 4.1% increase over the total 1993 cultivated area of 203ha. West Indian Cherry and citrus, were the more fruits cultivated within the backyard-type orchards.

While production data for breadfruit and other agricultural commodities were not available, trade data indicate a general upward trend in both the volume and value of breadfruit exports from 1991 through to 1995. In fact, breadfruit represented one of the major export successes between 1990-1995, increasing from 227.3 tons in 1990 to 520.1 tons in 1995.

Root Crops

Root Crops are generally grown for domestic consumption with the surplus exported to regional and extra-regional markets. While Barbados does not have a strong tradition in fresh food exports, significant progress in sweet potato production led to crop becoming an important contributor to the non-sugar, non-cotton agricultural crop sub-sector, both in terms of output and export earnings.

Root crop production was characterised by a high degree of variability between 1991-1995, largely due to the incidence of pests and adverse weather conditions (Table 7). In 1993 and 1994, all classes of root crops experienced a decline in production levels as a result of the very severe drought which started during the latter part of 1993 and continued in 1994. Consequently, food crop farmers experienced low yields. The area of cultivated root crop increased by 41% between 1994 and 1995, from 747ha to 1,053ha, respectively. This growth was led by a 75% expansion in sweet potato cultivation, 10% in yam and 9% in eddo production. Cultivated area under other roots, such as cassava, remained fairly constant.

Sweet potato exports, which declined substantially between 1991-1994, increased dramatically to 780 tons, in 1995. This represented a 160% increase over the 1994 output level. Yam, the second most extensively

cultivated root crop, was severely affected by anthracnose disease for most of the 1991-1995 period. As a result, output volumes were highly variable from year to year. In 1995, however, production recovered with output attaining its pre-1991 level of 2600 tons. A similar pattern of growth and decline was reflected in yam exports over the period.

Table 7
Barbados Food & Root Crop Production and Exports

	1991	1992	1993	1994	1995
Sweet Potatoes:					
Prod. (tons)	1,932	2,419	2,251	1,253	5,202
Exp. (ton)	235	251	-	300	780
BDS\$ '000	426	381	-	444	1,164
Yams:					
Prod. (tons)	1,989	1,566	1,926	1,173	2,570
Exp. (tons)	75	24	-	62	73
BDS\$ '000	126	29	-	87	107
Onions:					
Prod. (tons)	726	744	555	726	1,804
Breadfruit:					
Exp. (tons)	147	279	-	301	520
BDS\$ '000	249	444	-	732	711

Source: MARO

Between 1986-1994, onion production was similarly affected by adverse weather conditions, but more so by 'onion blast' disease. Consequently, production fluctuated between 700-800 tons over most of the 1991-1994 period, before increasing to 1,804.4 tons in 1995. The 148% increase in onion production in 1995, was achieved despite a 21.9% reduction in area cultivated over the 1994-1995 period. Between 1992-95, the area of land cultivated with onion declined from 75 ha in 1992, to 53.1 ha in 1995. The decline in actual area cultivated, was, however, matched by an increase in the number of onion farmers, from 28 in 1993 to 51 in 1995.

Notwithstanding the fluctuations in onion production, yields remained relatively stable at 9.3kg/ha in 1992 and 1993, improving more than threefold to 33.9kg/ha in 1995. The improved yields in 1995 were primarily attributable to the successful research efforts aimed at effective disease control. The Onion Blast disease, however, together with the Leaf Miner disease and uncontrolled weed growth, continued to pose challenges to onion

production in Barbados. Onion, unlike yam and sweet potato did not feature as an export commodity, but was primarily grown to partially replace imports.

The performance of root crops, such as cassava and eddo, was also highly variable between 1990-1995. Corn, which was a fairly new crop in Barbados, experienced dramatic increases in cultivated area, from 66 ha in 1992 to 182.4 ha in 1995. Output was consumed almost completely in the popular "roast corn" market.

Vegetables

Vegetable production, mainly string beans and carrots, displayed mixed performances (Table 8). Carrot production, though variable, trended upwards between 1991-1995.

Table 8
Production of Selected Vegetables

tons	1991	1992	1993	1994	1995
String Bean	830	1,035	749	490	1,948
Beets	263	134	106	69	246
Cabbage	495	436	746	514	1,823
Carrots	1,547	1,051	1,046	330	1,304
Cucumbers	503	489	675	367	1,427
Lettuce	--	--	389	712	1,908
Melon	123	78	119	104	392
Okra	384	270	851	300	495
Pepper	62	54	140	217	424
Sweet Pepper	63	72	227	84	214
Pumpkin	100	140	458	595	1,080
Tomatoes	427	440	483	565	1,132

Source: Barbados Economic Report 1995, Ministry of Finance and Economic Affairs

The production of string beans, however, increased steadily throughout the period, from 446.4 tons in 1990 to 1,948.1 tons in 1995. This represented an increase of 336%. Other vegetables for which output increased between 1990-1993 included cabbage, cucumbers and sweet pepper. In the case of beet, melon, okra, hot pepper, pumpkin and tomato, sharp fluctuations caused by disease and un-seasonal rains severely affected production levels.

Among the vegetables, the export volume of okra increased (Table 9). Hot pepper was also an important export commodity, contributing \$1.1 million to total agricultural exports in 1994-1995.

Table 9
Barbados, Selected Vegetable Exports

	1991	1992	1994	1995
Sweet Pepper: Bds\$'000	4.4	22.5	1.6	4.3
Tons	1.6	8.1	1.4	2.2
Okra: Bds\$'000	9.7	130.1	135.7	136.4
Tons	5.8	76.0	85.3	82.1
Cucumber: Bds\$'000	-	-	10.8	21.8
Tons	-	-	5.8	10.9
Pumpkin: Bds\$'000	-	0.6	10.7	1.0
Tons	-	0.66	4.1	1.5

Source: MARD

□ *Cut Flower and Foliage*

Cut flowers and foliage were included among the priority commodities for export agriculture in early 1980's. However, because of high establishment costs, investment in this industry tended to be relatively low. The industry has since expanded, and in addition to the sugar industry and dairy farming, has become one of the more technologically based and commercially oriented agricultural enterprises in Barbados. The cut flower industry is important complement to the sugar industry. This is both in terms of its potential as a high-valued export commodity and opportunities to realise substantial returns on investment. Total cultivated area under cut flowers moved from 24.2ha in 1994 to 25.1ha in 1995. Anthuriums accounted for 2.9 ha, and heliconia and ginger lily, 20.2ha.

Cut flower exports from Barbados have been variable from year to year, both in terms of volumes shipped and revenue earned (Table 10). In 1989, Barbados exported 17.8 tons of cut flowers and 90.3 tons of foliage, to twelve countries. From 1993 onwards, both the volume and value of cut flowers and foliage exports have declined. In 1995, 25.8 tons of cut flowers valued at \$150,267 and 3.26 tons of foliage, valued at \$22,519 were exported.

Table 10
Barbados, Cut Flower & Foliage Exports

	1991	1992	1993	1994	1995
Cut Flowers: BDS\$'000	198.4	258.2	230.1	161.8	150.3
Tons	29.8	35.4		26.1	25.8
Foliage: BDS\$'000	44.6	48.1	-	25.0	2.5
Tons	11.4	6.5	-	3.9	3.2

Source: MARD

The main export markets for Barbados's cut flowers and foliage, were North and South America, and Europe. In addition, cruise ships provided a substantial demand for the local product. In spite of the lacklustre performance, cut flowers and foliage continued to represent a major element of the sugar diversification thrust.

□ *Livestock*

The emphasis in the livestock sub-sector is on dairy, poultry (broiler and eggs) and pork production. Although the dairy industry comprises farms of variable sizes, the trend is towards the rearing of large herds. In contrast, the pig industry comprises a large number of small producers, with an estimated 70% of the pig farmers holding stock of under 10 pigs. Only 1% of pig farmers stock over 500 pigs. Although Barbados has achieved high levels of self-sufficiency in the production of fresh milk, eggs, poultry and fresh pork, the country continues to rely on imports of pork to satisfy approximately 60% of the requirements of the pork processing industries.

Over the 1991-1995 period, livestock production was generally characterised by annual fluctuations both in output levels and the number of animals slaughtered over the review period (Tables 11 & 12). However, definite growth trends can be discerned, such as in poultry (chicken and turkey), pork, beef and mutton. Despite shortfalls in output to levels below 10 thousand tons in 1992 and 1993, poultry production increased by 4.1% between 1990 and 1995, moving from 10,233.2 tons in 1990 to 10,650.9 tons in 1995. During this period, Barbados achieved self-sufficiency in whole chicken.

Table 11
Barbados: Numbers of Animals Slaughtered by Type

	1992	1993	1994	1995
Calves	431	250	227	238
Cows/Bulls	4,771	4,585	2,397	1,870
Sheep	3,151	3,057	3,391	3,758
Goats	136	88	103	248
Pigs	26,213	34,491	31,312	36,298
Total	44,704	42,471	37,430	42,412

Source: Barbados Agriview 1995

Table 12
Barbados: Livestock Production & Fish Landings

tons	1991	1992	1993	1994	1995
Eggs	1,390	1,267	1,247	1,322	1065
Milk	14,252	8,656	7,668	7,296	7,869
Poultry	10,072	8,825	8,739	10,152	10,651
Pork	1,871	2,018	1,890	1,688	1,928
Beef	904	986	862	861	862
Mutton	37	38	49	55	66
Veal	19	21	12	13	22
Fish	2,722	2,820	4,262	3,042	3,285

Source: Barbados Economic Report 1995; Ministry of Finance and Economic Affairs, 1996.

Generally, pork production experienced an overall increase, from 1,499 tons in 1990, to 1,928 tons in 1995. However, in the intervening years between 1990-1995, both the number of pigs slaughtered and the output of pork exhibited annual fluctuations (Table 12). The decline in beef production, compared to other livestock products, was partly associated with greater competition from imports. Both table egg and milk production generally declined throughout the period. Table egg production declined by 34.8% per annum, while milk production declined by 44.6% per annum over the 1991-1995 period.

Over the 1994-1995 period, earnings from the export of meat products amounted to \$4.3 million. Sausages (all forms) accounted for the largest share of meat products exports, with a total value of \$3.7 million. Although the expenditure on sausage imports for the 1994-1995 period totaled \$1.7 million, Barbados was a net exporter of sausages.

□ Fish

Fisheries, particularly the flying fish industry, is an important activity in Barbados' agricultural sector. Over the 1991-1995 period, fish landings have generally increased, moving from 2,966.3 tons in 1990 (peaking at 4,262.4 tons in 1993), to 3,285.6 tons in 1995 (Table 13). The value of fish exports increased from \$0.7 million in 1994 to \$1.65 million in 1995, indicative of improvements in the sub-sector.

Table 13 Barbados: Fish Landings

tons	1991	1992	1993	1994	1995
Fish	2,722	2,820	4,262	3,042	3,285

Source: Barbados Economic Report 1995, Ministry of Finance and Economic Affairs, 1996.

□ Agro-Processing

The agro-processing sub-sector in Barbados comprises mainly cottage-type operations (which are generally rudimentary) and a few medium to large scale enterprises. Activities are concentrated on the production of milk and dairy products (dominated by pasteurized milk and ice cream production) fruit juices, jams, jellies and meat and fish processing. In 1989, the Barbados Agro-Processing Company Limited was established as a joint public-private sector venture to expand fruit and vegetable processing. This was considered to be complementary to the planned acreage expansion of these commodities under the agricultural diversification programme. However, severe financial and other difficulties led to the suspension of the company's operations in 1990. Efforts have been made to revitalise the company and resume operations. Recommendations to effect same were being reviewed.

Two of the more successful agro-processing companies are Pine Hill Dairies (PHD) and BICO Limited. The PHD was established in the 1970s to process and distribute milk from the local dairy farms. The PDH has since diversified its product base, to include the manufacture of several varieties of fruit juices. As such, the company was the major supplier of fresh and non-fat milk in Barbados. In the late 1980s, PHD began exporting (mainly fruit juices) in neighbouring CARICOM markets.

Faced with increasing competition for market share and the rising cost of raw material inputs in the early 1990s, PHD refocused its attention to the tourist and hospitality industry. After several years of attempting to become an established supplier to cruise liners, in 1995 PHD entered the cruise line market, supplying cruise ships with six main products- including sour cream, cottage cheese, yogurt and fresh milk.

BICO Limited is a manufacturer of ice cream for both domestic consumption and export to regional markets. The company produces approximately 23 exotic West Indian flavours of ice creams (including mango, soursop and guava) and sherbets. BICO began exporting to

neighbouring Caribbean Islands toward the end of the 1980s and developed markets in St. Kitts/Nevis, St. Vincent, Belize, Trinidad and Tobago and Dominica, among other cities.

Two constraining factors to BICO's regional sales have been the lack of refrigerated shipping service to potential markets, such as Guyana and other smaller islands, and the relatively high cost of shipping which made container loads of less than a 40-foot capacity, only marginally profitable. These factors, coupled with increased competition in regional markets, led to a refocused export thrust on the part of the company, including the development of new products, improved packaging and marketing strategy. As a result, the company was able to penetrate the cruise line segment of the hospitality market in 1993.

A general feature of the Barbados agro-industrial sector is the high reliance on imported raw materials. Although use is made of available local supplies, in many instances, the volumes are insufficient to meet the requirements of the larger processors. In addition, agro-industrial enterprises have been affected by lack of funds for research and development, as well as for expansion.

Constraints to Agriculture

Despite the real contraction in agricultural sector activity between 1991-1995, agriculture remain important in terms of the socio-economic development of Barbados. This stems largely from the sector's capacity for employment generation, potential linkages with other sectors and for the earning of foreign exchange.

The range of constraints and deficiencies to the development of the agri-food sector in the Caribbean, which are also applicable to Barbados, may be summarised as follows:

Low Productivity Levels

- physical (geological) limitations, including hilly terrain, which minimizes the adoption of cost-effective mechanisation, unsuitable soils, soil degradation and water availability and management

problems, which adversely impact on yields and productivity;

- pests and diseases of economic significance, exacerbated by the inadequate quarantine capabilities;
- small domestic and regional markets;
- low levels of human capital and inadequate application of improved technologies;
- lack of a commercial orientation in farming and propensity to produce for "protected" markets, resulting in slow progress in agricultural diversification programmes and difficulty in competing in both domestic and export markets.;
- inadequate storage, marketing and transportation facilities and services to facilitate and stimulate trade in agricultural commodities.

Institutional & Structural Deficiencies

- weak macro-economic framework, which constrains the development of enabling economic environment for investment in agriculture and the creation of inter-sectoral linkages with tourism and agro-industry;
- weak institutional capacity of Ministries of Agriculture, resulting in inadequate policy analysis formulation and poor planning, evaluation and implementation of appropriate agriculture sector and rural development initiatives;
- the dependence on public-sector resources, which are inadequate to meet the demands of improved facilities, post-harvest and marketing infrastructure, training, research and other essential services;
- undeveloped domestic capital market and low propensity to invest in agriculture due to the sector's comparatively high risks and absence of risk-mitigating facilities such as insurance, market guarantees and compensation;
- an aging farm population, lack of labour for agriculture and poor skills of the agricultural labour force;
- undeveloped information systems which constrain the effectiveness of sector planning, produce marketing and trade.

While the above constraints are certainly not exhaustive, they capture the general constraints which are fairly common across all Caribbean countries. However, a few of these constraints require further discussion.

Barbados's, geology poses serious limitations to agriculture. In fact, Barbados is seen as a remarkable country in terms of agriculture. The soil cover over most of the island is unusually fragile, consisting of volcanic ash deposited on Barbados's dominant coral limestone after eruptions on neighbouring islands hundreds of years ago. The vulnerability of this soil cover to inappropriate and poor agricultural practices has prompted authorities to impose strict controls on farming activities.

Land suitability problems were also exacerbated by land availability problems, which derived from an unequal system of land distribution and tenure. In Barbados, less than 1% of the farming population controls over 80% of the total arable land. In addition, the agriculture sector has had to content with a protracted decline in agricultural land due to housing and industry. This latter trend has been due to the emergence of alternative economic activities and the growing indebtedness of many farm enterprises.

Low productivity and declining competitiveness were manifested in the inability to contain production costs, to effectively prevent and control pest and disease problems and to maintain acceptable levels of fruit quality. These problems are common to most enterprises in the sector. The inadequacy of technological application was also evidenced in the use of obsolete and/or severely depreciated equipment, particularly in the sugar industry. There also tended to be inappropriate choices of technology and absence of research and development by agro-processors. The persistence of these problems in the 1990s was symptomatic of the low uptake of scientific and technological innovations in the sector.

Financial constraints were manifested in the limited amount of financial institutions outside

the commercial banking system which provided adequate amounts of credit to the agricultural sector and agro-industrial enterprises. Notwithstanding the generally upward trend in commercial bank credit to the agricultural sector between 1991-1995, the share of agriculture remained more or less constant at a mere 2.6% per annum (Table 14). The amount of credit outstanding to the agricultural sector in 1995 (BDS \$ 39.3 M) was the highest figure recorded since 1984.

Table 14

Barbados: Commercial Bank Credit To The Agricultural Sector 1991-1995

BDS\$M.	1991	1992	1993	1994	1995
Total Bank Credit	1,262	1,217	1,234	1,436	1,533
Agriculture	31.5	31.1	30.1	35.8	37.1
Fisheries	1.6	1.4	2.4	2.3	2.0
% Agric & Fishery to Total	2.6	2.7	2.6	2.6	2.6

Source: Barbados Economic Report

The relatively low levels of credit from the commercial banks clearly reflected an acute financial situation, which undoubtedly contributed to the overall poor performance of the sector between 1991-1995. The financial constraints were exacerbated between 1992-1995 as a result of the restructuring of Barbados National Bank (BNB) in 1992 and the closure of the Barbados Development Bank. The Agricultural Division of the BNB was the main institution through which the Government provided concessionary credit to the sector. The Bank's restructuring was largely a result of the outstanding indebtedness of the sugar sub-sector which exceeded \$ BDS 200 M at the end of 1991.

In addition to domestic deficiencies, the agriculture sector is vulnerable to periods of global recession and waning demand. More recently, the sector has had to contend with the changing rules of international agricultural trade. These developments highlight the need to urgently address domestic deficiencies, if agricultural industries are to remain viable in the post-1996 period. Agriculture is no longer a protected industry and increased competition in domestic and export markets pose serious challenges for the agricultural sector in Barbados.

Agriculture in Barbados ~ Prospects

International Environment

Towards the year 2000, world agriculture will be increasingly influenced by an acceleration in the pace of globalisation and trade liberalisation. Trade is identified as the driver of this emerging environment. The dynamics of the globalisation and liberalisation have also been extended to agricultural trade, which, prior to 1994, was very heavily regulated by regional, hemispheric and international agreements. The most significant of these was the 1986-1994 Uruguay Round of negotiations on trade liberalisation.

These negotiations included for the first time, reducing the distortions in trade in agricultural products. These distortions resulted from government intervention and support for agriculture. The establishment of the World Trade Organisation in January 1995 thus marked the end of an era of protection the agricultural sector. The main WTO Agreements which impact the agricultural sector are summarized below. While developed countries were given a maximum period of six years for implementing commitments (i.e., 1995-2000), developing countries were allowed a period of ten years (i.e., from 1995 - 2004).⁴

- **Agreement on Agriculture: 3 Commitments**
Market Access commitments require the conversion of all non-tariff border measures (import quotas), to tariffs which provide the same protection (process called tariffication). Tariffication is to be followed by a reduction in all tariffs by 24%. Provision is also made for the institution of a minimum-access tariff quota, initially set at 3% in 1995, to increase to 5% by 2004.

Countries are, however allowed to include special arrangements in their minimum access commitment and to allocate their minimum access to exporters with special

arrangements, such as with the EU and sugar. Special safeguard provisions were also included for tariffied products that will allow additional duties to be applied in cases where shipments priced in domestic currencies fall below a certain trigger or in the case of import surges. This introduces, at least, the possibility of new protective measures being used in agriculture which may represent a weakness of the agreement.

Domestic Support commitments require reductions in the level of expenditures on domestic agricultural support measures which distort genuine trade (called amber box aggregate measures of support (AMS)), by 13.3% between 1995-2004. AMS include acreage payments, certain subsidised loan programmes, input subsidies and price supports.

Export Subsidies commitments require reductions in the value of direct export subsidies by 21% and in the volume of subsidised exports by 14% between 1995-2004. Developing countries are exempted from commitments on marketing of agricultural exports or internal transport subsidies.

- **Sanitary & Phytosanitary (SPS) Agreement**
This agreement covers food safety and animal, plant and health regulations. The agreement stipulates that the use of these measures should only be in instances where human, animal or plant life or health is threatened. Although negotiations towards the development of a globally accepted code of standards are still ongoing, Caribbean countries are encouraged to base their national SPS measures on international standards, guidelines and recommendations; higher standards may only be imposed if there is scientific justification.

- **Ministerial Decisions**
The Decisions on Measures Concerning the possible Negative Effects of the Reform Programme on LDCs and NFIDC seek to

⁴ "The Trading System After the Uruguay Round" John Whalley and Colleen Hamilton, Institute for International Economics, Washington DC, July 1996.

ensure that these countries are not disadvantaged in terms of higher food prices. The provision of food aid and basic food stuffs provided in full grant form constitutes the key elements of these Decisions.

The basic objective of agricultural trade liberalisation is to reduce the level of protection which imposed constraints to other potential suppliers of the specific agricultural commodities. The agreements may negatively affect some participants in agricultural trade, particularly the least efficient producers. However, for most, tariff reductions and the elimination of quantitative restrictions may impact positively on their production costs, particularly as the cost of imported inputs are reduced. While lower costs of imported inputs is one element in enhancing commodity competitiveness, other factors, such as increased productivity, improved fruit quality and improved commodity marketing are equally important in producing a cost and quality competitive commodity.

International - Domestic Economy Link

The Government of Barbados is a signatory of the WTO and by virtue of its membership, committed to implementing these reforms within the 10-year period. The WTO also specifies that all commitments are to be included in the country's schedules of agricultural concessions and commitments. The pace of implementation of WTO commitments has progressed rather slowly in Barbados. This is partially due to the reluctance in fully adopting trade liberalisation as a macro-economic objective. Much of this reluctance is related to its inability to compete against imports and the implications which this lack of competitiveness will have for employment, national income and economic growth.

In implementing WTO commitments, LDCs will require assistance in developing the legal framework and in undertaking reciprocal trade responsibilities. In addition to the slow pace of implementation of the WTO 1994 Agreements, Barbados must now prepare for the Mini-WTO Agriculture negotiations,

which are due to begin in 1999. It is very likely that this Round will place additional pressure on the EU to further liberalise its internal agricultural policy. The EU and the ACP are currently engaged in discussions towards the development of a post-Lomé IV arrangement and preparations are also on the way for the review of the EU's Common Agricultural Policy (CAP). It is expected that the outcome of these negotiations will impact on the EU's ACP trade preference regime and on the special commodity protocols in particular.

Although Barbados is a relatively minor player in international trade generally, and agricultural trade in particular, these global developments will have profound impacts on the country's agricultural sector and economy. Agricultural trade liberalisation will be accompanied by changing patterns of production, food sourcing, preparation, distribution and consumption.

Commodity Market Trends⁵

The dominant trends in world commodity markets reflect the changes in the global context particularly over the last 15 years. The following section summarises the dominant trends for the Barbados's main commodities.

- *Sugar*

Sugar continues to be one of the most highly protected agricultural commodities. In keeping with the commitments of the WTO Agreements, sugar export quotas are to be converted to tariffs, which are to be gradually reduced. This tariffication process, together with the upcoming Mini-WTO Agriculture Round negotiations in 1999, will undoubtedly put pressure on the current protected EU sugar market. The impact of these developments will be a reduction in world sugar prices as the sugar market becomes increasingly deregulated.

⁵ Information sources: USDA's "Situation and Outlook Forum'96 Proceedings", February, 1996 and 1997; CARICOM's "Marketing Developments Relating to the Major Commodities" March 1997; Caribbean Basin Regional Profile 1998 Report.

Long-term global trends for the sugar market indicate:

- greater interaction in all markets, with prices eventually converging with actual costs of production;
- the move towards minimal inventories, which may result in quicker price responses in both world and domestic markets.

While the emerging sugar market is expected to be more efficient, some instability in domestic markets will occur as they adjust to external price signals and freer trade. Although much of this market dynamism is occurring in the US, similar tendencies are being experienced in Europe. Sugar prices on the UK market are also expected to adjust downwards as a result of the EU's commitments to tariff reductions of 3.3% per annum to 2001.

The dynamic nature of the EU and the US sugar markets, the expected increase in world sugar production and move towards freer trade, signal an intensification of competition as the decade progresses. This will put further pressure on Barbados's sugar industry to increase its productivity and to diversify its output. For the 1996/1997 season, it was envisaged that funds provided under the Sugar Replanting Scheme will provide an incentive towards increased production and improved efficiency in sugar cane production and processing. At present Barbados's quota to the EU countries under the ACP Sugar Protocol is 54,000 metric tonnes while the 1998 US Tariff Rate allocation quota for raw cane sugar for Barbados was established at 7,830 metric tonnes.

• *Cotton*

Until recently, China was the world's largest cotton producer and processor. In 1995, however, China reverted to being a net cotton importer. In 1996, global cotton exports fell, following 10 consecutive years of flat global demand and smaller imports by China. In terms of global production, the combined cotton production of Caribbean producers is negligible. In spite of this, global trends in cotton consumption and production will have

a deciding influence on the industry's prospects as the decade progresses.

The USDA projections for cotton to the year 2000⁶ include a decline in market share of raw cotton, in particular, as opposed to gains in market share of processed cotton. The inability of raw cotton to compete with man-made fibres (MMF), particularly polyester, will also contribute to the decline in market share. Cotton's fortunes will depend on establishing itself as a premium fibre and not as a bulk product. In addition, wider swings in worldwide cotton production are projected for the next 10 years due to more intense competition with food crops. In the post-1996 period, declining cotton prices, coupled with strong production of competing crop prices (such as wheat, corn, soya bean), will act as a disincentive to expanding cotton production in countries such as Paraguay, India and Turkey.

World cotton outlook suggests a weakening import demand in China, with a downward trend in cotton use in traditional high-income importing cotton countries including Japan. While cotton consumption continues to be strong in the Western Hemisphere, elsewhere in the world, growth in textile demand is increasingly being met by man-made fibre. This scenario for world cotton production and consumption, indicates that production continues to outstrip consumption, albeit by a small margin. In the long-run, the bringing of textile trade under the ambit GATT/WTO and the increasing use of man-made fibres will also constrain cotton imports by most developed traditional importers, including the EU and Japan.

The prospects for the cotton industry in Barbados appear to be mixed. While an increase in the area planted should lead to a higher level of output in the 1997 season, further expansion of the industry is constrained by marketing problems.

A Regional marketing approach among sea island cotton producers has been identified as

⁶ Agricultural Outlook Forum '97 - Speech Booklet 3, "Cotton Forum".

one possible solution to eliminate some of the problems related to the marketing of lint and contribute to the maintenance of the elite status which it still enjoys. However, unless a solution is found to the current problems plaguing the industry, there is a risk that cotton growers will continue to lose interest in cotton production.

• *Non-Traditional Fruits*

The international juice market represents one of the most important sectors of the global agribusiness market. Developing country suppliers (mainly Brazil) share 50% of international trade (ITC, 1992).⁷ In addition, the market for non-traditional fruit has shifted towards pulps, segments and purees. Dehydrated tropical fruits (in the form of pre-packaged cubes, slices, wedges or chips) are also becoming increasingly popular among the health conscious population. US supplies of such products are currently met by Thailand and the Phillipines, with increasing imports from Central America.

While the global demand for fruit juice should continue to grow significantly over the next ten years, competition from temperate fruit juices (berries, apples) is likely to increase. In the US and Canada, fruit consumption is reported to be stable, with limited interest in tropical fruits. Fruit imports are from traditional suppliers, with strict phytosanitary barriers and high transport costs being the major limiting factors to US market access for newcomers. However, in Europe, total non-citrus fruit imports have diminished slightly since 1992. Imports of selected fruits, mainly guava, pineapple, paw paw, mangosteen, mango and avocado have experienced sharp increases.

While demand for non-traditional fruits in general exists, penetrating the US market in particular, has been difficult. This is due to rigid health and sanitation requirements as well as the trend towards multiples and supermarkets which demand range, volume,

⁷ Information on market behaviour and trends in non-traditional tropical fruits are extracted from various issues of Fruitrop, Publication of CIRAD-FLHOR, 1995-1997 issues.

regularity and product related services. In the case of cherry and guava production in Barbados, there has been very little acreage expansion in these crops sufficient to meet the demand of the export market.

Opportunities do exist for non-traditional fruit exports. However, in many instances, these opportunities are for pre-packaged, higher valued products, such as purees, pulps, segments etc. Additionally, given the relatively small scale of most fruit production in Barbados, it may be more appropriate to target micro and niche markets. The key to successful exporting of non-traditional fruits, therefore rests ultimately, on the development of products to satisfy the demands of these niche markets, including the gourmet food industry, for high-valued products.

• *Cut flowers*

World flower production has experienced tremendous growth over the past 4 decades and now totals 6 billion dollars (3 billion alone for the cut flower industry). Markets continue to be concentrated in Europe, North America and Japan. Growth in per capita consumption of flower products in these markets is expected to continue. Producing countries and the range of products have diversified significantly. Traditional flower producers have been Holland, Israel and Colombia, with new producers including Mexico, Spain, Italy, Central and South Africa, Australia, New Zealand and South-East Asia. The world flower and green leaf market grew by 5% and 10%, respectively, in the last ten years, a trend which is expected to growth continue.

More specifically, the tropical flower market has not experienced the same dynamism and has yet to firmly establish itself in the American and European markets. Besides the limited interest of Western consumers for these products, the commercialisation of tropical flowers necessitates particular attention and special equipment in order to maintain the market quality of tropical cut flowers.⁸

⁸ "Development of the Flower Industry in Grenada"; by C. Coutin (IICA/FMTC Agri-Food Sector Competitiveness Study), 1997.

The small size and limited varieties of Caribbean cut flowers offer opportunities for penetrating niche and specialists markets. However, the structural constraints confronting Caribbean cut flower producers limit their ability to expand the industry and to effectively compete internationally. In the case of Barbadian cut flower industry, producers have focused on the domestic market. Further growth in the industry will however, depend to a large extent on the ability of the farmers to seize export marketing opportunities, the cost of planting material and inputs, and the supply of planting material locally.

• *Domestic Food production*

As a result of an expansion in the area under sugar cane production, the view is that the output of food and root crops, which are grown in rotation with sugar, will increase. While most of the food and root crops grown in Barbados is for domestic consumption, increasing quantities of produce from this sub-sector have been shipped to export markets, both regional and extra-regional. On the basis of detailed research of the UK, the Netherlands, USA and Canada for fresh produce, yam was identified as one of the commodities having export potential. This root crop along with sweet potato and breadfruit are the food and root crops exported in the largest quantities.

There is growth potential in the vegetable industry, particularly for onions, hot peppers and a number of selected commodities. Local farmers have displayed great initiative in their efforts to meet the demands of the domestic market. However, the cost of water as well as the untimely cultivation of their lands could be constraining factors. Further, the freeing up of regional trade could pose the greatest challenge to the sub-sector. Consequently, farmers need to take further steps to lower their costs in order to survive any adverse effects that may arise.

Livestock production is expected to improve, particularly in the sheep, goat and pig industries. Development programmes implemented by the MARD are expected to

improve the quantity and health status of livestock. Further, implementation of the BADMC's Beef Project is expected to help improve efficiency and competitiveness in Barbados's beef market. However, local livestock producers are constrained by the high cost of concentrate feed, the lack of adequate slaughter facilities and inadequate credit facilities.

As regards the fishing industry, the introduction of more effective fisheries management measures should provide a participative framework for both the identification and resolution of issues that affect the industry. As usual, with respect to the level of catches, there is uncertainty due to the unpredictable nature of migratory fishery resources which form the mainstay of the industry. The trend for the longline fleet to increase in number and average size of vessels could result in greater catches of tuna and sword fish for export, and perhaps more bill fish for the local off season market. The increased availability of ice should result in increased and better quality catches.

• *Agro-Industry*

Previous sections have alluded to the critical role which agro-industry can play in the transformation of agricultural production and in the sustainability of the agri-food sector in all its dimensions. This is even more important given the growing trends towards the consumption of semi- and processed fruit and vegetable products. With the exception of the organic fruit and vegetable market segment which has recorded significant growth in this decade, the demand for processed fruit and vegetable products has grown more rapidly than that of fresh fruit in particular. Growth in the demand for fruit products, such as segments, pulps, juices and purees, in developed countries offer opportunities for efficient agro-processors.

The development of a vibrant agro-processing industry based primarily on utilisation of local supplies of fruits, vegetables and root crops, will not only add-value to agricultural output, but will also stimulate production. In the first instance, such industries should

concentrate on the processing of fruits which are in abundant supply but for which export markets have either stagnated or declined.

Marketing and Distribution

Agricultural production will generally benefit from a continuous search for new market opportunities, domestically, such as in the hospitality and food processing sectors, and even more importantly, externally, as existing markets approach saturation. The level of success in increasing agricultural production (both fresh produce and processed commodities) will be conditioned on the existence of an effective agricultural marketing network. Maintaining supplies in traditional markets and introducing new products into traditional as well as new markets present a tough challenge for any country, particularly one such as Barbados which faces supply limitations. Given limited production capacity and hence low export volumes, the magnitude of this challenge could be minimised through the adoption of the concept of partnerships with overseas retailers, mainly supermarket chains. The development of an integrated production and market intelligence system is a pre-requisite to successful marketing.

The establishment of mechanisms to secure access to supermarkets and other domestic retail outlets and the consolidation of linkages with the hospitality sector will be a critical development in this area. Other supportive and complementary measures should include quality enhancing marketing support services (eg. grading and packaging), technical support services, such as research and development, disease control and extension.

Guidelines for Policy Formulation

The Government of Barbados is committed to the provisions of the WTO Agreement, including reducing public sector support to agriculture. Against this background, all actors in the sector are challenged to develop WTO-consistent mechanisms to increase productivity and competitiveness in the sector.

.....Competitiveness in agriculture can be viewed as a dynamic economic concept inherent to globalisation, that takes into account the need to adjust to the macro-economic environment, adapt to the astonishing pace of technological innovation and be flexible in terms of the requirements of sustainable and equitable development.


AGRIFORUM - Towards an Agenda for Agriculture in the Americas, DIREXCOM, IICA Headquarters, Costa Rica, August, 1997.

In 1997, a short-term challenge to agricultural producers is the imposition of VAT on agricultural production. This action, which will result in the lowering and removal of tariff and quantitative restrictions, threatens to negate the potential savings. The impact may be an increase in the cost of farm with possible negative implications for the cost competitiveness of many agricultural enterprises.

The long-term challenge however, continues to be one of sustaining efficient traditional crop production while expanding into a more flexible, diverse agriculture. Policy makers are thus faced with the twin tasks of increasing productivity and competitiveness while simultaneously keeping the adjustment costs relatively small so as to minimise the negative impact on resource constrained groups.

Given the constraints imposed on Government by the WTO in terms of the level of domestic support to agriculture, the Government is challenged to develop WTO-consistent system/mechanism of support to agricultural sector development. Policy decision making for Caribbean Agriculture should place priority on the following considerations in the design of an agricultural development strategy.

- An Enabling Policy Environment which combines new public policy for rural areas with current macro-economic policy to enhance competitiveness. This should include policies which ensure rational spending of public resources on direct works that support the market rather than replace it. This strongly suggests an increased role of the private sector in all dimensions of the agricultural sector.

- Dynamic and Flexible Support Institutions through the transformation of the institutional framework. Institutional evolution should be characterised by reform/development of specialist institutions and an integrated and dynamic public and private sector partnership with the capacity to capitalise on strategic and tactical alliances for developing the sector.
 - Technology Generation based on innovations for improved efficiency. Given the human and financial resource constraints, it may be more feasible for Barbados to actively support the establishment and effective operation of a regional or sub-regional research centre for technology generation and transfer. This will be a pre-requisite for achieving
- and maintaining competitiveness and sustainability of the agricultural sector.
- Human Resource Development and the continuous development of the knowledge base will become a fundamental factor of production. Attention must be placed on the provision of high quality and timely education, which takes into account production and social requirements of the sector. Training and investment in human resources, particularly in the rural areas are inextricably linked to the sector's modernisation process, competitiveness and equity.
- 

Additional Statistics

Table 1: Origin of Gross Domestic Product, Barbados

BDS \$ Millions @ 1974 prices	1991	1992	1993	1994	1995 ^P
<u>Primary Sector:</u>					
Agriculture	62.1	56.1	53.8	53.3	53.3
<i>Sugar</i>	28.0	23.1	20.9	22.2	16.6
<i>Non-sugar Agriculture & Fishing</i>	34.1	33.0	32.9	31.1	36.7
Mining & Quarrying	6.3	7.0	6.8	6.9	7.4
<u>Secondary Sector:</u>					
Manufacturing:	83.8	75.9	73.8	78.8	85.0
Construction	55.6	51.0	52.1	53.9	57.5
<u>Services Sector:</u>					
Utilities - Electricity & Water	27.0	27.4	27.5	28.6	30.3
Transport, Storage, Communications	67.6	65.2	66.0	67.9	69.7
Wholesale & Retail Trade	161.2	148.4	152.0	159.7	164.8
Tourism	115.5	113.2	117.7	129.0	130.3
Business & General Services	147.7	139.9	141.0	144.5	147.3
Government Services	117.8	112.0	112.0	112.0	113.1
Gross Domestic Product @ Factor Cost	844.6	796.1	802.7	834.6	858.7

Source: Central Bank of Barbados Annual Statistical Digest, 1996.

Table 2: Savings and Investment, Barbados

BDS\$ Millions	1991	1992	1993	1994	1995 ^p
<u>Gross Domestic Savings¹</u>	<u>-11.7</u>	<u>70.0</u>	<u>-13.1</u>	<u>71.9</u>	<u>-128.1</u>
<u>Gross Domestic Investment</u>	<u>580.5</u>	<u>300.8</u>	<u>419.8</u>	<u>464.8</u>	<u>520.4</u>
Private Investment	301.5	217.6	241.3	253.6	314.3
Public Investment	75.1	44.2	39.8	56.9	36.6

1 - defined as the difference between GDP and total consumption;

Source: Central Bank of Barbados Annual Statistical Digest, 1996.

Table 3: Retail Price Index- Annual Averages, Barbados

Average, year-end, 1980=100	Wghts	1991	1992	1993	1994	1995 [*]
All Items	1000	191.2	202.8	205.1	205.3	103.0
<i>Food & Beverages</i>	432	194.9	195.4	195.3	195.9	106.1
<i>Alcoholic Bev. & Tobacco</i>	84	208.4	223.2	220.9	224.1	101.2
Housing	131	253.8	296.7	296.9	294.8	103.7
Fuel and Light	62	121.6	124.9	128.8	125.9	104.0
Household Operat. & Furn.	96	133.2	147.3	148.5	147.3	98.0
Clothing & Footwear	51	131.7	135.8	137.6	136.3	97.6
Medical & Personal	60	211.5	233.3	253.0	256.5	101.0
Transportation	46	229.5	260.5	274.4	268.9	99.3
Education, Recreat. & Misc.	38	156.8	158.0	163.2	166.9	100.3

*A new index using May, 1994 indicators replaces the old index which was based on March, 1980 indicators.

Source: Barbados Economic Report, 1995.

Table 4: Summary Central Government Fiscal Operations and Composition of PSIP, Barbados

BDS \$ Millions	1990/ 1991	1991/ 1992	1992/ 1993	1993/ 1994	1994/ 1995
Central Government Current Account:	949.5	990.4	1,005.0	1,006.3	1,067.4
Current Revenue	891.8	923.2	916.5	933.2	979.2
Taxes	57.7	67.2	88.6	73.0	88.2
Non-Tax	957.3	921.5	941.1	954.1	990.2
Current Expenditure	423.6	400.5	370.0	401.4	410.9
Wages & Salaries	132.2	163.5	164.6	143.8	164.7
Interest Payments	401.5	357.5	406.5	408.9	414.7
Other	-7.8	68.9	63.9	52.2	77.2
<u>Current Account Balance</u>	NA	NA	NA	NA	NA
Capital Revenue	240.1	113.4	105.0	109.4	103.8
Capital Expenditure	0.35	9.0	11.0	11.6	9.7
Net Lending	-248.2	-53.5	-52.1	-68.8	-36.3
Overall Balance					
Expenditure on and Financing of the PSIP*					
<u>Total Investment</u>					
Agriculture	15.1	8.0	5.5	5.0	6.7
Education	63.6	21.9	18.9	28.7	20.2
Trade, Industry & Tourism	13.9	4.0	2.6	5.4	6.0

Source: Central Bank of Barbados Annual Statistical Digest 1996

- Represents Central Government's Capital Expenditure
- Errors are due to rounding

Table 5: Distribution of Commercial Bank Credit, Balance

BDS \$ Millions, End of Period	1991	1992	1993	1994	1995
<u>Total Commercial Bank</u>					
Agriculture	31.5	31.1	30.1	31.7	37.1
Fisheries	1.6	1.4	2.4	6.6	2.0
Manufacturing	176.2	185.7	144.3	117.1	124.9
Mining & Quarrying	2.4	2.8	2.5	1.1	1.3
Distributive Trades	207.2	216.3	264.8	295.2	330.8
Tourism & Entertainment	110.9	105.6	91.2	144.2	184.1
Transport	75.8	75.6	16.9	16.4	16.4
Public Utilities	32.1	25.2	19.6	16.8	16.1
Construction	53.5	49.3	57.1	71.7	76.7
Government	0.3	0.2	0.01	0.9	0.005
Statutory Boards	25.7	33.0	32.1	26.9	24.1
Financial Institutions	69.2	46.1	66.0	153.7	32.0
Personal	279.8	263.7	315.0	348.2	437.5
Other	196.1	191.3	192.4	226.0	250.1

Source: Barbados Economic Report 1995

Table 6: Balance of Payments, Balance

US \$ Millions	1991	1992	1993	1994	1995p
Current Account Balance	-23.6	143.4	70.2	134.6	107.9
Trade Balance	-416.1	-277.8	-326.7	-354.7	-445.7
Exports f.o.b	206.6	189.8	187.6	189.8	245.5
Imports c.i.f	622.8	467.6	514.3	544.6	691.2
Services (Net)	398.8	409.7	417.0	494.7	567.7
Income (Net)	-39.5	-29.0	-40.9	-40.7	-47.7
Net Private Transfers	34.2	41.2	26.1	40.3	34.9
Capital Account Balance	9.5	-98.2	-8.5	9.1	-3.5
Net Direct Investment	6.05	13.6	6.7	n.a.	n.a.

Sources: Central Bank of Barbados : Annual Statistical Digest & Balance of Payments of Barbados

Table 7: Composition of Merchandise Exports and Imports, Barbados

BDS \$ Millions	1991	1992	1993	1994	1995p
Total Exports:	414.7	380.3	373.8	365.6	477.8
0 Food & Live Animals	86.7	95.7	90.9	91.3	109.5
1 Beverages & Tobacco	19.7	27.8	24.0	16.4	28.4
2 Crude Material	1.7	2.9	2.8	2.9	11.6
3 Minerals Fuels	117.2	65.4	58.5	52.7	68.7
4 Animal & Vegetable Fats & Oils	0.02	0.02	0.06	0.01	0.7
5 Chemicals	53.0	54.6	52.6	52.8	66.2
6 Manufactured Goods	43.9	34.2	52.1	51.5	66.2
7 Machinery, Transport, etc	54.3	63.8	65.4	68.3	94.4
8 Misc, Manufactured Goods	31.4	31.1	25.3	26.4	31.6
9 Misc. Transactions	6.4	4.8	2.1	3.2	0.5
Re-Exports	170.1	111.1	91.7	98.8	131.6
Imports:	1,396.6	1,048.5	1,154.1	1,236.4	1,541.1
0 Food & Live Animals	205.6	186.8	189.1	208.8	226.1
1 Beverages & Tobacco	30.6	24.3	22.0	28.1	29.6
2 Crude Material	39.8	26.9	36.0	49.9	59.4
3 Minerals Fuels	192.7	124.8	112.7	107.5	130.9
4 Animal & Vegetable Fats & Oils	14.4	12.7	13.2	6.7	9.2
5 Chemicals	150.3	133.2	146.3	154.6	188.1
6 Manufactured Goods	252.8	178.8	207.5	210.7	264.6
7 Machinery, Transport, etc	324.6	209.8	264.9	290.9	412.6
8 Misc, Manufactured Goods	151.0	145.7	157.2	174.0	216.3
9 Misc. Transactions	34.5	5.4	5.2	5.2	4.2

Sources: Ministry of Agriculture and Rural Development, Barbados Economic Report 1995.

Table 8: Composition of Food & Live Animal Imports (SITC 0), Barbados

BDS \$ Millions	1991	1992	1993	1994	1995p
00 Food & Live Animals	0.70	0.12	0.35	1.22	0.84
01 Meat & Preparations	28.5	23.5	25.1	24.0	29.1
02 Dairy Products & Eggs	9.20	9.0	11.4	9.8	9.5
03 Fish & Fish Preparation	2.10	1.8	1.8	2.5	2.9
04 Cereals & Preparations	NA	NA	NA	NA	NA
05 Vegetables & Fruits	12.2	23.3	12.5	18.7	21.9
06 Sugar & Sugar Preparations	5.4	13.6	16.8	13.1	15.5
07 Coffee, Tea, Cocoa & Spices	10.5	10.4	3.7	13.8	14.2
08 Feeding Stuff for Animals	14.4	9.1	6.5	5.5	4.9
09 Misc. Edible Products	NA	NA	NA	NA	NA

Source: Ministry of Agriculture and Rural Development

Table 9 Imports of Agricultural Inputs, Barbados

BDS\$ Million	1991	1992	1993	1994	1995
Total Imports		2.24	3.79	3.00	5.06
Agro-Chemicals (fertilisers)	3.2	2.7	2.6	2.8	4.5
<i>Insect/Herb/Fung/Rodent-icides</i>	6.8	5.2	6.6	7.7	10.9
Agro-Equipment (small implements)	0.5	0.3	0.4	0.5	0.5
Agro-Machinery	4.7	1.3	1.8	2.5	4.0

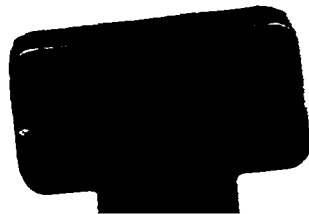
Sources: Ministry of Agriculture and Rural Development

Table 10: Direction of Trade in Percent of Total, Barbados

	1991	1992	1993	1994	1995p
Total Exports f.o.b (BDS \$)	414.7	380.3	374.0	363.0	477.8
Trade Shares %					
UK	10.2	19.9	18.5	20.8	17.7
US	13.4	16.6	17.9	18.3	15.9
Canada	3.1	2.7	3.2	4.3	5.3
CARICOM Countries	32.7	34.3	37.7	33.7	40.0
Other	34.3	23.3	21.0	20.8	17.3
Total Imports c.i.f (BDS \$)	1,397.7	1,048.5	1,154.1	1,228.6	1,541.2
Trade Shares %					
UK	11.3	8.7	9.3	9.2	9.5
US	36.1	37.1	37.3	39.7	38.5
Canada	6.0	5.5	5.0	5.7	5.1
Japan	6.1	3.8	5.4	4.6	6.7
CARICOM Countries	14.6	19.0	18.8	19.1	16.0
Other	25.4	22.7	22.6	19.8	23.8

Sources: Central Bank of Barbados : Annual Statistical Digest 1996 & Barbados Economic Report 1995.

Wales
76.



**INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE
OFFICE IN TRINIDAD AND TOBAGO**

3 Herbert Street, Newtown, Port of Spain, Trinidad and Tobago / P.O. Box 1318

Tel: (868) 628-4403/4078/4079; 622-7050/7086/7093; Fax: (868) 628-4562; Cable: IICAPOS; Email: iicatt@iicacare.org