Agricultural development and employment in the Caribbean: challenges and future prospects

by

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1. Introduction

This Report deals with the issue of agricultural development and employment in the Caribbean. In particular, this Report will attempt to assess whether, in the future, the agricultural sector can be expected to assist in increasing employment or reducing unemployment in the Caribbean.

Area of Focus of the Study

While this study will be relevant to the wider Caribbean, this Report will focus on the states of The Caribbean Community (CARICOM) for two major reasons. In the first instance, the countries of CARICOM (including Haiti and Guyana) are among the poorest in the Caribbean and thus the problems of agricultural development and employment could be expected to be most severe in CARICOM states. These countries would have the least amount of resources to impact these problems.

Secondly, many CARICOM states are heavily dependent on export agriculture, which is under threat by the wave of trade liberalization that has been consequent on the Uruguay Round of the General Agreement on Tariffs and Trade (GATT).

Approach of the Study

The study proceeded via a review of the relevant literature and also the development of a database to link together the labour situation and agricultural development in the Caribbean.

In light of this approach, the structure of this Report is as follows:

In the next section the analytical framework for the Report will be presented. This will concentrate on a discussion of the factors affecting the rate of agricultural development in the Caribbean.

Section 3 will then give a review of the state of agriculture in the region. This review will focus on the performance of the traditional and non-traditional export industries as well as the industries geared towards domestic food production including the livestock sub-sector.

Section 4 then analyses the strategies that are currently being recommended to bring about agricultural development in the region. In this regard, a recent study of agricultural strategies by two economists of the Caribbean Development Bank (CDB) will be reviewed.

This is followed in Section 5 by a review of constraints and obstacles to the development of the agricultural sector in the region. Identification of these obstacles and constraints
has been part of the focus of the recent Jagdeo initiative\(^1\) to speed up the implementation of the Regional Transformation Programme for CARICOM agriculture. The results of this initiative will be presented. This will be preceded by a general analysis of constraints facing agricultural development worldwide.

Section 6 will examine the implications of the different strategies for Caribbean agricultural development for labour employment and the labour market in the Caribbean.

Section 7 then presents the conclusions and recommendations that result from this study.

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\(^1\) The ‘Jagdeo Initiative’ is a regional effort led by President Bharrat Jagdeo of Guyana to develop a framework for repositioning agriculture in the region.
2. Factors Affecting the Rate of Agricultural Development in the Caribbean

The ability of the agricultural sector in the Caribbean to employ additional labour (or whether indeed the sector employs less labour) depends on the rate of agricultural development. Agricultural development is concerned with the transformation of the agricultural sector to increase not only agricultural output but the productivity or efficiency with which that output is produced to increase the competitiveness of the sector. However, agricultural development depends not only on factors endogenous to the agricultural sector, but also exogenous factors from:

- the non-agricultural sectors (industrial and service sectors) of the domestic economy;
- regional economies; and
- economic conditions internationally.

The exogenous factors are first reviewed, followed by the endogenous factors.

A. Exogenous Factors

Food Security

The output of the agricultural sector is derived from the demand for food by the domestic population and foreigners who import our products. In this context therefore, factors that would tend to favour increased local consumption of domestically produced food would tend to promote agricultural development, as would factors tending to expand the level of exports of domestically produced agricultural products.

The Rome Declaration on World Food Security and the World Food Summit Plan of Action defined food security to exist when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. One of the policies to achieve food security is to promote the consumption of domestically produced foods in order to reduce the vulnerability of dependence on foreign sources. Such a policy would tend to favour domestic agricultural development.

Expansion of Non-Agricultural Sectors

Relatively stronger growth in the non-agricultural sectors of the economy can both draw away resources from the agricultural sector as well as provide sufficient funds for the

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2 Also the demand for fibre; however the production of fibre is relatively unimportant in the Caribbean context.
3 The so-called Dutch Disease phenomenon.
substitution of domestically produced food by imported products. Both of these factors will reduce the pace of domestic agricultural development.

**Population Growth**

Caribbean countries, like most developing countries, have been characterized by fairly high rates of population growth. One benefit of this population growth could be an expanded market for locally produced food, which would spur agricultural output.

However, in an effort to reduce the negative social consequences of high population growth such as high rural unemployment and social unrest, states in the region have been forced to expend substantial resources on expanded social infrastructure such as schools, hospitals and also in the creation of urban employment. This social expenditure, especially in the urban areas, has often been at the expense of investment in rural infrastructure and measures to increase agricultural productivity.

**Foreign Demand for Domestically Produced Agricultural Products**

A reduction in the external demand for domestically-produced agricultural products will retard the process of agricultural development in the Caribbean. Caribbean agricultural exports have depended on preferential market access in Europe and to a lesser extent in the United States (especially for sugar). In periods where such preferential markets offered high prices, such exports led to rapid growth of agricultural output and high labour employment in agriculture.

However, in the recent past with the greater liberalization of world trade, the levels of protection of these exports have been reduced substantially, greatly reducing the prices paid for these products and weakening the agriculture sectors of the Caribbean. Also, the European economies have been growing very slowly so this has meant little expansion of the demand for export commodities from the Caribbean, even at the greatly reduced prices.

**B. Endogenous Factors**

**Human Resource Development in Agriculture**

Human capital improvement within the sector has affected the rate of agricultural development in the Caribbean. The region has developed a cadre of skilled technocrats in agriculture, through a number of education and training institutes, led by the Faculty (now School) of Agriculture of the University of the West Indies, St Augustine, Trinidad and Tobago. These institutes also include the Jamaica School of Agriculture and the

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4 The preferential market for sugar in the United States has declined in importance in recent years.
College of Jamaica, the Eastern Caribbean Institute of Agriculture and Forestry in Trinidad and Tobago and indeed a large number of other institutions in Jamaica, Belize, Barbados, St Lucia, Dominica and the Bahamas.

However, the graduates of these institutes have largely been employed in the public and teaching services and related extension services in Caribbean states and only a very small percentage of them have actually gone into farming. Thus, there is a shortage of skilled human resource in the practice of agriculture in the CARICOM states, with the majority of the farmers unable to benefit from the expanding areas of information and communication technology.

Extension services geared to education and training of the majority of the farmers do generally exist in Caribbean agriculture. However, the low extension officer to farmer ratios and the ad hoc and unsustained nature of training projects have limited the effectiveness of these extension services.

**Access to Land**

Access to land has been a major factor affecting agricultural development in the region. In the first instance, the small size of islands and the high population levels have led to low ratios of land per agricultural worker in several islands. Then there has always been the problem of land tenure in the Caribbean. There is a skewed pattern of land ownership, with a small number of large holders owning most of the land best suited to farming and, on the other hand, large numbers of the smallest farmers having access to only a small percentage of the land.

Recent data on the structure of the agricultural sectors of the Caribbean are limited, but the very recent Census of Agriculture in Trinidad and Tobago has provided very up-to-date information on this nation. Table 1 shows that for Trinidad and Tobago the 16,513 farm holdings below 5 acres comprised 87.13% of all farm holdings (totalling 18,951) but occupied only 30.4% (25,840 hectares) of the total land in agriculture (84,990 hectares). A similar pattern is expected to hold for the rest of the Caribbean.
Table 1. Number and Area of All Holdings by Size, Group and Type of Organization of Holding

<table>
<thead>
<tr>
<th>Size Group (Hectares)</th>
<th>Total</th>
<th>Individual/ Household/ Sole Proprietor</th>
<th>Joint Partnership</th>
<th>Co-operative Society</th>
<th>Private Company</th>
<th>State Enterprise</th>
<th>Government</th>
<th>Other</th>
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<td>18 591</td>
<td>300</td>
<td>1</td>
<td>34</td>
<td>2</td>
<td>19</td>
<td>4</td>
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<td>Number of Holdings</td>
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<td>18 591</td>
<td>300</td>
<td>1</td>
<td>34</td>
<td>2</td>
<td>19</td>
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<td>14.2</td>
<td>4 972.0</td>
<td>27 269.3</td>
<td>1 640.9</td>
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<td>4 144</td>
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<td>4 144</td>
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<td>1 &lt; 2</td>
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<td>3 396</td>
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<td>6 322</td>
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<td>-</td>
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<td>1 355.3</td>
<td>-</td>
<td>327.6</td>
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<td>286.6</td>
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<td>100 &lt; 200</td>
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<td>Area (Ha)</td>
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<td>559.3</td>
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<td>200 &lt; 500</td>
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<td>-</td>
<td>6</td>
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<td>Area (Ha)</td>
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<td>-</td>
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<tr>
<td>500 and Over</td>
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</table>

Source: 2004 Agricultural Census of Trinidad and Tobago, CSO, Trinidad and Tobago, 2005 (un-edited table)

In recent years, access to land for agriculture has been made more restrictive by the competing demands for land by other more productive sectors. In this regard, the demand for housing and tourism development sites has caused the price of land to rise to
very high levels in such tourist-oriented islands in the Caribbean like Tobago, the Bahamas, Barbados, and St Vincent and the Grenadines.

**Access to Water Resources**

Another factor that affects the rate of agricultural development in the Caribbean is the access to water resources. In the main, Caribbean agricultural output has been seasonal, in line with the seasonal rainfall pattern of a wet season and a dry season occupying approximately half of the year each. The dry season severely limits the output of annual crops in the absence of irrigation infrastructure and available water supplies. Even perennial crops are known to suffer detrimental effects from prolonged dry seasons. During the dry season, there is also the accompanying risk of forest and bush fires.

Investment in irrigation infrastructure including infrastructure for water conservation will therefore facilitate an expansion of agricultural production and productivity and is being promoted as a major strategy for agricultural development in the Caribbean.

**Environmental Degradation**

Land and water resources in Caribbean states have been severely degraded by poor management and utilization of the natural environment. The destruction of forests, in particular, has damaged water-sheds, leading to a reduction in the water supply and also to the loss of potential agricultural land area. Severe soil erosion characterizes several Caribbean states (especially Haiti). Also in several states, the reduction in water-sheds has also so reduced the water supply that the limited water available has to be reserved for the direct use of households, leading to severe shortages of water for agriculture, especially in the dry season that characterizes the Caribbean weather pattern.

**Institutions and Organizations**

Several organizations in the Caribbean have facilitated the development of the agricultural sector by at least temporarily promoting the growth of specific sectors. Mention can be made of the contribution of organizations like the Windward Islands Banana Growers Association (WINBAN) in banana development in the Windward Islands, the Coffee Marketing Board in Jamaica and its work in promoting and developing the Blue Mountain Coffee in Jamaica and the Cocoa and Coffee Industry Board (CCIB) that has maintained cocoa production in Trinidad and Tobago at economical and competitive levels, despite the pressures facing the sector in general in the Caribbean.

Private sector initiatives have also led to the growth of livestock industries in the Caribbean, albeit under a regime of protection. Such initiatives have seen the broiler industry emerge as one of the major agricultural industries in the Caribbean.
Development banks in the region have also been instrumental in making available to the sector large amounts of capital from local sources, as well as from donor countries, through the Caribbean Development Bank (CDB).
3. Review of the Agricultural Sector in the Caribbean

General Performance of the Agricultural Sector

In her review titled “State of Agriculture and Rural Life in the Caribbean”, Francis (2003) states that over the period 1968 to 2002, there was a declining share of GDP by the agricultural sector in Caribbean nations, as they transformed their economies from agriculture to service-led economies. For 2003, she reported that Belize, the Dominican Republic and Trinidad and Tobago reported annual growth in agriculture of 2% to 4%, while Jamaica recorded a growth rate of 5%. However, the rest of the countries in the region showed signs of stagnation or decline in the performance of their agricultural sectors, with Dominica, St Lucia and Grenada particularly noteworthy, as a consequence of the steady deterioration of their banana industries.

The sector continues to be a major employer of labour in the region, however. Figures for the percentage of the labour force employed in agriculture range from 8.5% for Trinidad and Tobago, to 30.5% in Belize and 60% in Haiti and between 20–40% in Dominica, Jamaica, St Vincent and the Grenadines, Guyana, Suriname, the Dominican Republic and St Lucia. The figure was less than 10% for Antigua and Barbuda, the Bahamas, Barbados and (as already stated) Trinidad and Tobago.

Traditional Export Agriculture

The Caribbean Regional Human Resource Development Programme for Economic Cooperation (CPEC) (2005) has provided a useful summary of the state of agriculture in the region. With respect to traditional export commodities, they report that over the last 150 years, traditional export crops (sugar, bananas, cocoa, and rice) have been major sources of foreign exchange earnings, employment, and social and economic stability in the CARICOM region. Within recent years, however, price volatility in commodity markets, together with the international policies of trade liberalization, have threatened and begun to erode trading arrangements for these traditional crops.

Because of the importance of traditional exports, their decline exerted a downward pull on the entire agricultural sector between 1991 and 2002. The general response across the region to these developments in the traditional agricultural export sector has been:

(1) to enhance the competitiveness of traditional systems through improvements in productivity and production efficiency;

(2) to differentiate the product mix within traditional systems; and

(3) to diversify production away from these traditional export crops into crops and commodities which are considered to have a competitive advantage in international niche markets - these new crops have included, *inter alia*, papaya, pineapple, mango, guava, sorrel, hot peppers, spices, herbs and root crops, and animal and fisheries products have
included shrimp, lobster, conch, tilapia, ornamental fish, and small ruminants (sheep and goats).

The major traditional agricultural export commodities will now be discussed in more detail.

1. Sugar

According to Francis (2003), market volatility occasioned by gradual lifting of preferential access has plunged the sugar industries into crisis. CPEC (2005) points out that an assessment of the export competitiveness of traditional commodities shows that only the sugar sectors in Guyana and Belize could evolve to be competitive at world prices.

The Caribbean is a comparatively high-cost producer of sugar, the bulk of which is exported largely to the European Union under the Sugar Protocol and the Special Preferential Sugar Quota. The recent World Trade Organization (WTO) ruling against the European Union (EU) sugar regime, in favour of the Brazil-led challenge, is the most recent issue that has prompted the radical proposals by the EU to reduce the preferential prices and has presented further problems for Caribbean sugar producers and escalated their ongoing battle to avoid complete collapse of their sugar industries. The removal of sugar subsidies could lead to considerable structural change with the rural poor incurring the bulk of the burden of adjustment. Programmes implemented to reduce costs and improve efficiencies have yielded limited and inconsistent benefits, so that it is unlikely that, under a liberalized regime, costs could be lowered in any meaningful way to enhance global competitiveness. (Francis, 2003).

As recently as September 30 2005, CARICOM leaders collectively rejected the EU’s sugar proposals and agreed on an Action Plan to tackle the region's opposition to the imminent EU sugar regime. They agreed to devise a common CARICOM position and plan, to counter the impact of the EU's proposals to cut preferential prices for sugar exports from CARICOM and other sugar producers in the African Caribbean Pacific Group of Countries (ACP). They stated that the EU proposals would entail a substantial reduction in the preferential sugar price in two phases over a three-year period, with effect from July 2005. Once uncontested, the proposals would result in a loss of US$180 million in revenue for sugar exporters in the first three years of its imposition, causing a recurring loss of US$90 million annually.

In the Action Plan, leaders agreed to initiate a policy of structured engagement with the EU and the European Commission to insist on the special legal status of the Sugar Protocol and to safeguard its benefits. They also agreed to the formulation of a common ACP policy with regard to the proposed changes.
2. **Bananas**

Francis (2003) contends that the constraints faced by the Caribbean banana industry centre on the challenge of achieving and benefiting from economies of scale. Since 1990, a substantial fall in banana prices (approximately 64% in real terms by 2000) and the rising production costs – due largely to increasingly stringent quality demands of the market- have resulted in the contraction of income and profitability. This challenge has been made more difficult by the historically low total factor productivity (TFP) growth in banana production in the Caribbean. In addition, she points out that the vulnerable small growers in the Caribbean, who may have benefited from productivity enhancing programmes supported through external funding, are now faced with falling market prices fuelled by an increasingly competitive banana purchasing system, dominated by large multinational companies.

In the case of bananas, according to CPEC (2005), it was determined that Belize, Jamaica and Suriname stood a chance at competing on the world market, and that St. Lucia and Grenada were unlikely to survive if banana preferences were lost, or if the steady deterioration in the banana industry continued, because of their inability to reduce costs or differentiate their bananas successfully. The presence of large companies dominating the industry in Belize, Jamaica and Suriname was cited as a key factor in influencing their potential success.

3. **Rice**

According to Francis (2003), Belize, Guyana and Suriname, the only commercial exporters in the region, have traditionally exported rice to the EU, United States and CARICOM preferential markets, and to the non-preferential markets in the non-CARICOM Caribbean, South and Central America and West Africa. According to Francis (2003), from the 1990’s, the performance of the rice industry in the region has generally been one of output and export expansion facilitated by industry deregulation and expanding investment in yield-enhancing innovations, especially water management.

In the case of rice, CPEC (2005) reports that analyses have indicated that none of the three major exporters in the region is likely to be competitive on the world market, and that Guyana had the greatest opportunities for selling its rice on the CARICOM market.

4. **Cocoa and Coffee**

From 1988 to 2004, coffee production in the Caribbean has seen a reduction of about 33%, from just over 150,000 (metric) tonnes in 1988 to close to 100,000 tonnes in 2004. The major producers remain the Dominican Republic (45%), Haiti (28%), Cuba (13%), Puerto Rico (10%) and Jamaica (3%). Trinidad and Tobago has recorded a major drop in production and is now producing less than 1%.
Low prices and the absence of any trading agreements have meant low prices for coffee, but in the main the production is competitive, with Jamaica’s coffee being one of the highest-priced in the world.

Cocoa production in the Caribbean moved from around 50,000 tonnes in the 1980’s (51,722 in 1988, for example) to a peak of 79,000 tonnes in 1996, but fell back to 54,785 tonnes by 2004. The Dominican Republic dominates the Caribbean’s production, producing about 82% of the cocoa in 2004. Haiti produces about 8%, Cuba 3%, Trinidad and Tobago about 2.4% and Jamaica and Grenada about 2% each.

Most of the production in the region is of fine-flavour cocoa, which commands premium prices on the international market, with Trinidad and Tobago usually commanding the highest prices. Thus production in Trinidad and Tobago and Jamaica is reported by CPEC (2005) to be internationally competitive.

5. **Other Traditional Exports**

The Inter-American Institute for Cooperation on Agriculture (IICA) Caribbean Annual Report 2004, (IICA, 2005) reports that in terms of other traditional exports, nutmeg in Grenada continued to battle decreasing levels of production efficiency in the context of increasing competition in the global commodity market. The passage of Hurricane Ivan on September 7, 2004, which left an estimated 90% of nutmeg trees uprooted, was expected to have serious implications for the Grenada Cooperative Nutmeg Association’s (GCNA) development plans to add value through the production of manufactured downstream products (myristic acid, trimyristin, nutmeg grease and nutmeg soap).

Citrus also faces its share of challenges as the prospect of deeper regional integration would allow for increased access to CARICOM countries of lower-cost citrus from the Dominican Republic and Cuba. The Dominican Republic has already started to export duty free citrus to Barbados under the trade pact.

6. **Non-Traditional Agricultural Exports**

One of the major problems in assessing the performance of the non-traditional exports in CARICOM is the absence of formal data, surveys and studies to quantify the size of these exports. However, the IICA Caribbean Annual Report 2004, (IICA, 2005) reports that the performance of these non-traditional exports continued to be “mixed” in 2004. IICA reported that hot peppers, mangoes, citrus and avocados featured prominently in the non-traditional export mix, largely to extra-regional markets.

For some countries, non-traditional exports expanded, as was the situation for Grenada and Guyana, with Canada featuring as a major trading partner, particularly for mangoes from Guyana. For Guyana, organic heart-of-palm and organic pineapples to European destinations continued to improve. “However, for several countries, the performance of non-traditional agriculture was still a long way off from filling the vacuum created by declining traditional exports.” (IICA, 2005).
Another assessment of the performance of non-traditional exports from the Caribbean has been provided by CPEC (2005). CPEC reports that various efforts at diversification into non-traditional commodities have led to the growth of fresh produce exports, and an agro-processing sector, largely comprised of a range of small and medium-sized companies. Fresh produce exports comprise a range of indigenous fruits (mango, golden apple, pineapple, papaya, guinep, coconut, plum) and vegetable and root crops (hot peppers, breadfruit, plantain, sweet potatoes, yam, and aroids). Agro-processed products include pepper sauces, condiments, seasonings, jams, jellies, syrups, preserves, Caribbean foods and specialties such as cassava bammie, ackee, jerk products, rum cakes, and traditional confectionery and ethno-botanic products.

CPEC argues that non-traditional agricultural exports assist the economies of the region through foreign exchange earnings, employment, backward linkages to the productive sector, forward linkages into the distributive and tourism sectors, and overall social and economic stability, particularly in rural areas. However, it states that the sustainability of these enterprises in fully liberalized markets is hampered by problems of scale, supply of inputs, access to technology and technical expertise, language barriers, low production efficiencies, high production and marketing costs, unreliable and high-cost transportation, and ineffective market penetration.

CPEC also states that the focus of non-traditional agriculture on high-valued, niche commodities, targeted at specific markets, is consistent with the recommendations of numerous studies conducted within recent years on the state of competitiveness of CARICOM agriculture. The opportunities for a sustainable, competitive sector all point to product differentiation with a focus on health, ethnic and tourist markets, and to the need for effective public/private sector partnerships to overcome constraints. It states that there is also consensus that these constraints, if addressed from a regional perspective, have a much greater chance of having the desired impact on the survival and long-term sustainability of agriculture and agro-processing. This issue of non-traditional exports as a strategy for long-term development of Caribbean agriculture is taken up in the next section.

6. Fisheries

IICA (2005) reports that, except for Guyana, Suriname and the Bahamas, the fisheries sub-sector in the Caribbean remain a relatively small part of the agricultural export sector. Guyana and Suriname are major exporters of mainly shrimp and other seafood products to the EU and US markets. For Guyana, during the first half of 2004, fish and prawn catches increased by 19.4% and 14.7% respectively, while shrimp and other products declined.

Francis (2003) contends that it is the general opinion that the Caribbean is over-fished and that returns on fishing efforts are diminishing. IICA (2005) further states that “…aquaculture has emerged as an area of significant emphasis within the agricultural diversification and rural development strategies in several Caribbean countries as concerns with the over-exploitation of marine fisheries resources escalate.”
Belize’s aquaculture industry provides a good illustration of the growth of this industry in certain CARICOM states. This industry is described in Appendix 1. Here it is seen that while production expanded sharply from 189 thousand pounds in 1990 to 15.9 million pounds in 2003 and while export earnings increased from Bz $1.8 million in 1990 to Bz $91.8 million in 2003, there has been a drop in the average price of these exports from Bz $9.52 per pound in 1990 to Bz $5.77 in 2003. This price was expected to drop further to Bz $4.70 in 2004. This fall in price has been attributed to competition from Asian producers.

Francis also states that the increasing food safety-based regulations and standards of the marine-based fisheries industry have adversely affected some countries. The general inability of the fisheries export sector to comply with the required standards has resulted in a significant decline in exports to the EU particularly for Antigua and Barbuda. Antigua and Barbuda has the added challenge of trade sanctions (for conch) slapped on it in 1999 due to its failure to meet reporting obligations and to enact the Convention on the International Trade in Endangered Species and Wildlife Flora and Fauna (CITES) enabling legislation required as part of its accession to CITES. This Convention seeks to protect certain endangered species from overexploitation by means of a system of trade permits. These trade sanctions have had dire consequences for Barbuda where 26% of the population is financially dependent on this fishery.

Trinidad and Tobago also lost its market for fish products in the EU, as a consequence of the country’s inability to satisfy the EU standards (Francis, 2003). In commenting on the fishing industry in Trinidad and Tobago the Food and Agriculture Organization (FAO) Fishery Country Profile (FAO, 2000) states that Trinidad and Tobago’s export market is predominantly shrimp and other high-value species such as tunas, snappers, kingfish, dolphin and flying fish, in both fresh and frozen forms, to the markets of North America (Canada and USA) and the Caribbean. The profile also states that “exports to the European Union have been suspended pending possible Third Country status for this market.” (FAO, 2000).

**Production for Domestic/Regionally Consumed Food**

The IICA Caribbean Annual Report 2004 (IICA, 2005) reports extensively on the performance of the sub-sector of regional agricultural production for regional food consumption. IICA prefaces its comments by pointing out the “absence of formal surveys and studies to quantify the size of the informal domestic/regional food system.” However, it states that even in the face of such data constraints there are indications that suggest a continued resilience and growth in the domestic food sector in several countries.

For example, in Grenada, growth was facilitated through support provided under the Government’s Food Security programme. St. Lucia reported continued vibrancy in sales of locally produced fresh foods, with the small but steady growth in sales to hotels, particularly the Sandals Resorts of St. Lucia. The situation was similar in Barbados, with
reports of increased trade of meats (poultry, pork and lamb), fresh fruits and vegetables on the local market through the supermarket trade, and to a lesser extent, with the tourism sector. However, production of tomatoes, eddoes, hot peppers and pigeon peas declined.

In St. Kitts and Nevis, pineapple production doubled over its 2003 level, with small increases in the production of cabbage, sweet pepper, white potato and peanut. This performance was attributed in part to the accelerated thrust of the Government to develop non-sugar agriculture as part of its economic diversification strategy. Nevertheless, in terms of domestic food supplies, generally, the level of output in the region remained comparatively low when compared to the domestic demand.

IICA (2005) reports that Trinidad and Tobago recorded increased production of vegetable and food crops. Also the National Agricultural Marketing Development Company (NAMDEVCO) of Trinidad and Tobago reported an 81% increase in the exports of locally produced fresh produce to Barbados from 1,189,812 lbs in 2003 to 2,163,959 lbs in 2004. This increased trade was facilitated by the establishment of trade protocols for fresh produce exports, with a list of six popular commodities also cleared for exports to Antigua. This also suggests that intra-regional trade in food products remains relatively dynamic, albeit generally ad hoc, which makes such trade extremely vulnerable to relative price changes and weather-induced supply disruption.

IICA (2005) also points out that growth in animal products was an important source of food security in several countries. In 2004, the poultry and egg and pork industries generally outperformed other livestock industries in most producing countries. This was the situation in Barbados, Guyana, St. Lucia and Trinidad and Tobago. The improved performance of poultry in these countries reflected the high domestic demand for poultry products and for Guyana, in particular, the impact of additional large-scale producers in the industry. While demand for poultry remained high in most countries, the stagnating and/or declining performance of domestic industries encouraged an increased reliance on imports. For example, this import dependence has driven the thrust to enhance local poultry production in several countries, including the Bahamas where in 2004, efforts to revitalize domestic broiler meat production led to the establishment of a 16,000 sq. ft. computerized tunnel-ventilated broiler facility, as a demonstration model to be replicated, and to eventually replace the traditional methods of production. Similarly, a national production programme was developed in the Bahamas to expand and improve mutton production from an estimated 130,000 lbs in order to satisfy a projected demand of over four million pounds annually for mutton.

Within the beef sub-sector for the Caribbean, St. Kitts and Nevis showed significant progress. Beef production registered its fourth consecutive year of growth, increasing by 46%, from 83,200 kg in 2003 to 121,700 kg in 2004. This growth was spurred by the introduction of the beef marketing initiative in September 2001 and the production of boneless beef. Currently, 90% of the demand for boneless beef, ground beef and beef burgers is being met through local production.
In most Caribbean countries a substantial amount of the landings of the artisanal fishery, especially the lower-value species, is consumed locally in the fresh state. For example in Trinidad, the Port of Spain Wholesale Market is the main hub of activity, where landings from many sites throughout the island are taken to auction, before entering the retail trade. (FAO, 2000)

Smaller food processing enterprises in the Caribbean focus on production of jams, jellies, sauces and candied fruits and vegetables. IICA (2005) points out that there is a renewed interest in dehydrated products using a range of locally produced fruits and vegetables, as discussions in a post-hurricane environment raised the issue of food stockpiling for immediate food relief. The number of small, home- and community-based agro-processing units also showed an increase, particularly in the rural areas, such as in St. Lucia. This was accompanied by the increased prominence on food security issues and Small Business Development Companies widening their portfolios to engage in active promotion and marketing of their services.

Finally, IICA (2005) also linked domestic food production in the Caribbean to the decline of traditional export agriculture. It stated that given the urgency to revitalize agriculture as a major vehicle for stimulating economic activity in rural areas, the promotion of micro and small rural-based processing enterprises formed a critical element of rural and agricultural development plans in several Caribbean countries, particularly those struggling with the demise of traditional export industries. As agriculture declined, so too did the situation in rural areas, with agriculture and rural development plans working in tandem to revitalize agriculture and stimulate non-farm enterprises in rural areas. Activities such as small-scale rural industrial processing of agricultural and forestry products and promotion of linkages with the other sectors through various cooperation activities, notably rural-tourism, were promoted in virtually all countries. Increased focus was also placed on generating real employment and income earning opportunities for women in agricultural diversification programmes (such as flowers, herbs, ornamentals, organic vegetable production) and small businesses generally.
4. Strategies for agricultural development in the Caribbean

Introduction

Given the review of the recent performance of the agricultural sector in the Caribbean, attention now turns to a review of strategies that have been proposed for the development of this sector. In this section we will concentrate on strategies endogenous to the agricultural sector in the sense that the strategies depend to a greater degree on factors within the agricultural sector itself rather than factors within other sectors.

In a recent article, the Director General of IICA, Chelston Brathwaite (2005), outlined a general set of strategies for Caribbean agriculture. He stated that there are several global challenges for agriculture in the Caribbean in the future. Among these are:

- the need to adjust to the liberalization of economies in the global world;
- diversification of the agricultural economic base from the primary traditional crop production;
- preservation of the environment;
- the need to become internationally competitive; and
- the need to produce more jobs.

He stated that the small economies of the region, which are struggling with the twin challenges of the elimination of poverty and the promotion of sustainable economic development, must be assisted in their efforts to integrate into the global economy.

Based on this scenario he outlined the strategic directions for Caribbean agriculture as follows:

In our view, the pillars of this reactivation (of Caribbean agriculture) must be based on a commitment to diversify the sector, to promote food security and to develop effective linkages between agriculture and tourism in those countries where tourism is a key component of the economy. The current situation with respect to hurricane and natural disasters as it affects the agricultural sector (also) requires a regional response mechanism… (Braithwaite, 2005)

One of the most comprehensive and interesting analyses of the general set of strategies usually advocated for agricultural development in the Caribbean has been by Kendall and Petracco (2003). They stated that the aim of their paper was to sketch the broad outlines of a new agriculture policy for the Caribbean Region, taking into consideration the new challenges (trade liberalization, falling prices), concerns (food safety, quality, security) and opportunities (development of markets for organic products) as presented by the current international environment.
They reported that (as has been stated previously) agricultural output for decades had been geared towards external preferential markets from which the region had benefited in terms of real income growth, employment and foreign exchange earnings. However, they argued that the existence of preferences also shielded the region’s export agriculture from international competition, leaving it unprepared for the new trading regime based on competitiveness. They concluded that in a number of cases, the region’s export agriculture will not be able to survive in a fully liberalized market and hence the need to identify new areas of comparative advantage within and outside of the agriculture sector.

Furthermore, they stated that the events of September 11 and the ongoing war against terrorism have raised new concerns about regional food dependence and security. Also, the incidence of bovine spongiform encephalopathy (BSE)\(^5\) and the growing controversy over genetically modified foods were all forcing the region to rethink its agriculture strategy and particularly its substantial dependence on food imports, while it simultaneously struggles to maintain and expand markets in an increasingly uncertain environment.

Kendall and Petracco (2003) then analyzed strategies which are currently being proposed for regional agricultural development as follows.

**Export Promotion Strategy**

With respect to an export promotion strategy Kendall and Petracco (2003) provided evidence to show that this strategy had not brought benefits to the region in the recent past. They stated that as regards the performance of export agriculture, the use of any indicator shows that, even with preferential market access, export agriculture has been at best a sputtering engine of economic growth. Its contribution to GDP in most Caribbean economies has been declining steadily.

For example, they stated that in the case of Barbados, the ratio of export agriculture earnings to GDP fell from approximately 11.4% in 1970 to less than 3.3% in 1998. In Belize, the ratio fell from approximately 23% of GDP in 1970 to approximately 7% in 1999. The comparable figures for Dominica were 24.8% and 9.2%, respectively. In Jamaica, the ratio wavered between 5% and 7% during the period. A significant exception to this characterization has been Guyana. Export agriculture declined in Guyana during the late seventies and early eighties. But the implementation of a structural adjustment programme has seen an increase in the ratio of agricultural export earnings to GDP, from 18.9% in 1970 to 32% in 1999. In the case of Suriname also, agricultural export earnings as a percentage of GDP increased from approximately 2% in 1970 to 13.4% in 1996.\(^6\)

\(^5\) And more recently bird flu.
\(^6\) This may be only a relative increase due to the fall in the share of the natural resource-based exports (bauxite/alumina) in total exports.
They therefore argued that from a policy perspective, it would be useful to determine whether continued pursuit of an agricultural export strategy is worthwhile. They based their analysis in this regard on the long-term trend in the terms of trade of export commodities, both traditional and non-traditional “so as to determine the likelihood of increased productivity changes redounding to economic expansion in the exporters rather than merely to the benefit of importers.”

Their analysis showed that, from the early 1990’s, as the process of trade liberalization unfolded, the terms of trade for the region’s agricultural exports declined for most countries. As preferences are further eliminated, indications are that there will be further deterioration, implying reduced impact on real income growth and foreign exchange earnings per unit of exports.

Surprisingly, their analysis also showed that the terms of trade have performed better in the case of traditional rather than non-traditional agricultural exports for most countries throughout almost the entire period. “In only a handful of countries (Dominica, Grenada, Suriname) did the terms of trade performance of non-traditional (agricultural exports) seem superior to those of agricultural exports.” They explained that this was consistent with the preferential arrangements for traditional commodities, which were meant to keep prices artificially high, as part of a process of aid transfer through trade.

They thus concluded that the imminent elimination of preferences and the terms of trade analysis suggest an urgent review, not only of agricultural export diversification strategies, but also export diversification strategies, as a whole.

**Food Security Strategy**

In general, Kendall and Petracco (2003) concluded that the currently articulated strategy of increased food production to achieve food security is not an appropriate one for the Caribbean since, they argued, the Caribbean has the capacity to purchase its food needs through imports. They based their analysis on the use of the ratio of food imports to GDP as a “… useful indicator of food dependence and one which captures the effects of the population growth rate, and the growth rate in real income, including the impact of tourism growth”.

They concluded that while in nominal terms the value of food imports had increased steadily over the period for all countries, food import values as a percentage of GDP had generally stabilized (Guyana, Jamaica) or declined (Antigua, Bahamas, Barbados, Belize, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago). Hence, food security as defined by commercial access or the ability to purchase had generally not deteriorated. The exceptions had been Suriname and Haiti, where the ratios had risen.

They provided further support for their position by examining the ratio of expenditure on food imports, to total foreign exchange earnings. In all countries of CARICOM, with the exception of the Bahamas, Haiti and Suriname, the ratio of food imports expenditure to total foreign exchange earnings had fallen considerably. In the case of Trinidad and
Tobago, the ratio, after increasing from the late seventies to 1987, declined to 11% in 1998, approximately the same ratio as in 1970.

An important conclusion from the foregoing they argue, is that the region’s capacity to purchase food externally, and hence regional food security as defined by commercial access, had not deteriorated, but improved, diluting considerably the foreign exchange constraint argument for food independence and security and hence negating the argument for increased domestic agricultural production to meet the food security concerns.

Policy Prescriptions

Kendall and Petracco (2003) presented their policy prescriptions for Caribbean agriculture as follows:

(i). Expansion of Non-Agricultural Exports and De-Emphasis on Agriculture

The first policy prescription or strategy that Kendall and Petracco (2003) suggested for the Caribbean was the expansion of non-agricultural exports and a de-emphasis on national agricultural production. They concluded that this strategy is suitable for some countries in the region. For these countries, they argued, a focus on agricultural development may not be a desirable option, given their resource endowments and their new demonstrated areas of comparative advantage in non-agricultural exports. Among these are Barbados, the Bahamas and Trinidad and Tobago, (with St. Kitts and Nevis, Grenada, Antigua and Barbuda and St. Vincent tending in this direction).

For these countries, import dependence for food is already very high. However, these are countries with strong export sectors outside of agriculture. In the case of both Barbados and the Bahamas, to a large extent, agricultural activity has given way to export services (tourism, offshore finance). In Trinidad and Tobago, the oil sector dominates. St. Kitts and Nevis has ceased its operations in sugar and is expanding substantially in tourism. St. Vincent and the Grenadines in recent years has also achieved a rapid expansion in tourism, while agricultural exports, mainly bananas, have struggled in the face of international competition. In all of these countries, the decision implicitly or explicitly, they argued, should be to de-emphasize agricultural production and exports and to reorient resources towards export services.

Noting however, the concerns about food security even for these countries, Kendall and Petracco (2003) suggested that “the food security strategy in the case of these countries may lie in the development of food reserves rather than in the development of agriculture per se.” They stated that food reserves can be established on a national, sub-regional (involving basically those countries that have chosen this type of development strategy) or regional basis. “Those countries in the region with a relatively strong agriculture sector, for example, can be used as depositories or as suppliers of food stocks for the countries discussed here or for the region as a whole. Of course, the issue of efficient
management of reserves then arises so as to minimize foreign exchange, administrative and other costs.”

(ii) Agricultural Export Diversification

Even in the face of their earlier arguments, Kendall and Petracco (2003) concluded that for some other countries in the Caribbean, given their resource endowments, stimulation of agricultural exports and competitive import replacement seem viable strategies for the foreseeable future. Among these would be the largest countries of CARICOM in terms of land area - Guyana, Suriname, Haiti, Belize and Jamaica. Also included would be Dominica. However, they stated that given the recent performance of agricultural exports and current prospects for those commodities receiving preferential treatment, a change in agricultural strategy is urgently required.

Thus with respect to a strategy of agricultural export diversification, they stated that:

… rationalization of traditional agricultural exports is a priority. This will require the closing down of some industries or of firms in certain industries, as is the case with sugar in Jamaica or bananas in the Windward Islands. Substantial resources will also have to be used to enhance productivity in these traditional sectors. These countries will likely witness more efficient though possibly reduced exports in these sectors.

Rather than an emphasis on traditional exports, however, Kendall and Petracco (2003) recommended instead that the strategy of export diversification should emphasize organic products and agro-processing based on raw material production in both traditional and non-traditional agriculture. They concluded that it is possible in the long run that those countries continuing pursuit of an agricultural export strategy will have a relatively more diversified agricultural sector comprised of a variety of fruits and vegetables (processed or unprocessed), targeted at various regional and extra-regional markets.

They stated:

Arguably, this strategy can lead to more stable and sustainable growth in agricultural exports through the diversification of risks across a wider range of commodities and markets. Moreover, this approach to agricultural development enhances food security as defined by the FAO as compared with monoculture production that has characterized (current)… export agriculture. It provides an expanded range of nutritious food(s) … that can be redirected to domestic use in the case of external supply shocks.

(iii) Competitive Import Replacement

Rather than a policy of food reserves, Kendall and Petracco (2003) recommended the strategy of competitive import replacement for those countries of the region that decide to adopt an agricultural export diversification strategy, to address the issues of food dependence and security. They stated that ideally, this strategy should contain two fundamental elements:

(i) an element for constraining growth in import demand; and
(ii) an element for expanding production for the domestic market.

However, they cautioned that the “expansion of production for the domestic market” that they advocated was different from traditional import substitution, which was the earlier response and one which took place behind various types of trade barriers. They argued that in the new trade regime, “import replacements must now be competitive but not solely on the basis of price but also other features such as environmental sustainability, taste, freshness, (and) food quality/safety.”

Thus they concluded that production should take place with the objective of ensuring a healthy, environmentally-friendly and sustainable food supply at the cheapest possible social cost. This may very well imply reorienting agricultural production towards a more organic approach. An important additional advantage of this approach would be that “world markets in various commodities, including a wide range of fruits and vegetables, are already moving in this direction and unless the Caribbean adapts, it will not be able to participate in those markets.”

They argued that while there is some skepticism in the region with respect to the pursuit of such an “organic” strategy due to various constraints (advanced age of the farming population, in the case of the Windward Islands, sloping terrain, inadequate knowledge of production methods etc), it is estimated that currently more than 100 countries are engaged in the production and export of a wide range of organic food exports, most often from small farming communities, that are also quite prevalent in the Caribbean. Also, the FAO, the World Bank and the Inter-American Development Bank (IDB) have through various projects, given support to this rapidly expanding initiative.
5. Constraints to Agricultural Development in the Caribbean

Before going on to deal with the implications of the strategies for agricultural development in the Caribbean for the employment of labour, binding constraints to the development of agriculture will be addressed. In the first instance, general constraints facing agriculture worldwide will be discussed, then specific constraints facing Caribbean agriculture.

Constraints Facing Agriculture Worldwide

An overview of constraints facing agriculture worldwide has been provided by Brathwaite (2005). He stated that the United Nations Millennium Development Goals seek among other objectives, to reduce extreme hunger and poverty by 50% by 2015. He continued that worldwide, poverty is mainly a rural problem, since 75% of the world’s poor live in rural areas. If poverty is a rural problem, then the growth processes that are linked to the rural areas, especially to agriculture, can have a vital impact on poverty reduction and the generation of rural employment.

He therefore argued that the promotion of a prosperous agricultural sector and the generation of rural employment are vital as a prerequisite for:

- poverty alleviation and food security; and
- prevention of migration of the rural poor to the cities and the social and economic challenges, which urban overcrowding generates, such as crime, illegal use of drugs etc., which threaten social stability and the progress being made toward democratic governance.

He further argued that for agriculture to make these contributions it

… must be valued for what it is: the bedrock of society and the cornerstone of any economy. Agriculture is not only about helping marginal poor farmers; the agricultural sector is a strategic sector of our economy based on science that contributes to food security for the nation, national and social stability, preservation of the environment and the generation of employment opportunities.

Finally, Brathwaite (2005) concluded that the under-estimation of the importance of food and agribusiness industries in economic development has resulted in the following constraints to agricultural development:

- a lack of recognition of the contribution of agriculture and agricultural professionals to national development;
• under-financing of agricultural research, training and education, and rural infrastructure and investment;

• low interest in agribusiness as a profession among youth;

• an urban bias in the allocation of national resources; and

• a continued dependence on imported food in some countries.

Constraints Facing Agriculture in the Caribbean

Attention now turns to those constraints which limit the success of Caribbean agriculture. These constraints have been addressed as part of the recent ‘Jagdeo Initiative’ of CARICOM.

According to IICA (2005) the ‘Jagdeo Initiative’:

• is a regional effort, led by President Bharrat Jagdeo of Guyana, lead CARICOM Head responsible for Agriculture in the CARICOM Conference of Heads of Government (CHG);

• started in late 2003 when President Jagdeo requested assistance from FAO and IICA to develop a framework for repositioning agriculture in the region;

• is guided by a process approved by the Caribbean Heads of Government in July 2004 with core partners being FAO, IICA, the CARICOM Secretariat and the Caribbean Agricultural Research and Development Institute (CARDI), with the Caribbean Development Bank (CDB), the Secretariat of the Organisation of Eastern Caribbean States (OECS), the University of the West Indies (UWI) and the Caribbean Regional Negotiating Mechanism (CRNM);

• seeks to develop focused and practical interventions to reduce the key and immediate binding constraints to agricultural development and competitiveness in member states; and

• fully recognizes that progress within a Single Market and Economy requires the immediate and effective operationalization of the RTP (Regional Transformation Programme for Agriculture).

IICA (2005) also states that in 2004, as part of the Jagdeo Initiative, member states were asked to identify their key binding constraints to agriculture. These constraints and policies and proposals to alleviate them were discussed at a Regional Agricultural Policy Workshop in December 2004. IICA (2005) presented the major constraints “that can best be dealt with through collective regional effort” as follows:
1. limited financing and inadequate new investments;
2. outdated and inefficient agriculture, health and food safety systems;
3. inadequate research and development (R&D);
4. fragmented and unorganized private sector;
5. inefficient land and water distribution and management systems;
6. deficient and uncoordinated risk management measures (including those against) praedial larceny;
7. inadequate transportation system, particularly for perishables;
8. weak and non-integrated information and intelligence systems and services;
9. weak marketing systems, linkages and participation in growth markets;
and
10. Lack of skilled (quantum/quality) human resources.

Another constraint to agricultural development in the Caribbean that has already been mentioned are the weak national statistics systems, especially agricultural and food statistical subsystems. These weak systems and the lack of stable up-to-date statistical frames (area lists, registers etc.) have meant that few countries of the region have completed recent agricultural censuses. A further constraint is the general absence of web sites for the exchange of information and knowledge and for providing information for research into problems facing the agricultural sectors.

The constraints identified in this section will limit the performance of the regional agricultural sector irrespective of the particular policy prescriptions that are adopted. Hence the alleviation of these constraints would be a key requirement of regional agricultural development. Or put another way, if a policy calls for a de-emphasis of agriculture in a country, these constraints will provide further vehicles or mechanisms for the decline of the agricultural sector. The next section will therefore discuss the implications of the proposed strategies for labour employment in agriculture, within the environment created by these constraints.
6. Implications of policy strategies for employment in agriculture

This section will examine two issues. The first issue concerns the implications for labour employment of the endogenous strategies for agricultural development in the Caribbean outlined earlier in this Report. The strategies are first stated and then their implications are discussed. The second issue concerns the implications for labour employment of a more exogenous strategy of promotion of agricultural development through greater linkages with the tourism sector.

Strategy 1: Expansion of Non-Agricultural Exports and De-Emphasis on Agriculture

Two recent cases of the application of this strategy of a de-emphasis of agriculture have been the closure of the sugar industry in St Kitts and Nevis and also the restructuring of the sugar industry in Trinidad and Tobago.

In the Trinidad and Tobago case, a “voluntary” approach was first attempted. According to the International Labour Organization (ILO) (2000), the general approach to rationalization was outlined in a tripartite report in 1992 by the three stakeholders - Government, sugar workers and cane farmers. According to the terms of the general agreement among the stakeholders, the state-owned company Caroni (1975) Ltd., the sole sugar processor and the main sugar grower, was to remain primarily a processor operation, and was to reduce its role in the production of cane in favour of cane farmers from the present company/cane farmer ratio of 46 : 56, to a ratio of 25 : 75. Meanwhile, since it was also agreed that there would be no forced retrenchment, natural attrition was to be the main factor involved in staff reduction.

Voluntary Separation of Employment Package (VSEP) was provided to both staff and weekly-paid employees. The former responded but the latter did not in any significant number. According to management, the terms of the VSEP may not have appeared attractive to the daily-paid workers and the arrangements for training and retraining for alternative employment were not explored. Moreover, having regard to the low level of skills of some of its workers, the unavailability of viable options elsewhere, and with the union having won the concession that there should be no forced retrenchment, workers were attracted by the element of job security that this created.

A change of Government, after 2001, brought about a more radical approach to the rationalization of the industry. Appendix 2 provides an account of the changes that have recently taken place in the industry from recent Budget statements from the Prime Minister (and also Minister of Finance). In summary, Caroni (1975 Ltd.) was closed down as a production and manufacturing company and its sugar processing assets were transferred to a smaller enterprise, the Sugar Manufacturing Company of Trinidad and Tobago. One sugar cane factory was closed down and all workers were separated from the company and given severance benefits, which included parcels of land for daily paid workers.
workers. Several training programmes have been conducted for the displaced workers, and special investment packages have been devised for their severance payments, including one by the Agricultural Development Bank/Unit Trust Corporation of Trinidad and Tobago.

As stated in the Budget Statement for the fiscal year 2006, the allocation of two-acre plots of agricultural land in fifteen (15) locations throughout Trinidad to former employees of Caroni Ltd. has created 7,247 new land owners and brought into use 18,388 acres of land. Whether these newly distributed lands will actually be used for agriculture and the extent to which this agriculture will fit the pattern of diversification suggested by Kendall and Petracco (2003) (competitive import replacement) are still matters of conjecture.

It can therefore be concluded from the information provided in the statements from the Minister of Agriculture (see Appendix 2), that of the approximately 8000 former workers of Caroni (1975) Ltd., about 7300 have accepted agricultural land as part of their voluntary separation package and approximately 1223 former workers were re-hired in the new sugar producing company.

The situation in St Kitts and Nevis has been more terminal. The European Commission’s “EU Relations with St Kitts & Nevis” (2005) summarizes the context in which the sugar industry was recently closed as follows:

The economy of St Kitts and Nevis is small and highly susceptible to exogenous shocks. Production is focused on a very narrow range of goods and services, most of which are exported, while the country relies heavily on imports to satisfy demand for consumer and producer goods. Significant shifts in the domestic economy have occurred with agriculture, dominated by the sugar industry for three centuries. Consequently, the public debt is one of the highest in the world in terms of GDP (170%). For a long period of time, the St. Kitts Sugar Manufacturing Corporation had been a heavy drain on public finances and sizeable amounts of debts had been accumulated. In late July 2005, after some contemplation, the situation led to a closure of the sugar industry, which has forced approximately 1,500 sugar workers into unemployment. As there are at the moment no realistic alternatives to the sugar industry, many may turn to independent small-scale agriculture.

A recent article in the Caribbean Net News (March, 2005) looked more closely at the situation of the former workers in the sugar industry as follows:

Sugar workers at the St. Kitts Sugar Manufacturing Corporation (SSMC) have been slowly but surely coming to terms with the fact that the Federation’s sugar industry will be no more come the end of this year's crop.

It further states that the Government, led by Prime Minister, Dr Douglas, took the decision to shut down the debt-ridden industry which served the Federation for some 300 years, since it had to do something to halt the increasing losses.

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7 The full text of this article is given at Appendix 3
The article reported that the effect of the closure affected not only just Kittitian workers, but also workers from the rest of the Caribbean working in the industry. One worker is quoted as saying “Many of us were able to achieve a few things in life working there and you would imagine there are lots of bitter-sweet memories as a cultural way of life evolved from the industry, as we had workers from Guyana and other Caribbean countries who settled in St. Kitts as a result of coming to work in the crop season. It's not just the industry that's closing it's a whole chapter, a way of life that's closing." The workers were also said to be looking forward to their severance benefits.

The implications of this strategy of a de-emphasis on agriculture, for employment in agriculture and in the economy are therefore quite clear:

- reduced employment in the agricultural sector;
- expansion of unemployment at least temporarily in the economy as workers attempt to find non-agricultural employment; and
- the need for retraining and re-equipping workers for employment outside of the traditional export industries.

Kendall and Petracco (2003) recognized these employment aspects of this strategy of de-emphasizing agriculture for those “caught in a declining agricultural sector”.

They stated that “it implies, either, the development of alternative non-agricultural activity in rural communities and, where this is not possible, movement of the rural work force in some cases to new income earning opportunities developed elsewhere. For most of the region’s economies, because of their resource endowments, the new economic activities will most likely be in the services sector (as these sectors also are the current growth areas of the Caribbean economies).”

They concluded therefore that the identification of the targeted service industries and the provision of the appropriate re-training opportunities would be the relevant course of action under this strategy as opposed to the development of skills in the agricultural sector.

**Agricultural Export Diversification with Competitive Import Replacement**

CPEC (2005) reported that an assessment of non-traditional commodities (both crop and livestock) in CARICOM countries has shown that the commodities with greatest potential for successful and competitive production in the region were as follows:

- citrus in Belize;
- hot pepper in Belize, Jamaica, Grenada, Guyana and Suriname;
- papaya in Belize and Jamaica;
- beef production in Belize;
• cocoa\textsuperscript{8} production in Jamaica and Trinidad & Tobago; and 
• milk production in Guyana and Suriname.

CPEC (2005) stated that the potential of non-traditional production is already being realized in some countries. In Belize, for example, they report that (as previously stated) “… tremendous progress has been made in fisheries development, to the extent that shrimp, lobster and conch exports are poised to become the number one export earner in a few years.” They also state that “significant progress is also being made in both Belize and Jamaica in the production and export of fresh papaya and pepper-based products.”

They note, however, that as non-traditional agricultural products become more and more visible in international trade, issues of compliance in terms of product standardization, authenticity, food safety and quality assurance would assume increasing importance. Also there would be the need for certification and approval of imports by major markets, and for determining the competitiveness of agricultural exports. They also suggest that these issues will also become more important at the regional level, with the establishment of the Caribbean Single Market and Economy (CSME), and also as the levels of linkage increase within the regional tourism sector.

CEPEC continues to argue that these competitiveness issues have significant implications for agricultural production (in terms of traceability to sources of supply, consistency and quality of harvests, the use of pesticides and agricultural chemicals, the use of genetically modified seed materials, and implementation of Good Agricultural Practices or GAPS, as well as significant implications for fresh produce pack-houses and processing plants (in terms of compliance of premises and operations with international standards of Good Manufacturing Practice or GMPs, HACCP certification, quality assurance, labeling and packaging, and compliance with environmental standards).

CEPEC notes therefore that there are certain critical success factors for a Caribbean non-traditional strategy. They include:

• strengthening of in-house technical and management skills;
• increasing the efficiency of plant layouts and production systems;
• developing risk assessment and self-monitoring systems;
• building flexibility and innovation into product design and manufacturing processes;
• implementing performance measurement systems;
• forming strategic alliances for more effective market penetration; and
• effecting negotiation skills among industry leaders.

With regard to institutional strengthening, it has already been stated that the development of the exports of non-traditional agricultural products could benefit from a “regional perspective” to have a much greater chance of having the desired impact on the survival

\textsuperscript{8} It could be noted that cocoa is generally considered a traditional commodity and has been treated as such in this Report.
and long-term sustainability of agriculture and agro-processing. Such a regional perspective could also involve cooperation between several industries, to take advantage of economies of scale in transportation, advertising and other aspects of marketing. One suggestion, for example, has been to market a “Caribbean brand” for a wide range of agricultural exports to gain maximum promotion and brand image, for a wide range of products.

It is clear that an agricultural export diversification with a competitive import replacement strategy would require a substantial new input of specialized and skilled labour. However, if such a strategy is accompanied by a reduction in the traditional export sector, the net additions to agricultural employment may be very small.

**Strengthening Linkages Between Tourism and Agriculture**

According to Zappino (2005), writing for the European Centre for Development Policy Management (ECDP), tourism is one of the fastest growing industries in the world. It is an increasingly important source of income, employment and wealth in many countries and its rapid expansion has been considered as an interesting possibility for sustainable development (including poverty reduction) in developing countries. Zappino (2005) stated that in the Caribbean, tourism “… is the most important industry especially after the crisis of other sectors such as agriculture and manufacturing.”

Because of the importance and growth potential of tourism in the Caribbean, it has often been proposed that if there could be close linkages between agriculture and tourism, then the growth of tourism could lead to a growth in agricultural production, if agricultural goods benefit from derived demand from the tourism sector.

In discussing links of tourism with services and other sectors, Zappino (2005) states with respect to such links with agriculture:

> Agriculture remains a key sector of several Caribbean countries. On the one hand, it has already been proven that the increase in tourism’s relative importance is also partially due to the decline in other sectors, such as agriculture and manufacturing. On the other hand, it could be possible to say that the agricultural sector has a double advantage from tourism development. The first advantage is connected to the consuming of food and beverages by the tourists during their holidays (tourism could be considered as an interesting market for the agricultural sector). The second one is related to all tourism activities development by local stakeholders connected to the agriculture (e.g. eco-tourism, rural tourism, etc.). In this case, tourism has been useful in order to create new job opportunities, revenues, etc.

However, despite such potential benefits from expanded tourism, the reality has been that the linkages between tourism and agriculture in the Caribbean have been very weak and that tourism has led to little creation of job opportunities in the agricultural sector. Indeed, the opposite has probably taken place where the rapid rise in tourism in the Caribbean has led to a migration of labour from agriculture to the tourism sector.
The basic problem of fostering linkages between tourism and agriculture is that tourism is an export industry. What this means is that the same negative factors (or constraints) that the agricultural sector in the Caribbean faces in the export of food to say the United States or Europe, are the same negative factors, the sector would face in the “export” of food to the tourists who visit the Caribbean from those countries. These negative factors include:

- lack of grades and standards of food products;
- availability of food products in very small quantities; and
- unavailability of the food products in the form and packaging that easily accommodate the hotel and restaurant industry.
7. Conclusions and Recommendations

Introduction

This final section presents the conclusions and recommendations of the study. The conclusions will be with respect to:

- The importance of agriculture to the Caribbean.
- Strategies for the future of Caribbean agriculture.
- Implications for labor employment of the strategies for Caribbean agriculture.
- Proposed interventions for relieving constraints in Caribbean agriculture.
- Impact on employment of increasing capitalization of Caribbean agriculture.

After these conclusions, recommendations arising from the study are presented.

Conclusions

Importance of Agriculture to the Caribbean

As stated earlier, despite the threats to its very existence, the agricultural sector of the Caribbean is still expected to “produce jobs” in countries that still record high official levels of unemployment. The evidence suggests that there has been a trend of increasing population and employment in the agricultural sector in CARICOM. Table 2 presents figures that show that even up to the year 2010, it is expected that over 36% of the persons in CARICOM will be employed in an agricultural activity. Perhaps, more importantly, the figures show that despite losing relative importance in total employment, agriculture continues to employ more and more persons in the region.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Agricultural Population</td>
<td>4187</td>
<td>4538</td>
<td>4788</td>
<td>5195</td>
<td>5883</td>
<td>6067</td>
<td>6156</td>
</tr>
<tr>
<td>Non-Agricultural Population</td>
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<td>3461</td>
<td>4663</td>
<td>5688</td>
<td>6960</td>
<td>8342</td>
<td>9832</td>
</tr>
<tr>
<td>Total Persons in Economic Activity</td>
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<td>3642</td>
<td>4056</td>
<td>4690</td>
<td>5422</td>
<td>6418</td>
<td>7541</td>
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<tr>
<td>Total Persons in Agricultural Economic Activity</td>
<td>1969</td>
<td>2136</td>
<td>2373</td>
<td>2730</td>
<td>3144</td>
<td>3683</td>
<td>4332</td>
</tr>
</tbody>
</table>

*Projection

Source: Compiled from FAO online database

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9 These figures reflect the large influence of Haiti in CARICOM population statistics.
Table 2 also shows that while the population of these states is expected to increase by 40% over the period 1990 to 2010, the agricultural population is only expected to increase by 5%.

When the same information shown in Table 2 is compiled for CARICOM states excluding Haiti, the picture changes dramatically. These figures are presented in Table 3 and show that the agricultural population for these states is expected to decrease over time. The same trend is expected for the persons employed in agriculture. Agriculture is projected to employ about 11.7% of the total labour force by 2010. However, in these states, even by 2010, almost half a million persons are still projected to be employed in agriculture.

### Table 3. Population and Employment in the Agricultural Sector of CARICOM excluding Haiti* (*'000 persons)

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Population</td>
<td>1336</td>
<td>1438</td>
<td>1375</td>
<td>1282</td>
<td>1152</td>
<td>1039</td>
<td>937</td>
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<tr>
<td>Non-Agricultural Population</td>
<td>1924</td>
<td>2569</td>
<td>3293</td>
<td>3832</td>
<td>4398</td>
<td>4928</td>
<td>5440</td>
</tr>
<tr>
<td>Total Persons in Economic Activity</td>
<td>1315</td>
<td>1433</td>
<td>1596</td>
<td>2033</td>
<td>2340</td>
<td>2745</td>
<td>3167</td>
</tr>
<tr>
<td>Total Persons in Agricultural Economic Activity</td>
<td>544</td>
<td>521</td>
<td>473</td>
<td>513</td>
<td>489</td>
<td>473</td>
<td>459</td>
</tr>
</tbody>
</table>

*CARICOM states excluding Haiti  
*Projection  
Source: Compiled from the FAO online database

As seen in Tables 4 and 5, agricultural imports into the region have increased over the years and have also increased as a percentage of agricultural exports, causing concerns for food security in the region.
### Table 4. Agricultural Imports - CARICOM

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>7,857</td>
<td>21,150</td>
<td>38,098</td>
<td>32,220</td>
<td>25,552</td>
<td>29,804</td>
<td>31,491</td>
</tr>
<tr>
<td>Bahamas</td>
<td>62,987</td>
<td>150,857</td>
<td>214,683</td>
<td>396,350</td>
<td>366,874</td>
<td>279,157</td>
<td>244,298</td>
</tr>
<tr>
<td>Barbados</td>
<td>27,213</td>
<td>90,315</td>
<td>116,093</td>
<td>131,179</td>
<td>175,169</td>
<td>176,324</td>
<td>190,687</td>
</tr>
<tr>
<td>Belize</td>
<td>10,512</td>
<td>36,242</td>
<td>48,987</td>
<td>86,689</td>
<td>66,713</td>
<td>64,344</td>
<td>75,113</td>
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<td>Dominica</td>
<td>3,878</td>
<td>12,508</td>
<td>29,020</td>
<td>35,547</td>
<td>29,525</td>
<td>40,665</td>
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<tr>
<td>Grenada</td>
<td>5,785</td>
<td>15,584</td>
<td>28,902</td>
<td>30,355</td>
<td>28,738</td>
<td>26,614</td>
<td>29,072</td>
</tr>
<tr>
<td>Guyana</td>
<td>19,963</td>
<td>51,750</td>
<td>37,887</td>
<td>83,450</td>
<td>91,871</td>
<td>91,538</td>
<td>89,817</td>
</tr>
<tr>
<td>Haiti</td>
<td>13,081</td>
<td>120,163</td>
<td>215,295</td>
<td>343,241</td>
<td>319,769</td>
<td>388,764</td>
<td>401,145</td>
</tr>
<tr>
<td>Jamaica</td>
<td>85,199</td>
<td>224,825</td>
<td>253,368</td>
<td>369,465</td>
<td>378,135</td>
<td>417,180</td>
<td>439,856</td>
</tr>
<tr>
<td>Saint Kitts and Nevis</td>
<td>2,752</td>
<td>8,240</td>
<td>19,639</td>
<td>31,416</td>
<td>26,334</td>
<td>22,301</td>
<td>23,201</td>
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<tr>
<td>Saint Lucia</td>
<td>5,511</td>
<td>23,830</td>
<td>55,190</td>
<td>73,351</td>
<td>123,944</td>
<td>86,003</td>
<td>86,003</td>
</tr>
<tr>
<td>Saint Vincent/Grenadines</td>
<td>3,898</td>
<td>18,676</td>
<td>28,480</td>
<td>29,654</td>
<td>42,188</td>
<td>42,631</td>
<td>42,631</td>
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<tr>
<td>Suriname</td>
<td>18,188</td>
<td>49,859</td>
<td>52,376</td>
<td>97,231</td>
<td>76,208</td>
<td>97,077</td>
<td>97,077</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>59,937</td>
<td>345,721</td>
<td>241,360</td>
<td>313,183</td>
<td>333,801</td>
<td>362,692</td>
<td>362,692</td>
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<tr>
<td>CARICOM</td>
<td>326,761</td>
<td>1,169,720</td>
<td>1,379,378</td>
<td>2,074,229</td>
<td>2,117,495</td>
<td>2,149,061</td>
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</tbody>
</table>

Source: FAO Online database.

### Table 5. Agricultural Export - CARICOM

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>876</td>
<td>694</td>
<td>1,467</td>
<td>367</td>
<td>253</td>
<td>418</td>
<td>909</td>
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<tr>
<td>Bahamas</td>
<td>8,632</td>
<td>10,674</td>
<td>37,474</td>
<td>37,908</td>
<td>55,391</td>
<td>45,337</td>
<td>279,825*</td>
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<tr>
<td>Barbados</td>
<td>20,947</td>
<td>72,402</td>
<td>58,018</td>
<td>58,034</td>
<td>76,485</td>
<td>73,374</td>
<td>66,000</td>
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<td>Belize</td>
<td>12,351</td>
<td>67,812</td>
<td>96,611</td>
<td>160,750</td>
<td>119,190</td>
<td>108,547</td>
<td>118,954</td>
</tr>
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<td>Dominica</td>
<td>4,996</td>
<td>4,260</td>
<td>35,852</td>
<td>22,164</td>
<td>19,174</td>
<td>16,348</td>
<td>13,774</td>
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<td>Grenada</td>
<td>5,484</td>
<td>15,545</td>
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<td>22,221</td>
<td>20,826</td>
<td>21,168</td>
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</tr>
<tr>
<td>Guyana</td>
<td>50,567</td>
<td>168,923</td>
<td>107,045</td>
<td>180,169</td>
<td>151,954</td>
<td>158,539</td>
<td>183,109</td>
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<tr>
<td>Haiti</td>
<td>23,695</td>
<td>112,303</td>
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<td>28,412</td>
<td>19,340</td>
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<td>Jamaica</td>
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<td>282,453</td>
<td>242,303</td>
<td>281,815</td>
<td>292,205</td>
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<td>7,613</td>
<td>10,786</td>
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<td>Saint Lucia</td>
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<td>31,385</td>
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<td>28,703</td>
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<tr>
<td>Saint Vincent/Grenadines</td>
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<td>36,249</td>
<td>27,249</td>
<td>32,287</td>
<td>27,406</td>
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<tr>
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<td>71,187</td>
<td>65,026</td>
<td>48,399</td>
<td>30,669</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
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<td>80,715</td>
<td>111,598</td>
<td>231,506</td>
<td>236,666</td>
<td>239,521</td>
<td>222,420</td>
</tr>
<tr>
<td>CARICOM</td>
<td>262,328</td>
<td>764,249</td>
<td>915,946</td>
<td>1,170,575</td>
<td>1,067,098</td>
<td>1,096,066</td>
<td>1,314,723</td>
</tr>
</tbody>
</table>

*No explanation was provided nor can be provided for this unusually high figure.

Source: FAO Online database.
These concerns have also intensified as a result of international political developments especially the growth of terrorism. The figures in Table 5 also reflect the relative stagnation of agricultural exports from CARICOM since 1990 caused by the rapid decline of the traditional exports. This decline has been compensated for, to a limited extent, by the rise in non-traditional exports, especially fresh fruits and vegetables.

**Strategies for the Agricultural Sector**

The study concludes that it is urgent for the Caribbean to bring about a rapid transformation of its agriculture. Three broad strategies have been advocated to bring about the transformation of the sector. The first is a concentration on the export of a diversified range of agricultural commodities, including traditional and non-traditional commodities. This strategy is being suggested for the larger countries of the Caribbean which have an advantage in terms of reaping economies of scale in agricultural production. Such countries can also adopt a strategy of competitive import replacement, whereby production can be expanded for agricultural commodities (especially food) presently imported where the countries have a decided comparative advantage.

For countries which have a demonstrated capability for productive and competitive non-agricultural sectors, the overall macro-economic strategy would be for these non-agricultural sectors to be the engines of growth for these economies. These sectors are largely service oriented, especially tourism, but would include the petrochemical complex of industries in the case of Trinidad and Tobago. Given this overall macro-economic strategy, the strategy for agriculture would be to de-emphasize any non-competitive traditional export industries (for example the sugar industry in Barbados and Trinidad and Tobago) and the same policy of competitive import replacement just described.

The third strategy would be to promote as much as possible inter-sectoral linkages, in particular, the linkages of agricultural production to the rapidly expanding sectors of the economy so that agriculture can benefit from the derived demand for food and industrial inputs from the rapid expansion of the linked sectors. The focus in this regard would be on agro-tourism linkages.

**Implications of Agricultural Strategies for Labour**

There are quite straight-forward implications of a de-emphasis on the production of uncompetitive traditional export crops for agricultural labour employment. This de-emphasis should result in a decline in employment in the agricultural sector. Indications from Trinidad and Tobago are that downsizing traditional industries would reduce employment in the traditional sector by about 60%. However, it could be expected that at least half of the displaced workers and farmers would turn to other agricultural activity. However, careful studies would have to be conducted to determine these figures exactly.

With respect to sugar and bananas the European Union is strongly signalling that it will implement its measures to reduce preferential pricing (and to become WTO compliant) within ten years. But even this time frame is being challenged by its competitors as being
too slow and protective of ACP states, and the EU may have to impose far more stringent price cutting and greater market liberalization in a far shorter time period.

With respect to the promotion of a more diversified agricultural export mix, it would seem that such a diversified agricultural production strategy based on competitive agricultural and agro-processing industries would require an increase in the employment of specialized and skilled labour in the sector, associated with the need to maintain high quality standards in international, regional and (increasingly) local markets.

All evidence would suggest that a strategy of strengthening inter-sectoral linkages would have only a small expansionary impact on agricultural labour employment in the Caribbean. However, there is always the probability that the Caribbean could develop a new agricultural product or service that can appeal to a large market among tourists and so create a significant increase in employment in the sector. Some of these possibilities are presented in the recommendations.

**Interventions to Relieve Constraints to Agriculture in the Caribbean**

In the context of the implications of these strategies for agricultural development in the Caribbean, it is interesting to examine the “immediate interventions” that have been suggested to alleviate the binding constraints to agriculture under the Jagdeo Initiative, discussed earlier in the Report. These interventions are as follows:

- establish a regional Agricultural Modernization Fund (AMF);
- establish the Caribbean Agricultural Health and Food Safety Agency (CAHFSA);
- define and implement a regional Research and Development Policy and Action Plan;
- strengthen private sector organizations and collaboration;
- establish a system of incentives for improved land and water use;
- develop an integrated regional risk (particularly natural disasters) mitigation and relief programme including agricultural insurance;
- determine regional freight needs, upgrade port infrastructure and consolidate trade services;
- integrate and modernize industry and national information systems and services;
- strengthen joint marketing opportunities and facilitate access to EXIM-type financing; and
- upgrade and integrate curriculum and training at all levels. (IICA, 2005).
One interesting intervention called for in the Jagdeo Initiative is the need to define and implement a regional agricultural research and development policy and action plan. Currently, the research and development activities in the Caribbean are scattered over a wide range of institutions including universities (such as UWI), regional agencies (such as CARDI), specialized research institutes funded by industries (e.g. the sugar industry) or the State (such as the Central Experiment Station in Trinidad and Tobago) or a combination of State and private sector funding (Cocoa Research Unit, UWI). However, there is no clear regional policy on such research and no pooling of resources (except for CARDI) to ensure that the most pressing problems are seen as research priorities.

However, technological improvements and innovation remain the major ways whereby countries gain competitive advantage in agricultural production, especially in non-traditional commodities and processed products. Thus the Caribbean with its limited research and development in agriculture and food technology has been falling behind in international competitiveness in the agricultural sector. Hence research and development in agriculture has to be accorded high priority.

Of the ten interventions listed above, it may be noted that only the last is specific to labour input and employment, more particularly, the creation of skilled specialized labour. What is also noticeable is that the intervention accorded greatest prominence is one calling for the establishment of a regional Agricultural Modernization Fund to increase the supply of capital to agriculture in the Region. Other interventions also target expansion of investment in infrastructure and market information services.

The issue of the employment impact of increased capitalization of agriculture will be addressed next.

**Employment Impact of Increasing Capitalization of Agriculture**

There has been a definite trend towards increasing capitalization of Caribbean agriculture. This capitalization has been at the expense of an expansion of labour employment in the sector. Overuse of certain capital inputs, for example, spraying equipment and the associated herbicides and pesticides may also be more harmful to the environment and the workers themselves. However, the perceived shortage of agricultural labour is often used as the rationale for the expansion of capital use in the agricultural sector.

Even though the basic agricultural production function has labour as a major input, agriculture is often seen as being basically agrarian or concentrating on the land input. However, it is argued here that the input of labor is of crucial importance in the context of agricultural development.

As seen in Equation (6) at Appendix 4,(without regard to technological change), the growth of output in the agricultural sector $Y'$ can be given as:
\[ Y^* = K^* \varepsilon_K + L^* \varepsilon_L + N^* \varepsilon_N \]

which basically states that the growth of the sector depends on the growth of all the inputs: land \((N)\), labor \((L)\) and capital \((K)\) and the “efficiency” with which these inputs are used as given by their elasticities of production \(\varepsilon_i\).

So, for example, if the elasticities (or “efficiencies”) of the use of the inputs remain the same and there is little growth of employment and investment in the sector, loss of land from agriculture to other sectors (that is \(N^* < 0\)) will result in the decline in the output of the sector.

In those countries, however, where \(N^*\) could be expected to be close to zero (that is little change in the land resources in agriculture), such as the larger states of the Caribbean, the growth (or decline) of employment in agriculture is given by the equation (5) at Appendix 4:

\[ L^* \varepsilon_L = Y^* - K^* \varepsilon_K \]

Under conditions of unitary elasticities of production, if output grows by 10\% and the stock of capital grows by 5\%, then labour employment would grow by 5\% also.

However, if, as seems more likely,\(^{10}\) both the elasticity of production of labour and the elasticity of capital is say 0.15, a 2\% growth of agricultural output and a 10\% growth of capital in the agricultural sector would require agricultural employment to increase by 3.3\%.

In other words, in conditions of tight supplies of labour for the agricultural sector and an abundant source of capital via loans from development banks and aid agencies, growth of agricultural output can proceed through higher levels of investment and the substitution of capital for labour. Thus “modern” agriculture can become very industrial, by a high degree of capitalization on farms. Such a process has often been termed “mechanization”. There is a change of factor proportions in such agriculture, with much higher capital to labour ratios and the labour that may be required is usually more highly skilled.

The main factors that will determine the factor proportions that will exist in Caribbean agriculture will be the relative prices of capital inputs and labour, and the rates at which these prices are expected to increase. If farmers perceive that labour wage rates are higher and increasing faster than the prices of capital inputs required to achieve the same task (eg. hand weeding versus the use of herbicides or hand-filled feeders for poultry versus automatic feeders) then the choice will be greater capitalization.

\(^{10}\) Recent paper by Pemberton and Mgonja (2005).
Capitalization will also be favoured given, as already noted, the ready sources of supply of loans, as well as the greater difficulty to manage labour with all its human resource management issues, as opposed to the more compliant capital resource.

A final issue concerns the “perceived shortage of agricultural labour”. The labour markets in the Caribbean, especially for non-professional labour can be considered as being competitive\(^\text{11}\). As such therefore, wage rates are set by forces of supply and demand with labour being paid close to its marginal productivity. Where minimum wage laws exist or where the state finances special works programmes, these measures tend to set a floor price for labour (“floor wage”), which may exceed the marginal productivity of the labour.

Under these fairly competitive conditions therefore labour will move into occupations where it can receive either the floor wage set by the state or the generally established wage set by supply and demand conditions. As a consequence, industries which are not productive enough to afford to pay the floor wage or the market wage will tend not to be able to attract labour and hence will perceive that a labour “shortage” exists. This has been the general experience of agriculture in the Caribbean, where particularly traditional industries have not been very productive. Farmers in such industries therefore usually list a shortage of labour as one of the reasons for a decline in production especially in the amount of land utilized.

In some countries such as Barbados and St Kitts and Nevis, even the lower than market wages that farmers can afford to pay based on their productivity have been attractive to workers from other countries with much lower valued currencies, such as Guyana. Guyanese have therefore filled the “void” in the agriculture labour market in those countries (see Appendix 3). On this basis, it can be predicted that if immigration laws are relaxed, migrants from Haiti could be expected to fill the “void” in the labour market in the rest of CARICOM, as they have done in the Bahamas and the Dominican Republic.

**Recommendations**

**General Recommendations**

1. There is urgent need to improve the regional research and development system in agriculture.

2. There is the urgent need for detailed research on the dynamics of the agricultural labour market in the Caribbean and its interrelationships to the wider national and regional labour markets in the Caribbean.

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\(^{11}\) The activity of trade unions and the existence of minimum wage laws in certain countries introduce imperfections into the labour market, but these are not considered to have major structural impacts on the market.
3. Urgent research needs to be undertaken on the degree of capital substitution of labour in the agricultural sector and its consequences for labour employment and skills development and the sustainable development of agriculture. Such research should include estimates of productivity of resource use in Caribbean agriculture.

4. The need for competitive production for Caribbean agriculture should be re-emphasized and should feature more prominently in the interventions and policy prescriptions of Caribbean agriculture, including the Jagdeo Initiative. In that regard, caution should be exercised with respect to the introduction of any new forms of subsidies and incentives, even where these subsidies and incentives are being promoted for improved environmental protection and sustainable production.

5. The general policy prescriptions of Kendall and Petracco (2003) are endorsed as the basis of the strategic directions of CARICOM agriculture as it attempts to rationalize itself in the modern realities of international economics, politics and trade.

Industry level Recommendations

6. The experiences of Trinidad and Tobago and St Kitts and Nevis in their rationalization of the sugar industries should be given detailed study to assess the impact of the changes on the former workers and on the agricultural sector and as important case studies in the de-emphasis on traditional export agricultural production.

7. The formation of strategic alliances among commodity boards and associations should be prioritized for more effective marketing of Caribbean agricultural products. Such alliances would achieve economies of scale and strategic advantages.

8. There is need for the strengthening of regional industry associations to enable them to take over from the state the responsibilities for commodities including marketing and promotion and so increase the efficiency of these operations and industries.

Recommendations With Respect to Agricultural Statistics

9. There needs to be urgent action to improve national statistical systems, especially agricultural and food statistical subsystems.

10. Agricultural censuses need to be undertaken on a more regular basis (in collaboration with the FAO) to provide up-to-date information on the sector and to generate data for research on problems of the sector.
11. All countries in the region should immediately undertake, via websites, to make accessible to the world community information on their agricultural sectors. The over-reliance on the FAO online database is detrimental to detailed study of the regional agricultural problems, since this database concentrates on production figures for commodities and has little information on structural aspects of the agricultural sector.

Recommendations on Tourism-Agriculture linkages

12. In order to involve local communities in the tourism supply, efforts should be made to develop community-based tourism products (eg. eco-tourism, rural-tourism, agro-tourism, etc.) that could increase the distribution of benefits to a wide range of the population. New tourism cooperation processes, already experimented with in several other tourism destinations such as “tourism product clubs”, “tourism enterprise networks” and “tourism mixed public-private networks” at national and regional levels could be promoted and supported with special financial funds.

13. Involvement of farmers and handicraftsmen could be stimulated through the organization of “tourism enterprise incubators”, especially in the rural areas. Special funds could be identified for NGOs, community associations, cooperatives, etc.

14. Tourism aggregations could be stimulated among the citizens of the local communities in order to develop dedicated tourism services that could be included in the local/national tourism supply (eg. homestay/Bed & Breakfast in the rural villages, etc.).

15. Enhancement of sustainable tourism could be supported through the adoption of appropriate regulations, such as a code of conduct, criteria for best practices, and other innovative measures.

16. A regional project with perhaps a pilot in one of the participating countries to attempt to strengthen tourism agricultural linkages meets expressed regional interest in this area.  

17. The development and adaptation of local cuisine concepts for small hotels, training programmes, increasing awareness of regional products such as arts and crafts, and providing an information resource to source regional products could all be considered as part of the project to drive demand for local and regional agricultural products.

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12 These recommendations are based on the work of Zappino (2005).

13 Details of a recent project of this type are presented in Appendix 5.
18. On the agricultural side, the issues of standards and packaging should be addressed to provide products of the quality required for the tourist sector.

**Recommendations Specific to the Labour input**\(^{14}\)

19. A cadre of professionals capable of drafting, updating and fast-tracking regional and national legislation on food safety and WTO issues needs to be developed.

20. There is also need to develop a regional cadre of inspectors and/or a regional body with responsibility for monitoring of inspection, updating of procedures, and maintenance of standards and certification of sub-regional and national inspectorates. Consideration can be given to linking this inspectorate with the inspection in agriculture that would be necessary for compliance with Occupational Safety and Health (OSH) regulations and also with chemicals/pesticide controls.

21. Research and development professionals and support workers of regional and national institutions need to be strengthened. Areas of need include strengthening of skills in the preparation of research proposals for funding and development of laboratory skills for specific types of analyses. There is also a critical need for strengthening of capacity in research and technology development for new and innovative agricultural crops and processed commodities (food and non-food).

22. Industry operators need to be trained and their skills upgraded to facilitate application of available knowledge and technology.

23. There should be collaboration among regional education and training institutions to ensure that curricula are standardized and that certification requirements are met, particularly as they relate to international trade.

24. There should be increased regional training in inspection and laboratory techniques.

25. There should be the documentation and dissemination (including the use of the internet) of available information on research and technology, available training courses and materials, qualifications of trained and skilled personnel in agriculture, and market research.

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\(^{14}\) Even though these recommendations were made by CEPEC in the context of a strategy of promotion of a diversified non-traditional agriculture, they are here considered to be of sufficient importance since they can be applied to the whole regional agricultural sector.
References


Pemberton, Carlisle and Mary Mgonja “Potential of Agricultural Development to Increase Rural Employment”. Paper submitted to the 2006 Conference of the International Association of Agricultural Economists.


Appendix 1

AN OVERVIEW OF AQUACULTURE IN BELIZE
Submitted by
Belize Fisheries Department

Aquaculture is expanding in volume and value more rapidly than capture fishery production, terrestrial livestock production and other agro-production activities. In this regard, the contributions of aquaculture to the global supply of fin-fish, crustaceans and molluscs, have increased from 3.9 percent of total fishery production by weight in 1970, to 29 percent in 2001.

In 2001, global aquaculture production was 48.2 million MT, with an estimated value of US$60.9 billion. In general, the growth of the industry over the past ten(10) years has been sustained at a rate of approximately ten percent (10%) per annum. In the case of shrimp farming, which is currently the primary focus of the national aquaculture industry, the production from exporting countries was absorbed by the three (3) main market destinations of the United States, Japan and the European Union.

The growth of the aquaculture industry in Belize has been even more impressive than the global situation, with annual increases in the volume of farmed shrimp production over the last ten (10) years being approximately 160%.

In Belize, the aquaculture industry is based primarily on the production of the Pacific White Shrimp (Litopenaeus vannamei). Since the early stages of shrimp farming in Belize, the sector has increased export production and revenues from 189 thousand pounds and Bz $1.8 million respectively in 1990 to 1.17 million pounds and Bz $10.4 million respectively in 1995.

Since 1995, export production and revenues have expanded to 15.9 million pounds of tails and Bz $ 91.8 million respectively in 2003. The significant increases in foreign exchange earnings derived from shrimp farming have elevated the Fisheries Sector from the fifth position between 1995 and 1999, to the third position in 2001 and 2002. Conservative estimates for the 2004 production year have been placed at 21.30 million pounds of processed shrimp tails – this is expected to generate over Bz $100 million.

Shrimp farming has also made significant contributions to the development of Belize in relation to employment and income generation, especially in rural communities. In relation to employment, there were 810 full-time permanent employees, and 594 temporary or seasonal workers.

With regard to the area devoted to shrimp farming in 2004, there are currently 6,888 acres under production. This represents a 12.5% increase in the overall area under the tenureship of shrimp farmers in 2004.
Apart from shrimp mariculture, the farming of *Tilapia* has been seeing some resurgence in commercialization. The only commercial Tilapia farming operation by Fresh Catch Limited was formally inaugurated in December 2002. The full scope of this project is for the development of 96 - 7,000 M² (0.7 Ha) Ponds and 2.8 hectare reservoirs. These facilities have a production capacity of **4,000 MT per annum**. Tilapia exports to the U.S. market were initiated in the month of May, 2004. In relation to small-scale fish farming, there are currently over ten acres of small-scale fish farming operations involved in the husbandry of a number of native finfish cichlids.

Source:
http://www.caricom-fisheries.com/website_content/Newsletter_Articles/article_9_an_overview_of_aquaculture_in_belize.pdf#search='Aquaculture%20in%20Belize'
Appendix 2

Excerpts from (i) Recent Budget Statements of the Minister of Finance of Trinidad and Tobago and two Statements from the Minister of Agriculture and the Chief Executive Office Caroni (1975) Ltd. re the Rationalization of the Sugar Industry

Excerpt from the Budget Statement for Fiscal 2003

Mr. Speaker, we have taken steps to reorganize Caroni (1975) Ltd through a process of re-vesting the assets of Caroni into the national community, including the major stakeholders. As you are aware Mr. Speaker, the programme of action for modernizing Caroni has already begun. Shortly, we will be in a position to offer an enhanced Voluntary Separation of Employment Program to all employees of Caroni. We are taking steps to transfer to the State all lands now controlled by this wholly owned State Enterprise. We will lease back to Caroni (1975) Ltd lands that are needed for the pursuit of its core agricultural business. Some of the land will also be leased to the cane farmers.

Mr Speaker, we have established a new company — Estate Management and Business Development Company Limited — with a mission to manage the lands leased to them by the State for the purpose of stimulating and facilitating new business activity in the areas of light and heavy industrial manufacturing, agricultural estates, housing estates and commercial complexes.

Mr Speaker, Caroni (1975) Ltd will remain in the sugar processing business, but cane cultivation and production will be assumed to a greater extent by the cane farmers in the context of the scaling down of the sugar industry. Mechanized cultivation and automated manufacturing will be standardized to make the industry internationally competitive and we will seek niche markets for the type of sugar we produce.

Mr Speaker, the modernization of Caroni together with the orderly transformation of its lands into growth poles would provide a range of alternative industrial and commercial activities to allow for a re-absorption of the unemployed labour resulting from the rationalization.

Moreover Mr Speaker, this employment-enhancing operation would be strengthened by the introduction of the private sector into the non-sugar operations of Caroni — the rum distillery, the rice and citrus entities and the dairy and cattle enterprises.

Mr Speaker, it is important that we create an environment which would allow companies including divested state enterprises, to prosper and to flourish.

As you are aware Mr Speaker, we are working hard on the structural environment, promoting transparency, accountability of Government and developing risk and venture capital for those sectors, in particular knowledge-based industries, which require state partnerships.
Excerpt from the Budget Statement for Fiscal 2005

Mr. Speaker, the principal objectives of the Caroni reform programme are to create employment-generating alternatives for workers in a declining industry and to reverse the economic waning of many communities which were dependent on the sugar industry. The objective is to ensure a secure and sustainable livelihood for former employees of Caroni.

Many former employees of Caroni (1975) Limited are now actively engaged in the operations of the Sugar Manufacturing Company Limited and so too are approximately 4,000 private farmers who cultivate sugarcane for the Company. We intend to establish a Sugar Industry Authority to implement a quality based payment system for sugar cane.

In addition, Government is acting to catalyse economic activity and create growth poles on vacated Caroni lands through the establishment of light industrial, commercial and agricultural estates and development of residential sites. The focus at this time is on provision of agricultural plots and residential lots to the former employees of Caroni as part of the enhanced Voluntary Separation of Employment Programme (VSEP). The agricultural plots would expand agricultural production in approximately seventeen (17) locations. Work is far advanced on preparing the residential and agricultural plots for occupation by eligible former employees. Distribution of agricultural plots will begin as soon as surveys have been completed.

Excerpt from the Budget Statement for Fiscal 2006

CARONI

The centre-piece of our intensified agricultural thrust is the restructuring of Caroni (1975) Limited. With the allocation of two-acre plots of agricultural land in fifteen (15) locations throughout Trinidad to former employees, we have created 7,247 new land owners and brought into productive use an additional eighteen thousand, three hundred and thirty eight (18,388) acres of land.

Mr. Speaker, the Ministry of Agriculture, Lands and Marine Resources will register these new land owners as farmers which will entitle them to benefit from Government’s Agricultural Incentive Programme. Some of these incentives will subsidize the cost to farmers as follows:
· 50% of the purchase price of machinery and equipment;
· 50% of the cost of irrigation equipment including water pumps;
· 25% of the cost of tillage of land; and
· 15% of the purchase price of agricultural vehicles.

Training support will also be provided through the extension services division of the Ministry and thirty (30) buildings owned by Caroni (1975) Limited are to be used for this purpose. The Ministry will also provide support in research and development, agro-processing and marketing.

Mr. Speaker, these farmers will be encouraged to extend from primary farming into value added products, particularly agro-processing and marketing through the creation of cooperatives and agri-businesses.

These initiatives will transform the traditional semi-commercial and primary-production-based agriculture into a set of profitable viable agri-businesses, and have a positive impact on employment, incomes, trade and production in agriculture and allow them to take advantage of the export opportunities that are available.

[Prime Minister Patrick Manning delivers the 2006 Budget Speech in Parliament on September 28, 2005](http://www.pnm.org.tt/content/documents_policies/article_id=32.shtml)

Deosaran Jagroo, Caroni (1975) CEO gave a breakdown of the future use of Caroni’s land:

Existing development—4,262 acres

Proposed usage for industrial and residential estates—1,027 acres

Proposed housing developments to meet the demand from former Caroni employees—1,022 acres

Proposed NHA and LSA developments—1,318 acres

Agricultural requests from former Caroni employees for agricultural lands—14,210 acres

He said this would leave 54,389 acres available for agricultural purposes.

Some 22,517 acres are currently being utilised for pasture; citrus; wine making, rice production, aqua culture, tree crops and private cane farming.
The residual 32,872 acres are presently under sugarcane production previously cultivated by Caroni and could be available for future agricultural or other uses.


More than 98 per cent of monthly-paid Caroni workers and half of the daily-paid have accepted the company’s voluntary separation employment package, Agriculture Minister John Rahael said yesterday.

Rahael gave an update on the VSEP plan, even as the Industrial Court began hearing submissions from Caroni and the All Trinidad Sugar and General Workers’ Trade Union on the latter’s injunction blocking the company from offering the package to daily-paid workers.

Yesterday, both parties agreed to expedite the proceedings. The union contends Caroni has failed to meet with the workers on the relevant issues affecting the company. No ruling was given up to 4 pm.

Proceedings continue today and both parties expect that an agreement would be reached by tomorrow.

Rahael said Caroni estimates that in order to produce 70,000 tonnes of sugar, a maximum of 1,223 employees would be required to man the Usine Ste Madeleine factory.

About 4,000-plus daily-paid workers have applied for VSEP, he added.

He also said 1,079 monthly-paid workers have accepted VSEP.

“So that almost half of the daily-paid workers and 98.4 per cent of the monthly-paid have taken VSEP, a significant number,” he added.

July 10 is the deadline for paying the daily-paid workers, he said.

Government has agreed that as part of the plan, Caroni employees would be given priority to access the company’s lands for agricultural use.

He said the land distribution plan, part of the proposed package to compensate workers, is yet to get off the ground since Caroni lands first have to be transferred to the State.

Legislation is required for this. A simple majority is needed for passage, he added. Rahael could not say when this will be brought to Parliament.

Replying to a question in Parliament on Friday, Rahael said Caroni has concluded land capability studies and it is estimated that at least 20,000 acres of land will be suitable for agricultural use other than cane cultivation.
He said it is expected that the lands will support a wide range of food crops and vegetables — pigeon peas, corn, hot peppers, pumpkin, ground provisions, citrus and rice. Most of these lands are likely to be located in central Trinidad.

To produce the 70,000 tonnes of cane which is projected in future, he said 32,000 acres of land would be required.

St Kitts workers saddened by industry's closure want severance now

Monday, March 28, 2005

BASSETERRE, St. Kitts: Sugar workers at the St. Kitts Sugar Manufacturing Corporation (SSMC) have been slowly but surely coming to terms with the fact that the Federation's sugar industry will be no more come the end of this year's crop.

Many nationals spent years working at the sugar factory in Basseterre and for many, it was labour which allowed them to build fine houses and educate their children among other things.

However, the government of Prime Minister Dr Douglas took the decision to shut down the debt-ridden industry which served the Federation for some 300 years.
In addressing the closure, Prime Minister Dr. Denzil Douglas stressed that the (SSMC) could not continue with the annual financial loss, adding that his government had to do something to halt the increasing losses.

Some workers are expressing annoyance with the Douglas Administration claiming that information on the promised redundancy packages is not forthcoming.

Speaking with Caribbean Net News Saturday, one worker who drove locomotives for several years expressed deep sadness in seeing the "sugar industry close down".

"It saddens me. Many of us were able to achieve a few things in life working there and you would imagine there are lots of bitter-sweet memories as a cultural way of life evolved from the industry, as we had workers from Guyana and other Caribbean countries who settled in St. Kitts as a result of coming to work in the crop season. It's not just the industry that's closing it's a whole chapter, a way of life that's closing," he said.

Despite the sadness however, the worker said he understood that government was losing a lot of money keeping the industry going and thought it might be the correct thing for the government to do. However he, like many others, expressed the desire to have severance monies paid now instead of later as is being said.
Appendix 4

Consider an aggregate production function for the agricultural sector:
\[ Y = f(K, L) \]  \hspace{1cm} (1)

Taking the total derivative of (1) we have:
\[ dY = f_K dK + f_L dL \]  \hspace{1cm} (2)

where \( f_L = \partial Y / \partial L \)

is the marginal value product of labor and \( f_K \) is similarly defined. Dividing (2) by \( Y \) we have:
\[ dY / Y = f_K dK / Y + f_L dL / Y \]

100 \( (dY / Y) \), the percentage change in \( Y \) as \( Y^* \) and \( K^* \) and \( L^* \) shall be denoted similarly. \( Y^* \) can be termed the rate of growth of the agricultural sector an important element of agricultural development. Hence
\[ Y^* = (f_K dK / K)(K / Y) + (f_L dL / L)(L / Y) \]  \hspace{1cm} (3)

i.e. \[ Y^* = K^* \varepsilon_K + L^* \varepsilon_L \]  \hspace{1cm} (4)

where \( f_K(K / Y) = \varepsilon_K \), the elasticity of production with respect to capital etc. and
\[ L^* \varepsilon_L = Y^* - K^* \varepsilon_K \]  \hspace{1cm} (5)

It is clear that if land \( N \) is included as an input then (4) becomes:
\[ Y^* = K^* \varepsilon_K + L^* \varepsilon_L + N^* \varepsilon_N \]  \hspace{1cm} (6)

And (5) becomes
\[ L^* \varepsilon_L = Y^* - K^* \varepsilon_K - N^* \varepsilon_N \]  \hspace{1cm} (7)
AGRICULTURE, TOURISM LINKS
Web Posted - Wed Aug 17 2005
By Patricia Thangaraj

The Inter-American Institute for Co-operation on Agriculture (IICA), the Organisation of American States (OAS) and the Government of Barbados have formed a partnership to develop a project that will encourage more linkages between the agricultural and tourism sectors.

Entitled Strengthening of the Tourism Sector through the Development of Linkages with the Agricultural Sector in the Caribbean, this project will provide economic opportunities, enhance resilience in rural communities and improve the sustainable development of both industries. The three-year project would start off with the participation of seven OAS CARICOM nations that include Barbados, Commonwealth of Dominica, Guyana, Suriname, Jamaica, St. Lucia and St. Kitts and Nevis and the first year of the project will run from July 2005 to November 2006 to the amount of US$119 000.

Ena Harvey, IICA Representative in Barbados, said that this new project will complement some of the other AgroTourism plans that they currently have, such as the Caribbean Week of Agriculture, scheduled for the first week of October in St. Kitts and the AgroTourism Conference, where the best practices and strategies to improve present initiatives would be discussed.

A lot of good initiatives are happening to support the production of AgroTourism products and services right across this region and bring a
whole new look to agriculture, towards what businesses in agriculture could be and to create win-win partnerships for agriculture and tourism.

The project was formed with the notion that the agricultural sector can provide the tourism industry with different and creative farm-based products, and services that could add a fresh touch to the current products being utilised by the tourism sector and would in effect, greatly benefit the income of the poor in the rural communities, who would otherwise be marginalised.

Wendell R. Goodin, Director for the Office of the General Secretariat of the OAS, said that it is probable that the current state of agriculture, especially for OECS countries in terms of bananas and sugar, is likely to be devastated resulting in the destruction of the livelihood of small farmers, and the agro-tourism linkage would not only revive the agricultural sector, but would also necessitate the tourism industry in becoming more competitive, especially since the Caribbean is the region that is most dependent on tourism than anywhere else in the world.

He explained that it is imperative that the Caribbean keeps on modifying and expanding our tourism-related products and services in order to remain competitive and establishing linkages with other industries would help us to do this. There is a generally held belief that the agricultural sector has the greatest potential to enhance and to expand the tourism product.

Patrick McCaskie, Chief Economist, Research & Planning Unit, Ministry of Finance and Economic Affairs agreed and added that this project is timely because it fits in with the National Strategic Plan 2005-2025 being formulated by the government, in which goal five aims to enhance Barbados’ prosperity and competitiveness and it is expected that these two sectors tourism and agriculture will play a pivotal role in this exercise.

It is expected that the tourism industry, small farmers, investors, entrepreneurs, food service providers, processors, artisans, handicraft persons and the rural community would all benefit from this project, which was officially signed by Harvey, Goodin and McCaskie at IICA headquarters yesterday.