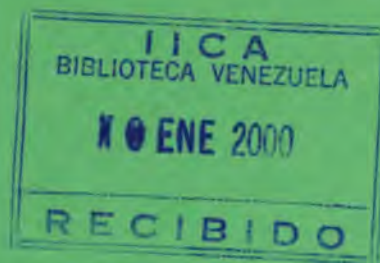


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*Caribbean Regional Centre*



## Agriculture in Antigua & Barbuda



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## 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

Information on the agricultural sector in Antigua and Barbuda is relatively weak, both in terms of data collection and analysis systems. While some information, albeit imprecise, does exist, it is often spread over a range of national, regional and international publications and databases, which, in many instances, are of limited circulation and accessibility. Much remains to be done in terms of developing and maintaining a comprehensive agricultural sector information base.

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 the result of the collaborative efforts of Diana E. Francis of the Socioeconomic Policy, Trade and Investment Programme (IICA Caribbean Regional Centre) and Mr. Francis Henry, Coordinator, IICA Technical Cooperation Agency (TCA) Office in Antigua and Barbuda. 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 Antigua & Barbuda, but also to other parties interested in information on the agricultural sector in general.

Appreciation is extended to Dr. Patrick Antoine Head, Socioeconomic Policy, Trade and Investment Programme for his guidance towards the preparation of this working document. 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.

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## Country Profile

The twin-island state of **Antigua and Barbuda** is located at the southern end of the Leeward island chain and approximately 250 miles south east of Puerto Rico. The climate is semi-arid and tropical. Temperatures, which range from 24°C-31°C, are moderated by continuous north-easterly breezes. The islands are relatively dry and annual rainfall averages 42 inches (1,050 mm). Total land area is 441, of which Antigua is 208 sq.km. Antigua's landscape ranges from the northern rolling limestone and scrub covered hills, the clayey soils of the central plains, to the steeper and more hilly volcanic lands of the southern regions. Barbuda is a very low-lying, coral-limestone based island. The highest point on Barbuda is 200 ft. above sea level. Within recent times, Antigua & Barbuda have been severely affected by hurricanes, such as the two hurricanes in 1995, which wrought severe damage to infrastructure.

The islands natural resource base consists almost entirely of white sand beaches. Land suitable for agricultural production, is limited to the central fertile plains. In addition to the low annual rainfall, Antigua & Barbuda have very little surface water. The six watersheds located in Antigua occupy 43% of total land area and contain about 80% of the groundwater supplies and 90% of surface water storage.

The population of Antigua & Barbuda is predominantly of African origin. The 1995 population was estimated at 66,500, with an average annual growth rate of 0.4%. St. Johns, the capital of Antigua, is home to approximately 35% of Antigua's population. Barbuda's 1995 population was estimated at 1,500 inhabitants. Small population size has been identified as one of the most serious problems facing Antigua & Barbuda.

Between 1991-1994, the Antigua & Barbuda economy grew by 3.4% per annum. The 4.4% decline in 1995 was primarily due to a decline in the tourism sector. The economy remains heavily reliant on tourism and related services.

In real terms, the sector's growth averaged 7.5% per annum between 1991-1994. The 16% decline in 1995 resulted from the hurricane-induced temporary closure of at least five hotels, that year. Within the last few years, the country experienced major developments in financial services, attracting significant amounts of capital. Both the agricultural and manufacturing sectors, however, remain small contributing on average, 4% each, to gross domestic output. Structural weaknesses, which lead to shortages of labour for employment in agriculture and manufacturing industries have been partially blamed for the lack-lustre performance of these two sectors.

The post-1990 period witnessed a strengthening of the government's resolve to diversify the economic base, including expansion in the manufacturing and financial services sectors. Public policy generally encouraged foreign investment through a number of incentive programmes aimed at attracting increased private sector participation. In 1995, the Government of Antigua & Barbuda (GoAB) embarked upon a Voluntary Structural Adjustment programme (VSAP) aimed at achieving sustainable growth, with emphasis on debt management and fiscal stabilisation. During 1996, economic activity gained momentum with GDP growth of 4.5% that year. This performance was attributed to the strong recovery in the tourism industry. Continued efforts at attracting offshore business and developing the country's reputation as an international financial services centre auger well for the country's future.

Table 1 - Antigua &amp; Barbuda

Key Economic Indicators EC\$m	1991	1992	1993	1994	1995
EC-US Exchange	2.7	2.7	2.7	2.7	2.7
GDP (1977)	378.1	382.4	395.8	416.1	397.5
Agriculture	13.6	14.1	15.5	14.4	13.6
Manufacturing	16.8	15.8	15.0	15.34	13.2
Tourism	57.0	60.5	66.5	70.8	59.2
Fiscal Overall Bal.	-33.0	-14.3	-19.9	-56.4	na
Visible Trade Bal	-585.1	-561.4	-625.6	-684.9	-778.6
BOP, EC\$m	13.3	44.3	-30.3	21.8	36.7
Ext. Debt, US\$m	332.3	333.6	335.1	358.8	371.8

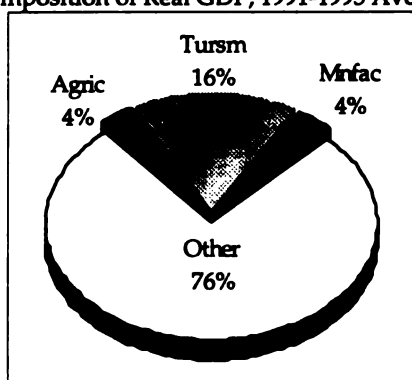
Source: CSO, Ministry of Finance

## Agriculture in Antigua & Barbuda - Sector Profile

### Socio-Economic Role

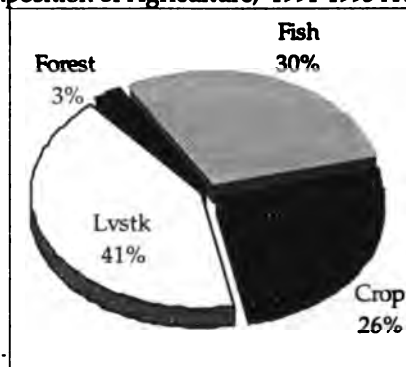
Following the demise of the sugar industry in the late 1970s, and the rapid expansion in the tourism and financial service sectors, the agriculture sector became virtually insignificant in the economy of Antigua & Barbuda. This situation also partially derived from the islands' natural resource limitations, which made agricultural production particularly difficult. The share of the agricultural sector in GDP declined from an average of 7.5% between 1970-1985, to about 4% during the first half of the 1990s (Figure 1).

Figure 1: Antigua & Barbuda  
Composition of Real GDP, 1991-1995 Average



Livestock and fisheries accounted for the largest share of gross agricultural output, with a 1991-1995 average share of 41% and 30%, respectively. The relative share of crop production averaged 26% over the period, with negligible contribution from the forestry sector (Figure 2).

Figure 2: Antigua & Barbuda  
Composition of Agriculture, 1991-1995 Average



Apart from land and water resource limitations, agricultural production in Antigua & Barbuda suffered from severe labour shortages. This situation was due mainly to the low wage structure in agriculture, compared to the high wages offered in the tourism industry and other service sectors. Consequently, agriculture accounted for a mere 9% of the employed labour force. Within recent times, there was a slight increase in the numbers of self-employed persons in agriculture. This was partly the result of the slow growth in employment opportunities in the tourism and other service sectors of the economy. Much of the labour which "returned" to agriculture were the generally young, below the age of 35.

The emergence of a small class of commercially-oriented farmers within the last six years, has led to a greater utilisation of available land resources. Many of these new producers became engaged in table egg and cash crop production, albeit on a part-time basis. The "larger" farmers were more inclined to be full-time farm operators (ie., with over 80% of time spent on-farm). Within recent times, the role of women in the agricultural sector also increased. This was both in terms managing farm activities as well as in undertaking actual production activities. Cattle and poultry (mainly table eggs) production are two areas in particular, where the numbers of female producers have increased.

Generally, the impact of the agricultural sector, in terms of contribution to domestic food supplies, has been low. Import-substitution programmes from the 1980s implemented in order to expand the production of vegetables and fruits on abandoned sugar plantations, have achieved limited success. Some success, however, was achieved in increasing the cultivation of cucumber, eggplant, hot pepper, melon, onion, pumpkin, tomato, sweet potato and yam. Output, however, was highly seasonal, and the bulk of domestic food requirements continued to be met from imports.



The need to feed a growing tourist population also contributed to the reliance on food imports. Fruit, meat and dairy products, in particular, constituted a high component of the food import bill.

#### Organisational Characteristics

Compared to other Eastern Caribbean countries, the economic significance of agriculture in Antigua & Barbuda is relatively low. While there has been some growth in terms of the number of farmers in agriculture, overall private sector participation in the sector continued to be low. This was both in terms of involvement in direct production activities and in the provision of necessary services and investment for agri-enterprise development.

The non-farm private sector tended to be more involved in produce trading (dominated by the informal sector), input supply and limited food processing activities. Efforts of Government to encourage greater private sector participation in the development of the sector have achieved very limited success. Consequently, the organisation of activities and resource utilisation in the sector remained unevenly distributed between the public and private sectors. The majority of the farm community continued to rely upon the subsidised services and facilities provided by the Government.

From the late 1970s, agricultural policy in Antigua & Barbuda pursued a strategy oriented towards the production of short-term crops and vegetables and the development of the livestock sector. This policy was, to some extent, preempted by the widespread occupation of abandoned sugar plantations by vegetable peasant farmers and land-less cattle owners. The continued decline in the agricultural sector from the mid-1980's prompted the Government of Antigua & Barbuda to implement measures aimed at increasing the sector's capacity to contribute to economic growth. The overall objective was to bridge the gap between the existing (4%) and the desired (15%) contribution of the agricultural sector to real medium term growth.

Agriculture was targeted to become an important driving force in the economy. Increased agricultural production was also encouraged as means of improving net incomes in the sector and strengthening the linkages with tourism.

To this end, the main specific policy objectives for the agricultural sector aimed at:

- increasing the production of crop and livestock products for local consumption and the service/tourist industry. Import substitution was to be pursued as a means of reducing the foreign exchange leakage;
- increasing the production of crops with linkages to agro-processing, as a means of increasing the value-added potential of the sector;
- providing tax and duty concessions to all bona fide farmers in order to encourage production;
- facilitating long term lease arrangements of economic viable plots of land to farmers, which could be used as collateral to raise finance;
- creating an environment which attracted young persons, women and investment in agricultural production.

The Ministry of Agriculture (MoA) has been the main government agency responsible for implementing agricultural policy. This function is effected through the administration of support schemes and provision of basic services and facilities for the farming community. Other quasi-state agencies, and regional and international organisations also play an important role in agricultural development in Antigua & Barbuda. The contribution of regional and international organisations, tended to be more evident in research and development and technology transfer activities. Farmer organisations and the agro-processing sector are still in the infancy stage in Antigua & Barbuda. The National Farmer Union marketing group tends to be activated mainly in periods where a surplus was available for export. The lack of an active agri-business class in Antigua & Barbuda has been consistent with the low rank and returns from agriculture in the economy.

## Agriculture in Antigua &amp; Barbuda - Performance Indicators, 1991-1995

## Socio-Economic Performance

The agricultural sector's share in real economic growth averaged 4% per annum between 1991-1995. The equivalent dollar value was EC\$40 million. This average value represented a 50% decline in the sector's contribution during the decade of the 80s. Growth in the agricultural sector averaged 3.4% between 1991-1993. This growth was led by moderate expansion in the crop and fisheries sub-sectors, of 4.5% and 4.1% per annum, respectively. Livestock recorded low (2.1%) growth, with an annual decline in forestry activities by 2.6% over the same period (Table 1).

Table 1:

Antigua & Barbuda, Real Growth in Agriculture					
	1991	1992	1993	1994	1995
GDP %	4.43	1.15	3.66	4.97	-4.45
Agricultural GDP %	3.04	3.76	3.27	-1.03	-5.08
Crops	3.9	4.9	2.8	-11.9	-10.1
Livestock	2.2	2.5	1.9	2.6	2.5
Fisheries	4.0	5.0	6.1	-11.7	4.6
Forestry	-2.4	-2.5	-2.5	0.0	-1.7

Source: Antigua &amp; Barbuda Statistical Office; OECS/EAS

The decline in the agricultural sector from 1994 was led by a 12% contraction each, in crop production and in fisheries, as well as continued slow growth in livestock production. The decline in the agricultural sector continued in 1995, led by further decline in crop production and slow growth in the livestock sub-sector. While the lack-lustre performance of the agricultural sector reflected the physical and structural constraints to agricultural production in general, in the 1994-95 period, crop production in particular, was also adversely affected by drought conditions and hurricanes.

Given agriculture's reliance on the public sector, the overall lacklustre performance of the sector may have also been the result of low levels of public expenditure in agriculture. Over the 1991-1995 period, the annual budget was sufficient mainly to cover the costs of operations. There were limited public sector resources available to undertake development projects. As a consequence of the limited public sector resources for investment in agriculture, the agricultural sector has traditionally relied

upon external financial support to implement development projects.

Table 2 presents the annual government expenditures in agriculture over the 1991-1995 period. As indicated, government budgetary allocations to the Division of Agriculture grew very slowly over the period. Financial assistance committed from the international financial community totaled EC\$91.1 million over the 1991-1995 period. Of the amount available for the implementation of capital projects, actual expenditure represented a mere 10% of the total over the 1991-1995 period. This situation was reflective of delays in project implementation, which may have also contributed to the constrained performance of the sector.

Table 2:

Antigua & Barbuda, Government Expenditure in Agriculture					
EC\$M	1991	1992	1993	1994	1995
<b>Recurrent Expenditure</b>					
National Budget	74.05	85.83	94.21	74.41	82.85
Total MoA	7.19	7.27	7.84	8.65	9.36
Division of Agric.	6.46	6.47	6.64	7.35	7.90
Agric. Dept.	2.10	2.10	2.16	2.17	2.39
Vet & Animal	1.14	1.14	1.08	1.37	1.42
Fisheries	0.38	0.39	0.41	0.42	0.43
Cotton	0.19	0.20	0.21	0.21	0.24
Extension	1.34	1.35	1.49	1.62	1.78
Lab/ Food Tech	0.53	0.54	0.47	0.56	0.45
Other MoA	0.73	0.80	1.20	1.30	1.46
<b>Capital Expenditure</b>					
Total National	143.5	162.7	150.1	242.9	263.4
Total MoA	2.38	1.54	1.37	1.00	3.10

Source: Ministry of Agriculture, Antigua &amp; Barbuda

Apart from the government, the other main sources of financial capital were the commercial banks and the Antigua & Barbuda Development Bank (ABDB). These institutions generally provided loans for agri-enterprise and agri-business development, albeit at different rates of interest. Credit from the commercial bank was offered at market interest rates, compared to the lower rates of interest offered by the development bank. In spite of the existence of the ABDB, small farmers who lack the required collateral for loans continued to experience difficulties in accessing credit. These small farmers have

relied increasingly, on community-based money lending, including the credit unions.

Over the 1991-1995 period, the average share of the agricultural sector (including food and non-alcoholic beverage manufacturing) in total credit disbursed by the commercial banks was a mere 1.4%. In contrast, the share of ABDB loans disbursed to agriculture (crops, livestock & fishing) was relatively higher, averaging 6.4% over the same period (Table 3). However, the ABDB's total loan portfolio was much lower than that of the commercial banks, so too was the total loans disbursed to agriculture.

Table 3:  
Antigua & Barbuda, Commercial & Development Bank  
Credit to Agriculture

	1991	1992	1993	1994	1995
<b>Commercial Banks EC\$M</b>					
Total	637.2	687.9	724.8	763.6	893.6
Agriculture	6.3	6.0	6.1	5.2	2.2
Fisheries	1.3	1.1	1.0	0.7	0.8
F& NA-B*	5.3	7.0	1.7	1.7	1.6
<b>A&amp;B Development Bank - Loans Disbursed, EC\$'000</b>					
Total	3,635	3,902	5,113	5,928	7,271
Agriculture	260.3	277.5	411.2	243.1	393.6
Crops	40.5	98.7	151.3	143.1	156.4
Livestock	29.0	166.7	137.8	37.8	115.0
Fishing	190.7	12.2	122.0	62.1	122.3

\*F&NA-B - food and non-alcoholic beverages

Source: OECS/EAS; ABDB reports

The sector's continued inability to produce a wide range of food products has earned Antigua & Barbuda the status of a net-food importing country. In spite of the general increase in area cultivated in short term crops, particularly in 1995, the agriculture's domestic food production capacity continued to be low. The overall increase in cultivated crop area in 1995 resulted largely from the reallocation of resources from land under pasture, moribund sugar and cotton estates to crop production. Reforms in the land tenure system, including the provision of longer government leases and the distribution of larger plot sizes, averaging 15 acres (compared to between 5-10 acres as was previously the case), also facilitated the expansion in crop production.

Over the 1991-1995 period, food imports accounted for approximately EC\$50million per annum. Fresh food commodities, mainly roots

and tubers and tropical fruits, were imported from within the region, while a wide range of vegetables, onions, white potato, exotic fruits and meat, fish and dairy products, were imported from extra-regional sources. In spite of the existence of the CARICOM CET, which imposed higher tariffs on goods of non-CARICOM origin, there was an increasing trend in imported food items from the major industrialised countries. This trend was facilitated by the comparative ease of access to extra-regional markets, due to well established direct air and sea links.

#### Agricultural Diversification

Since the 1970s, the objective of agricultural diversification programmes was to expand the production of vegetables, food crops and meat products. Attempts over the last two decades, to introduce new crops within the cropping pattern of Antigua & Barbuda, have had limited success. However, some progress was achieved in terms of introducing irrigated vegetable production. The adoption of overhead sprinkler irrigated vegetable production was facilitated through the establishment of demonstration stations in several strategic locations around the island. The associated increases in costs and subsequent reductions in profit margins, however, threatened to erode the initial success. This prompted the government to remove price controls on vegetables in order to encourage local vegetable production. In addition, the government constructed a series of micro dams to alleviate water problems and reduce production costs of the small vegetable farmers.

In the mid-1980s, renewed efforts at increasing agricultural production, included, the EDF-funded Livestock Project, Antigua & Barbuda Meats Ltd, a corn production project and the Roydan water melon farm development. A few crops, specifically, broccoli, cabbage, carrot, cauliflower, onion, peanut, pumpkin, hot pepper, sweet pepper, sweet potato and tomato were encouraged under the diversification programme. Research efforts also concentrated on varietal and seed improvement of pepper, papaw, hot season tomatoes, Antigua Black pineapple, honey dew

water melon and other crops. In the livestock sector, grazing trials and improvements to the genetic stock of cattle were also undertaken.

The agricultural diversification programme of Antigua & Barbuda received assistance from the OECS Agricultural Diversification and Coordinating Unit (ADCU). Much of the emphasis of the ADCU's programme was on the identification of suitable extra-regional markets opportunities. Support was also provided for joint promotions activities, including exhibitions in main European and North American markets. Participation in regional exhibitions also formed an important element in efforts to diversify markets for the limited volumes of the agricultural commodities produced in Antigua & Barbuda

It was anticipated that increasing the production of target crops would enhance the year-round availability in local markets, as well as facilitate exports of surplus output. In terms of availability of surplus for exports, the level of success was generally unsatisfactory and only a small, and irregular supply of hot peppers were exported to extra-regional markets. The limited success of the agricultural diversification was partially due to the inability of the agricultural sector to compete with the tourism sector with respect to wage rates. Consequently, agricultural production declined and the imports of relatively inexpensive agricultural commodities escalated.

#### Commodity and Sub-Sector Performance Crop Production

##### □ Cotton

The sea island variety cotton was a leading agricultural industry until the mid-late 1970s. Sea island cotton was produced exclusively for export to Japan. Within recent times, the level of cotton production, as well as the product quality experienced continued declined from the trend set in the 1980s. In spite of increased resource allocation for research and development in cotton production, there was very little expansion in the levels of production over the past decade. Low and declining productivity, loss of area under cultivation and increased competition, were factors which

contributed to the demise of the cotton plantation system.

##### □ Fruit Production

The soil and climatic conditions of Antigua & Barbuda do not facilitate a strong fruit tree crop base. Thus, fruit production in Antigua & Barbuda have traditionally concentrated on water melon, pineapple and pawpaw. Within recent years, production capabilities of these fruits was greatly improved through the development of the irrigation systems and water works.

Water melon, in particular, was extensively cultivated. Approximately 1,000 acres were cultivated under drip irrigation on the Roydan Melon farm. In 1990, water melon production was estimated at 360 thousand. The Roydan farm was also the main exporter of a very limited basket of agricultural commodities from Antigua & Barbuda. By 1995, however, watermelon production had virtually disappeared (Table 3). The decline in water melon production was primarily associated with the cessation of the Roydan farm in 1993. During its brief period of operation, great success was achieved in the export of water melons to the US and European markets.

**Table 3**  
Antigua & Barbuda - Selected Crop Production

'000 kgs	1991	1992	1993	1994	1995
Melon	52.9	22.9	9.6	0.0	8.0
<b>Vegetable</b>					
Bean green	5.7	18.1	19.8	1.7	5.3
Cabbage	5.5	4.3	13.8	15.9	14.6
Carrot	23.4	38.5	55.0	45.3	28.7
Cucumber	29.9	38.6	31.4	13.0	18.0
Eggplant	16.9	15.1	16.1	9.9	8.4
Sweetpepper	10.5	14.7	16.2	5.4	4.7
Squash	42.5	50.0	70.0	45.6	20.2
Pumpkin	34.8	41.4	66.2	79.0	9.8
Tomato	25.3	38.4	80.0	37.1	31.5
Onion	17.5	50.5	34.9	39.4	33.2
Sweet potato	39.8	86.0	61.4	36.5	33.8

Source: PROMIS, Ministry of Agriculture.

Pineapple was also widely cultivated in commercial quantities by a number of farmers. Although the production of avocado, oranges, grapefruit, lemon, limes, soursop, cherries and tamarind was encouraged, the total area cultivated remained negligible.

#### □ *Vegetables & Food Crops*

The bulk of vegetable and food crop production in Antigua & Barbuda continues to be rain-fed. Within recent times, the adoption of irrigation technology (mainly overhead sprinklers), facilitated the expansion of vegetables and food crops. In spite of the adoption of irrigation, crop production continued to be highly seasonal, with supplies greatest between January - May, which coincided with the period of highest rainfall.

While the varieties of vegetables cultivated have increased, those traditionally grown were cabbage, carrots, cotton, butternut, cucumber, egg plants, onions, sweet pepper, pumpkin, squash and tomato. Broccoli and cauliflower production was a more recent feature of the cropping system. Small, part-time farmers have opted for a more diverse and extensive vegetable cultivation regime, compared to the selective/intensive cropping patterns of the semi-commercial farmers.

Root crop production also occurred on very small holdings, using basic production techniques. The commonly grown root crops have been sweet potato, yam and cassava. Root crop production remains heavily labour intensive and labour shortages severely constrained small farmer profitability.

Vegetables and food crops tend to be consumed locally. The output from the commercial and medium sized farms was generally geared to satisfying the demands of supermarkets and hotels. Despite the inaccuracy of production data, it was noted that compared to a decade ago, the level of crop production generally declined over the 1991-1995 period (Table 3).

Between 1994-1995, the level of crop production was estimated at approximately 1/4th of output levels in 1990, and half of output levels in 1992-1993. Pumpkin production, in particular, declined drastically in 1995. The sharp declines in 1995 were generally associated more with the damaging effects of the hurricane, than with a sudden decline in activity in the sector.

The performance of vegetable production was mixed. The introduction of the hot season variety of tomato was fairly successful in terms of year round availability on the local market. In spite of this achievement, annual production continued to be low, due mainly to the small production base. The scale of cabbage production appeared to have increased, from an average of 5,000 kgs in 1991-1992 to about 14,000 kgs in the 1993-1995 period. This increase was partially attributable to the use of improved varieties, the inclusion of BTs and the adoption of Integrated Pest Management practices.

The level of onion production, which increased by 189% in 1992 from 1991, stabilised at around 35 thousand kgs per annum between 1991-1995. Onion was produced by a small core of farmers who experienced some success in improving yields and in regulating production to minimise over-supply. The absence of onion drying facilities was a critical constraint to onion production in Antigua & Barbuda. The acquisition of a solar dryer by the Central Marketing Corporation (CMC) somewhat, reduced the extent of this problem.

Based on available crop production statistics, there appeared to have been relatively less success in expanding cultivation of lettuce and (seasoning) herbs. This may have been due to the fact that the farmers involved in such production did so on a part-time basis. In addition, the level of organised technical support to this group of producers was noticeably lacking. However, the net income earned from the enterprise appeared to have been sufficient to encourage continued production.

#### **Livestock Production**

Livestock production in Antigua & Barbuda continues to be a small scale, part-time activity. Over the years, attempts to improve the commercial viability of the small livestock enterprises included the establishment of communal grazing areas, the development of model farms or Livestock Development Units (LDU) and forage legume trials aimed at selecting an appropriate food source for local livestock. The demise of the LDUs was a

serious set back to the success of the forage legume trials among livestock farmers. Other less successful attempts included the heifer replacement programme and the Antigua Meats project. The implementation of a breeding programme and the EDF-funded model-farm livestock development project achieved some success in improving the conditions for livestock farming in Antigua & Barbuda.

Cattle was reared primarily for local beef consumption. About 25% of the land-less farmers graze their stock on open land. A large proportion of the cattle stock is old and underweight, leading to low productivity. A 1995 survey indicated a cattle population of 7,580 heads (Table 4). Sheep and goat farmers, on the other hand, have demonstrated willingness to improve husbandry practices. In this effort, a few farmers have imported quality breeding stock as a means of improving the genetic quality of their herds. Improvements in systematic feeding patterns, attention to animal health and improved management also contributed to small ruminant production in Antigua & Barbuda.

**Table 4**  
Antigua & Barbuda, Livestock population

	1984	1991	1994	1995
Cattle	9,992	14,000	11,000	7,580
Sheep	5,619	6,000	6,000	10,755
Goats	9,319	9,000	9,000	9,546
Pigs	2,425	5,000	5,000	3,034
Poultry: Broiler	N.A.	N.A.	N.A.	706
Layer	19,554	26,000	26,000	42,000
Other	500	1,000	1,000	17,459

Source: 1984 = Agricultural Census Report 1984.  
1991-95 = Veterinary and Livestock Division

While a fair amount of goat meat and mutton is imported, demand for the local product tends to be high. Slaughtering was generally undertaken at farm or at the home. Super markets and hotels also make direct purchases of local goat meat from selected farmers. Poultry meat production occurred primarily for consumption within a relatively small segment of the local market. Virtually all of the poultry meat requirements were imported into Antigua & Barbuda.

Constraints to the poultry industry were mainly due to the fact that all inputs, including baby chicks, medication, manufactured feed and packaging material, were imported. The high freight charges and other costs further increased the landed cost of inputs. In addition, poultry farmers were required to pay commercial rates for the use of electricity and water in the enterprises. While the use of an improved genetic chick was preferable, the high temperatures of Antigua & Barbuda often led to heat stress, low productivity and a high mortality rate among imported breeds.

The area in which the twin-island state appeared to have made the greatest progress was in the table egg production. Table egg production occurred year-round and satisfied approximately 85-95% of domestic demand. One farm alone, accounted for 80% of total supplies. The level of demand for local eggs, however, fluctuated during the year, and has had to compete with table egg imports for the tourism industry. The poor communication regarding availability of domestic supplies and the high propensity towards imports led to gluts on the market, particularly during the low tourist season.

#### Fisheries

Traditionally, the fishing industry has been a significant component of the agricultural sector. Within the last five years the fisheries sub-sector has established itself as the major earner of foreign exchange in agriculture. The industry also provided, on average, direct employment for about 800 persons, including fishermen, processors, middlemen and vendors. This represented approximately 2.9% of the labour force of Antigua & Barbuda.

The fishing industry is based entirely on marine fisheries. Following unsuccessful attempts at salt water shrimp, spiny lobster and spiny crab production in the 1980, commercial aquaculture was discontinued. Marine fisheries exploit a large shelf area of over 1,000 miles which supports a fairly substantial volume of demersal fish and crustacea.

A large proportion of the fishing industry remains artisanal, using rudimentary manual-based techniques. Efforts at industry modernisation have succeeded in increasing the use of engine-powered boats and new fishing methods and gear. This transition resulted from training programmes implemented by the Fisheries Division, the provision of incentives to adopt modern equipment and techniques and the upgrading of fish landing site and marketing facilities.

The commercial fishing sector comprised approximately 300 open wooden boats, ranging from 15-22 feet, and some 40 sloops of 18-55 feet. The larger vessels remain as long as one week at sea and rely on fish traps, lines and nets for landing fish. Many vessels have been equipped with modern navigational and fish finding equipment - echo sounders, radar, Global Positioning Equipment (GPS) etc. Many fishermen are experimenting with the new method of vertical and long lines.

The Antigua Fisheries Ltd. has been successfully providing fishermen with supplies and inputs and also purchasing part of their catch, while the Fisheries Division has been involved in administration, training, technology transfer and support. Privately operated fish processing and marketing units have also emerged to meet the needs of the consumer. Efforts were also placed on improving the quality of the product in order to satisfy international standards.

In spite of the limited fish landing statistics, indications were that fish landings within the last five years, were below the levels recorded for the previous five-year period. The decline in fish landing is clearly indicated in Table 5.

Table 5

	Fish Landing & Exports				
	1991	1992	1993	1994	1995
<b>Total, '000lb</b>	<b>3,298</b>	<b>3,766</b>	na	<b>1,387</b>	<b>1,435</b>
Fish	2,981	3,418		1,072	1,090
Conch	32.6	20.8		152.3	112.4
Lobster	284.3	327.8		162.6	232.6
Exports 000lbs	216.5	79.7	na	253.6	na

Source:

Total fish landing for 1995 was reportedly less than half of that recorded for 1991, which in turn was reportedly less than a tenth of what was recorded in the previous year (1990). It must be cautioned, however, that the data presented, do not completely account for total fish landings in Antigua & Barbuda. Fish landing statistics suffer from an inadequate system for the annual consolidation of landing and marketing data. The data thus presented should be used more as an indicator of the major species landed, than as an indicator of the volume of landings over the 1991-1995 period.

#### Agro-Processing

In the early 1970s, agro industrial development was encouraged through the establishment of edible oils and arrowroot processing plants, a cornmeal factory, and the establishment of a livestock feed production unit. By the early 1980s however, the agro-industrial component of the programme had collapsed due to lack of sufficient supplies and high costs of production.

The experiences of the initial agro-industrial enterprises suggested that agro-industry in Antigua & Barbuda should appropriately target small-medium sized industries capable of producing a range of products. Supply constraints of the Antigua & Barbuda agricultural sector, limit the viability of large agro-industrial enterprises. Commodities which offer opportunities for small-medium scale agro-processing include onion, tomato, pineapple, pumpkin, fish and leather products. Despite the fact that there was no significant expansion in hot pepper production, the existing production levels appeared to have been sufficient to support the small local hot sauce industry. Other small-scale agro-industrial activity included pineapple jam production, as well as the small, but growing gift packages of jam and hot sauces, particularly targeted at the tourist market.

#### Constraints to Agriculture

Agriculture does not constitute an important economic sector in Antigua & Barbuda. The sectors' response to the various attempts at the organisation and development of domestic

production capabilities of a narrow basket of products, has been largely disappointing. Over the last five years, the crops targeted for development under the import substitution and export programmes have achieved mixed and limited results.

Unlike the other countries of the region, Antigua & Barbuda's agricultural sector is under-developed, with the level of output sufficient to satisfy only a small proportion of domestic requirements. The range of constraints and deficiencies to the development of the agri-food sector in the Caribbean, which are also applicable Antigua & Barbuda 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, the problems of land availability and suitability, as well as water problems are particularly debilitating for Antigua & Barbuda's agricultural sector. The soil and climatic conditions present severe limitations in terms of options for viable crop production.

The physical constraint, as well as the structural bias against the agriculture sector, have forced the farming community to concentrate on the production of short-term crops, particularly those in demand by the tourist industry. Rain-fed farming, which occurs for only six to nine months out of the year, allows mainly for short term fruits and vegetable production. The adoption of irrigation technology (mainly overhead sprinklers) has however, improved the conditions of short term crop production.

Low productivity and declining competitiveness is 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



agricultural production enterprises, including livestock production. The persistence of these problems in the 1990s are symptomatic of the low uptake of scientific and technological innovations in the sector.

In addition the nature of farming in Antigua & Barbuda, i.e., part-time farmers operating on small subsistent holdings, does not auger well for the sustained development of agriculture. Many of the part-time operators, supplement low and irregular farm income with employment in the unskilled/trades sector of the economy. Most of the small farming population have adopted mixed farming as a

means of compensating for the seasonal income of crop farming.

In addition to the physical constraints and the deficiencies at the domestic level, the agriculture sector must now contend with the changing rules of international agricultural trade. These developments highlight the need to urgently address the domestic deficiencies if agricultural industries are to remain viable in the post-1997 period. Agriculture is no longer a protected industry and the intensification of import competition on the domestic market will pose serious challenges for the domestic food production in Antigua & Barbuda.

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### **Agriculture in Antigua & Barbuda - Prospects**

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#### **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 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).<sup>1</sup>

- **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

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<sup>1</sup> "The Trading System After the Uruguay Round" John Whalley and Colleen Hamilton, Institute for International Economics, Washington DC, July 1996.

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 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 Antigua & Barbuda, 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 Antigua & Barbuda, as in the other Eastern Caribbean countries. 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.

The Mini-WTO Agriculture negotiations, which are due to begin in 1999 will also further reduce the remaining protection afforded the agriculture sector. It is very likely that this Round will place additional pressure in 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 underway for the review of the EU's Common Agriculture Policy (CAP). It is expected that these the outcome of negotiations will impact on the EU's ACP trade preference regime and on the special commodity protocols in particular.

Antigua & Barbuda, in particular, is a relatively insignificant player in international trade generally, and in particular, agricultural trade. The outlook for the agriculture sector in Antigua & Barbuda is thus conditioned on the sector's ability to successfully compete for

domestic resources, particularly labour, and to generate a level of acceptable returns to the farmer. In spite of the physical constraints, structural constraints, such as high wage rates in the service sector, lack of clear sectoral policies and an apparent anti-agricultural incentives and support system, have had far reaching, adverse impacts on the sector's ability to effectively compete for domestic resources.

The lack of development projects in the agricultural sector underscores its low ranking among the economic sectors, particularly among the service-oriented sectors. The Government has stated its objective to raise the level of the agricultural sector's contribution to economic growth and employment generation. However, the ability of the sector to satisfactorily meet this objective will require the identification of feasible proposals to overcome the numerous bottlenecks to agricultural activity in Antigua & Barbuda.

Unless an increased number of farmers can be encouraged to engage in commercial production, the overall level of agricultural output in Antigua & Barbuda will remain low. Continued attention to product quality and control over rising costs of production will enable local production to compete with the imported products.

The rapid advances in science and technology offer definite possibilities for the Antigua & Barbuda to successfully specialise in the production of a select range of agricultural crops. This requires a high level of investment in research development and transfer, infrastructure and institutional development. The process of agricultural development in Antigua & Barbuda, however, will ultimately depend, and be guided by the definition of clear policies and objectives.

#### **Guidelines for Policy Formulation**

In spite of its low and declining share in GDP, agriculture remains an important activity in Antigua & Barbuda, particularly in the non-tourist rural communities. Policy makers in Antigua & Barbuda, in particular, are thus faced with the twin tasks of increasing

productivity and competitiveness of domestic food production, while simultaneously keeping the adjustment costs relatively small so as to minimise the negative impact on resource constrained groups.

*Competitiveness in agriculture can be viewed as a dynamic economic concept inherent to globalisation, that takes into account the need to adjust to the macroeconomic 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.

Policy decision making for Caribbean Agriculture, including Antigua & Barbuda, 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 and 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.

This implies the extension of institutional capabilities which enables the development of mechanisms to secure access for local output to mainstream food distribution centres, which consolidates linkages with the hospitality sector, which provides quality-enhancing marketing services (eg. grading and packaging) and





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