

IICA  
E71  
59

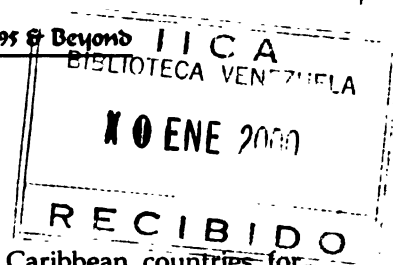


## Agriculture in Trinidad & Tobago



00006254

1102  
E71  
59



## Preface

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

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

Trinidad and Tobago is one of the few Caribbean countries for which information on the agricultural sector, both statistical and qualitative, is available. Reports and studies undertaken by the Ministry of Agriculture, Land and Marine Resources (MALMR), IICA, as well as by private consultants, on the agricultural sector in general and of its sub-sectors in particular are generally available.

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

This working document was the result of the collaborative efforts of Diana E. Francis and Michael Henry of the Socioeconomic Policy, Trade and Investment Programme of the IICA Caribbean Regional Centre. The information and analysis are based on statistics and descriptive information extracted from various national sources, as well as from reports generated by regional and international counterpart institutions. It is anticipated that the information will be useful, not only to individuals and institutions working in agricultural development in Trinidad & Tobago, but also to other parties interested in information on the agricultural sector in general.

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

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

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

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

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

**Table of Contents**

---

Preface .....	1
Table of Contents .....	2
Country Profile .....	3
Agriculture Sector Profile .....	4
Socioeconomic Role .....	4
Organisational Characteristics .....	5
Agriculture in T&T - Performance 1991-1995 .....	6
Socioeconomic Performance .....	6
Agricultural Diversification .....	9
Commodity and Sub-Sector Performance .....	10
Sugar Cane & Sugar .....	10
Cocoa and Coffee .....	11
Citrus .....	12
Coconut .....	13
Food Crops .....	13
Cut Flowers and Foliage .....	15
Livestock .....	16
Fisheries .....	18
Agro-processing .....	20
Constraints to Agriculture .....	21
Agriculture in T&T - Prospects .....	24
International Environment .....	24
International - Domestic Economy Link .....	25
Commodity Market Trends .....	26
Sugar .....	26
Coconut/Copra-Oils .....	26
Cocoa .....	27
Citrus: .....	27
Non-Traditional Fruits .....	28
Cut Flowers .....	28
Rum .....	28
Domestic Food Production .....	29
Agro-Industry .....	29
Guidelines for Policy Formulation .....	30
Additional Statistics .....	32

---

### Country Profile

The twin-island state of **Trinidad and Tobago** (hereafter T&T) lies at the extreme south of the Lesser Antilles island chain. The islands experience a tropical climate, with temperatures of between 29°C-32°C. Annual rainfall averages 40 inches and during the wet season (from June to December), Trinidad in particular is prone to flooding. Compared to other Caribbean islands, T&T are least affected by hurricanes with the last recorded hurricane occurring in the 1955.

Combined land area is 5,128 sq. km. (1,980 sq. mi, of which Trinidad is 4,828 sq.km. Roughly 45%-50% of Trinidad is forested, with large tracts of swamps in the eastern and western parts of the country. Arable land (estimated at 15% of total land) oil, gas and asphalt are the natural resources of economic importance in Trinidad, with white sand beaches being the natural resource of economic significance in Tobago.

T&T is a multi-ethnic society comprised of African (41%), East Indian (41%), mixed (16%) and small European and Chinese segments. The 1996 mid-year population was an estimated 1.32 million. About 71% of the population reside in urban areas with almost all other populated areas being semi-urban in character.

Real GDP grew by approximately 3.5% per annum between 1994-1995 after almost a decade of uninterrupted economic decline. The petroleum sector declined by 5% per annum between 1991-1993 before recovering in 1994. This recovery in the petroleum sector, as well as growth in chemical & non-metallic minerals manufacturing, were the main drivers of overall growth of the economy in 1994. By 1995, however, the economic base was broadened, with construction, transport and storage sectors emerging as major contributors to economic growth. Annual growth in manufacturing, averaging 2.4%, was led by the food-processing, cement, steel and the assembled-products industries. Recovery in the food, textile and wood manufacturing industries and expansion in the hotel and guest house sector led the 3.8% growth recorded in 1995. The agricultural sector on the other hand retained a relatively small share in total national income, averaging 2.4%

between 1993-1995. Over the same period, real growth averaged 0.77% per annum.

Between 1988-91, the Government of Trinidad and Tobago implemented a structural adjustment programme aimed at stabilising the economy and reforming the country's trade and exchange regimes. The macroeconomic stabilisation programme also concentrated on fiscal reform, through reductions in public sector expenditure, tax reform, privatisation of state enterprises and public utilities and debt payments rescheduling. While the floating of the TT dollar in 1993 constituted part of the trade and exchange liberalisation, the immediate effect on the Trinidad and Tobago economy was negative, particularly on the export sector. By the end of 1993, however, the economic reform programmes facilitated quick adjustment, which contributed to a turnaround in economic performance in 1994.

The post-1995 Medium Term Policy Agenda emphasised sustainable economic growth, job creation, poverty eradication, human development, improved social service delivery and environmental protection, with continuity in regard to monetary and fiscal discipline. Further trade and market liberalisation is expected to facilitate continued monetary and fiscal discipline. Emphasis was also placed on private sector development, the development of rural areas and the raising of productivity levels in the major non-energy productive sectors, including agriculture.

Table I ~ Trinidad and Tobago

Key Economic Indicators	1991	1992	1993	1994	1995
TT\$M					
Avg. TT\$=US\$1	4.25	4.25	5.35	5.95	5.91
GDP-1985 prices	16,567	16,294	16,057	16,630	17,265
Agriculture	568	553	600	593	562
Petroleum	4,405	4,228	3,937	4,287	4,303
Manufacturing	1,344	1,348	1,296	1,323	1,396
Fiscal Balance	-45.9	-643.8	-39.1	-6.0	53.3
Visible Trade Bal	8,436	7,943	8,800	11,575	14,512
B.O.P US\$M	-332.2	-116.8	151.2	181.0	32.5
Public Ext. Debt	5,255	6,000	9,454	10,071	9,738

Source: Review of the Economy, 1997, Ministry of Finance, Republic of Trinidad & Tobago; Annual Statistical Digest 1993

## Agriculture Sector Profile

### Socioeconomic Role

From the mid-1970s, the agricultural-based economy of T&T was transformed into an industrial economy driven by oil and gas production. Since then, agriculture's share in national income has hovered between 2% - 3%, increasing slightly to over 3% in the 1990s (Table 1). The sugar industry has historically been the single largest contributor to agricultural GDP and to agricultural export earnings.

**Table 1: Trinidad & Tobago**  
Agricultural GDP Sub-Sectoral Shares

TT\$M	1991	1992	1993	1994	1995
Agricultural GDP	568	553	600	593	562
share in GDP	3.4	3.6	3.7	3.6	3.3
Export Agriculture	24	18	31	34	34
Domestic Agriculture	335	329	337	301	290
Sugar	209	205	231	257	237
F, T & B Mfac.*	629	605	578	575	595
Share in GDP	3.8	3.7	3.6	3.5	3.4
Wood & related prod.	48	50	52	51	63

\*: F.T & B - Food, Beverage and Tobacco Manufacturing

Source: Annual Economic Survey, T&T Central Bank, 1995

While the performance of the sugar industry has fluctuated over the years, the contribution of the cocoa, coffee and citrus to total agricultural GDP and export earnings has gradually declined. In contrast, the economic significance of the domestic food production sub-sector increased, particularly towards the end of the period under review (1991-1995). While the expansion in the food production sector contributed significantly to the domestic food supply situation, the overall capacity of the agricultural sector to produce the bulk of the domestic food requirements remained generally under-emphasised. Increased attention to the food production sub-sector in recent times has contributed to an improvement in the country's self-sufficiency status, particularly in meat products (pork and poultry and to a lesser extent, beef and veal and mutton, table eggs and milk).

As indicated in Table 1, the contribution of the food, beverage and tobacco manufacturing sector to gross value-added averaged 3.6% per annum over the 1991-1995 period. Although small in comparison to the food, beverage and tobacco industries, the contribution to gross value-added from the wood and related products (forestry)

industries surpassed that of the export agriculture sector. With the possible exception of the sugar industry, and to a lesser extent the tobacco and beverages industries, linkages between agriculture and the other sectors remain fairly weak. Development of these linkages have been constrained by the inadequate supply capacity (in terms of volumes), quality of raw materials, and price competitiveness. Agricultural-tourism linkages are also weak and limited to the provision of fresh vegetables and fruits, to hotel establishments, restaurants and other visitor-service centres.

In spite of its fluctuating fortunes, the agricultural sector was able to maintain its importance in terms of absorbing surplus labour during periods of economic decline. This was generally evident in the 1982-1983 and 1988-1989 periods and in the food crop, fisheries and livestock sectors which absorbed a significant proportion of the "self-employed" agricultural labour force. The relative size of the labour force engaged in domestic food production is evident in Table 3, averaging 67% of total agricultural labour force. However, the sugar industry continued to be the single largest employer of unskilled labour in the agricultural sector. While this "return" to agricultural enterprises was induced by economic recession, the agricultural sector, particularly the non-sugar industries, has generally maintained the size and composition of its labour force over the 1991-1995 period of economic recovery (Table 3).

**Table 3: Trinidad & Tobago**  
Employed Labour Force in Industry & Agriculture

	'000s	1991	1992	1993	1994	1995
Industry		401.0	40.9	404.5	415.6	431.5
Agriculture:		47.1	47.4	46.1	51.7	46.2
sugar		11.7	13.9	12.6	12.9	12.7
export		3.5	3.1	2.8	3.2	3.1
domestic		31.9	30.4	30.7	35.6	30.4

Source: CSO

Employment generated as a result of agricultural activity accounts for approximately 5-11% of the total labour force. Though small in comparison to other Caribbean countries, for T&T this share is significant given the highly capital intensive

nature of the dominant oil and gas sector. The situation in T&T derives largely from the socio-economic factors which have relegated agriculture as the least sought-after means of employment in T&T. Unlike most developing countries, the rural parts of the country (particularly in Trinidad) are not highly agricultural resulting in a low rural labour force participation rate in agriculture.<sup>1</sup> The relatively low wages offered and generally insignificant or non-existent employment benefits act as further disincentives to agricultural employment. Table 4 indicates the size of the discrepancies in wages both within the agricultural sector and between the non-sugar agricultural sector and industrial labour and other occupations. The structural imbalance in wage rates was precipitated by the more rapid increase in wages in the industrial sectors since the early 1980s. Growth in the sector's labour force was stunted by its inability to match the rapid rise in wage levels.

**Table 4: Trinidad & Tobago**

Median Monthly Income of Persons Employed (\$TT)					
Industrial Group	1991	1992	1993	1994	1995
Sugar industry	1,400	1,300	1,300	1,300	1,400
Other Agriculture*	700	600	600	700	700
Petroleum Industry	2,700	3,100	3,200	3,100	3,200
Other Manufacture	1,200	1,200	1,200	1,200	1,200
Construction	1,300	1,400	1,400	1,400	1,600

\* includes fishing, hunting and forestry

Source: CSO Social Indicators; CSSP Labour Force Report

### Organisational Characteristics

Between the two, Tobago was once considered to be the "bread basket" of the twin island state, supplying the bulk of domestic food supplies to Trinidad. With the emphasis on tourism development in Tobago, as well as other contributing factors, the roles have been reversed, with Tobago now dependent on Trinidad for most of its domestic food supplies. In Trinidad the agriculture sector is clearly delineated among sugar production, export crop production and food production, which encompasses fish and livestock production. Sugar production remains largely a state-run enterprise, with a typical non-sugar farmer engaged in the small scale production and extremely informal vending of vegetables and

root crops. Domestic food producers tend to be small and resource constrained, and constitute the majority of the farming population. Within fairly recent times, however, there has been a noticeable expansion in the size of the commercially oriented capital-based agricultural producers, particularly in poultry and pig production and marketing, as well as in meat, poultry, fish, dairy products, fruit and vegetable processing, grain and feed mill operations and in the edible oils and fats and bakeries enterprises.

In spite of this small but strong private sector-led agribusiness sector, the bulk of food production activity continues to rely on public sector provided financial and other direct supports. Recognising the importance of strengthening the dependent small farm food production sector, between 1991-1995 the T&T government implemented initiatives aimed at developing the capacity of quality of production and output. As a result, public sector resources were re-allocated into activities to stimulate domestic food production. The development and expansion of the foreign exchange potential of the traditional export sub-sector however, continued to be accorded high priority.

Sector policies for the 1991-1995 period emphasised:

- achieving a maximum degree of self-sufficiency in staple foods;
- promoting human resources development;
- increasing incomes and employment from agriculture and agro-based activities;
- reducing the food import bill and import content of agriculture inputs, equipment and machinery;
- improving rural services and infrastructure to arrest the rural-to-urban drift;
- creating a new sense of social appreciation for agriculture; and
- protecting, conserving and enhancing the environment and the natural resource base for agriculture, forestry and fisheries.

Within the context of structural adjustment and public sector restraint, Government continues to maintain its role as the provider of requisite support to the sector. However, the level and scope of support has declined partly as a consequence of the economic reform programme

<sup>1</sup> Poverty and Unemployment in an Oil-Based Economy - Trinidad and Tobago, World Bank Document, October, 27, 1996.

in the late 1980s. The Ministry of Agriculture, Land and Marine Resources (MALMR), through its specialised departments, including livestock and animal health, is the lead institution responsible for implementing policy objectives. Against the backdrop of the reduced public sector role in agriculture, support provided by regional and international institutions complements the MALMR's activities, particularly in the areas of research, training and agricultural policy formulation and analysis.

Excluding the small, but vibrant private sector in agri-business development, private sector investment in agricultural development in T&T continues to be relatively low with the tendency to concentrate investments in the import and distribution of agro-chemicals and food retailing. In addition, much of the expansion in the financial and capital sector has been targeted at investment in non-agricultural industries. Commercial bank lending rates tend to be prohibitive for undertaking any substantial investment in agricultural enterprise development. Commercial bank lending for agricultural development averaged less than 5% of the total lending portfolio over the 1991-1995

period (Table 5). The Agricultural Development Bank (ADB) established by Government in 1968 for the purpose of mobilising investment financing for agricultural enterprise development maintains its role as the main provider of credit to the agricultural sector.

**Table 5: Trinidad & Tobago**  
Share of Agriculture in Commercial Bank Credit

TT\$'M	1991	1992	1993	1994	1995
Commercial Bank	8,256	7,996	8,123	7,158	7,662
<b>Total</b>					
Agricultural credit (%)	3.65	3.93	4.81	2.55	2.77
<b>ADB Total of which</b>	<b>45.4</b>	<b>50.5</b>	<b>40.7</b>	<b>72.4</b>	
Crops	16.7	20.5	12.1	13.9	
Fisheries & livestock	14.9	10.7	3.6	4.7	
Agro-Industry	8.8	14.0	19.1	48.8	
Horticulture	1.9	2.4	1.8	1.9	

Source: Trinidad & Tobago Central Bank Annual Reports, ADB Reports

Other avenues of credit for agricultural enterprises include the Small Business Development Company (SBDC) established in 1989 as well as through the establishment of a Government subsidy system and the granting of concessionary interest rates to farmers.

### Agriculture in T&T - Performance 1991-1995

#### Socioeconomic Performance

The long-term effects of structural bias created by the rapid development of the petroleum sector and more recently of the financial and services sectors continued to encourage resource transfers from agriculture. In spite of the advantages for agro-industrial development derived from the existence of cheap energy sources in T&T, agro-industrial development lagged behind non-agricultural manufacturing industries. In addition, the periodic devaluation and accompanying instability in the T&T dollar created significant challenges in terms of the agricultural sector's ability to adjust over the 1991-1995 period (Table 6).

In spite of the unfavourable performance in export agriculture in 1991 and 1992, its relatively small share in agricultural GDP (4% and 3% respectively), minimises its influence on overall sector performance. In contrast, the

relatively small declines in domestic agriculture and sugar production in 1992 was largely responsible for the 2.7% decline in the agricultural sector's contribution to GDP.

**Table 6: Trinidad & Tobago**  
Gross Domestic Product and Agricultural Growth Rates %

	1991	1992	1993	1994	1995
GDP @ Factor Cost	-1.6	-1.6	-1.5	3.6	3.8
Agriculture	6.6	-2.7	8.4	-1.0	-5.3
Export agriculture	-31.1	-21.9	66.0	10.6	-0.9
domestic agriculture	-1.3	-1.8	2.6	-10.6	-3.9
sugar	17.0	-1.9	12.6	11.4	-7.6
F, T & B Mfac	3.3	-3.9	-4.5	-0.5	3.5
Wood & related prod.	17.3	9.9	4.6	-1.9	22.4

Source: Review of the Economy 1997, Ministry of Finance,

The performance in the food, beverage and tobacco industry was also unfavourable during the 1992-1994 period. The decline in the food, beverage and tobacco industries in 1993 was closely linked with the floating of the T&T



dollar that year. The slight deceleration in agricultural sector growth rate in 1994 partially reflects the floating of the dollar, particularly as it affected the viability of domestic food producing enterprises, including livestock industries.

In concert with exchange rate instability, the "economic liberalisation-induced" shock (a la the establishment of the World Trade Organisation (WTO) and the Agriculture Agreement) contributed to the continued deceleration in agricultural sector in 1995. While trade liberalisation was generally viewed in positive terms for economic growth, its initial impact on the agricultural sector was somewhat ambiguous.

Among the enterprises most notably influenced by exchange rate instability, trade liberalisation and rising input prices was the agro-industrial sector. In an attempt to reduce the domestic agro-industries' reliance on imported raw materials, considerable investments were made in machinery and equipment for food processing with an accumulated \$344 million invested in the sector in the period up to 1983. The bulk of this investment was used for the development of meat slaughtering and processing, manufacturing of dairy products, fruit, vegetable and fish preservation, processing and canning and the manufacture of vegetable and animal oils and fats, cocoa, chocolate and sugar confectionary, other non-sugar foods and animal feeds.

The value of imported inputs for the agro-industrial sector was a major contributor to the high and rising T&T food import bill. With an approximate cost of \$261 million per annum, imports of cereal and cereal preparations ranked the highest among all imported foods. This category includes rice and other primary import commodities such as unmilled maize and wheat which are used as intermediate materials in the flour processing, bakeries industries and cereal preparations. The high raw material import content contributed significantly to the overall food import bill. Between 1991-1995 the annual food import bill (SITC Section 0) averaged \$1m per annum and constituted 13% of total merchandise trade.

Food import expenditures grew by approximately 11% per annum over the period, with the relatively higher import growth rates in the post-1993 period (averaging 20%). As a result of the agricultural production structure (export production and agro-industry), T&T has been a net-importer of agricultural commodities since the 1970s. This situation has improved as a result of an increased level of exports from the agro-industrial sector. This export growth was an important contributor to the reduction in the agricultural trade deficit over the 1991-1995 period (Table 7).

**Table 7: Trinidad & Tobago**  
**Agricultural Trade Performance**

TT\$M	1991	1992	1993	1994	1995
Trade Balance	-479	-463	-336	-202	-252
Exports by SITC:	492	483	665	895	1,170
0 - Food/Live Animals	378	365	481	635	821
1 - Beverages/Tobacco	100	108	168	235	314
4 - Oils/Fats	14	10	14	25	35
Imports by SITC:	971	946	999	1,097	1,422
0 - Food/Live Animals	895	897	939	1,010	1,344
1 - Beverages/Tobacco	41	29	30	40	44
4 - Oils/Fats	35	20	30	46	34

Source: CSO, Ministry of Finance, T&T

The relatively slow growth in import expenditures on fruits and vegetables also contributed to an improved agricultural trade balance in the 1992-1993 period. The 10% increase in expenditures on overall agricultural imports in 1994 was led by increases of 57%, 48% and 23% in expenditures on feeding stuff, cereals & preparations and fruit and vegetables, respectively. This apparent import surge was also closely associated with the immediate and short-term effects of the floating of the TT dollar in 1993. The currency effect was most evident in cereals, which reported declines in import volumes by approximately 17%. This partially reflects the reduction in the purchasing power of the T&T dollar. The more rapid growth in food and live animal imports in the post-1994 period was partly stimulated by trade liberalisation, mainly the abolition of the import negative list and exchange rate deregulation which facilitated expansion in the import sub-sector, particularly consumer products.

In spite of the relatively high level of food imports, government policies have promoted the strengthening of the country's food security

status. This was to be achieved by encouraging the production of fresh vegetables and fruits, rice and animal products for primary consumption as well as for raw material to the agro-industrial sector. Over the 1991-1995 period, total (current and capital) public sector financial support to the agricultural sector amounted to TT\$1,450.6 million, representing approximately 4% of the total national budget. The annual changes in the estimate in fact reflect an increase in the MALMR share of total expenditure alongside a general increase in the level of government spending (Table 8). Of this total, 86% represented current expenditures, of which the bulk (50%) was allocated towards administration and technical services (personnel costs). Transfers and subsidies which accounted for 42%, represent financial support to the state-owned enterprises as well as price and other support payments to farmers. The proportion of the recurrent budget allocated to transfers and subsidies generally increased compared to the levels in the pre-1991 period.

Table 8: Trinidad & Tobago.

Total Public and MALMR Annual Expenditures					
TT\$ Million	1991	1992	1993	1994	1995
Total Recurrent Exp.	5,991	7,636	6,542	7,079	8,058
MALMR Recurrent	164.1	287.9	255.4	259.8	273.9
Personnel	95.1	132.6	137.0	132.5	136.6
Transfers & Subsidies	53.5	140.3	104.5	110.8	113.5
Other	15.6	15.1	13.9	15.6	23.7
Total Capital Exp.	885	786	591	1,299	1,292
MALMR Capital Exp.	31.0	42.4	26.7	21.1	88.3

Source: Republic of Trinidad & Tobago, Estimates of Expenditure, Reports 1993-1995

During the 1991-1995 period, the level of total recurrent expenditure approximated 0.9% of total GDP and 38.8% of agricultural GDP. The share of transfers and subsidies in agricultural GDP moved from 9% in 1991 to an average of 17% between 1993/1994. Within this category, actual transfers to state-owned enterprises totaled \$32.9 million.

Public sector resources are usually complemented by donor financial assistance on concessionary terms (such as the IDB). Between 1992-1995, the pattern of sectoral concentration of aid by donors was relatively constant. Of the eight major economic sector classifications, the agricultural sector ranked third in terms of

percentage share of total donor funds in 1992, with a share of 12%. This share declined to 2% in 1995, with a consequent decline in the sector's percentage share ranking in assistance received, to sixth place.

In the 1990s, government budgetary support represented a main source of investment in agricultural enterprise development. In addition to government's direct intervention through the MALMR and its various statutory enterprises, Government has facilitated access to credit on relatively favourable terms since the late 1960s, particularly through the ADB. Between 1985-1995, fiscal constraints and state withdrawal from directly productive activities, among others, prompted a modification in agricultural credit policy.

The lack of widespread utilisation by farmers of the ADB credit facility, due largely to the non-effectiveness of the concessionary interest rate mechanism and the high level of loan default and heavy levels of debt incurred by the ADB also added stimulus to this reform. In the post-1995 period, a distinct facility, the Youth Window Project (YACTRAP), was introduced to improve rural youth's access to agricultural credit and ultimately stimulate agri-business employment opportunities in rural areas. The project was funded by an European Union (EU) grant of \$35 million, with ADB providing technical and business management training and assistance in market and input price information and land acquisition/access. Implementation was initiated in 1996 and the maximum value of the loan of \$50,000 carried a five-year repayment period and a two-year moratorium on loan repayment.

Outside of the ADB, access to credit for agricultural enterprises is facilitated through the Small Business Development Company (SBDC) established in 1989. The SBDC provides an alternative avenue to those desirous of engaging in viable agricultural enterprises, but who are unable to fulfill the collateral requirements of the ADB. The establishment and expansion of small-to-medium sized businesses has received additional support through Government loan guarantee incentive to the SBDC. The provision of agricultural

credit was also facilitated through the establishment of the Government subsidy system and the granting of concessionary interest rates to farmers.

### **Agricultural Diversification**

Against the backdrop of a declining traditional export sub-sector, economic adjustment and rising unemployment and poverty levels, the development of the domestic food production sub-sector and agricultural diversification assumed greater urgency in the 1990s. Government, with its direct presence in production activities through its state-owned enterprises (SOEs), Caroni and the National Flour Mill (NFM), was able to influence and accelerate the pace of the agricultural diversification.<sup>2</sup> The agricultural diversification strategy focused on the revitalisation of domestic agriculture, the restructuring of the sugar industry, the acceleration of the Caroni agricultural diversification program and the review and reformation of the subsidy and incentive systems with a view to removing the apparent bias against domestic agricultural production.

Impetus for embarking on a Caroni-led agricultural diversification was provided as a result of the declines in the two major foreign exchange earning industries - petroleum and sugar. In addition, the eventual elimination of preferential market access for sugar had far-reaching implications for the viability of the sugar industry, which has traditionally been the cornerstone of the agricultural sector and the leading agricultural export. Success in agricultural diversification would also be positively reflected in the agricultural trade balances. In addition, in light of the general economic decline, the agricultural sector was seen as the only sector capable of absorbing labour released from the oil industry and public sector employment.

In 1988, it was estimated that Caroni (1975) Ltd held approximately 20% of the total arable land in Trinidad. The implications of the sole ownership of such an extensive land resource are far reaching. The capacity of Caroni to

cultivate extensive new acreage alongside its main crop sugar and the existence of a well established production, processing and marketing system placed the company in an advantageous position in terms of spearheading diversification initiatives. Agri-business development would be facilitated through the increased volumes of domestically-produced raw material for agro-processing and additional foreign exchange earnings would be generated through the export of exotic tropical products.

Caroni's sugar operations also underwent a restructuring process in order to improve efficiencies and provide a solid base in support of the non-sugar activities. The production of rum from sugar-cane was actively pursued in order to reduce the dependence on primary production and to increase domestic value-added. The thrust of Caroni's diversification programme initiated in 1982, comprised the following projects: tree and food crop cultivation, livestock production, rice production and aquaculture development. These initiatives have earned the company the status of being the single largest producer of citrus and rice in Trinidad and Tobago.

The Trinidad and Tobago Oil Company Ltd (TRINTOC) a state-owned enterprise, also utilised the company's agricultural holdings to produce beef, sheep, dairy, bees, citrus, cocoa, coffee and horticulture. Tropical floriculture production occurs year-round with output sold on the local, European and U.S markets. In 1992, there were 32 known cut flower and foliage holdings, with approximately 75 acres under orchids, anthuriums, ginger lily, heliconia, chrysanthemums and cut foliage cultivation. The cultivation of exotic ornamentals is highly capital intensive, but the commercial potential is quite high. In recognition of its potential, the MALMR supported private commercial producers through research into tissue culture and the production of improved cultivars, sale of planting material, and the dissemination of market information.

<sup>2</sup> Review of the Agricultural Sector, 1993; prepared by the Planning Unit of the MAMLR, 1995.

## Commodity and Sub-Sector Performance

### □ Sugar Cane & Sugar

In 1994, sugarcane cultivation occupied approximately 38% (30,006 acres) of Caroni's (1975) Ltd's total agricultural land acreage. Partly as a result of government's policy of increasing agricultural employment and improving the efficiency of the sugar cane cultivation, sugarcane production has been opened to private farmers, who for the most part operate on relatively small holdings leased from Caroni, or on privately held lands. The share of small cane farmers' production has gradually increased, reaching an average share of 50% of total sugar cane production in 1995 (Table 8).

**Table 8: Trinidad & Tobago**

Cane and Sugar Production and Exports					
	1991	1992	1993	1994	1995
Cane Prod. '000mt	1,301	1,292	1,210	1,398	1,327
estates	687	681	603	701	663
farmers	614	611	607	697	664
Estate ha. Reaped	12,580	11,667	11,473	11,013	na
Yield Tons/ha	54.6	58.4	52.6	63.6	na
Raw sugar, '000mt	100.4	110.4	104.7	131.1	117.1
Refined '000mt	34.0	34.3	32.9	38.0	41.9
TC/TS	12.9	11.7	11.6	11.0	11.3
<b>Sugar Exports:</b>					
'000mt	56.5	59.2	51.0	57.1	68.1
TT\$M	148.6	153.8	161.2	202.9	305.7

Source: Annual Economic Survey, Central Bank; CSO

Between 1991-1995, sugarcane production declined by roughly 2% per annum. In fact, with the exception of the year 1994, the tonnage of sugarcane produced declined every year during this period, led by a 2.8% per annum contraction in estate sugarcane production compared to a positive, albeit slight (0.1%) expansion in production from small independent farmers. Sugarcane production peaked at 1.5 million tons in 1990, the highest output achieved since 1976. The subsequent decline in 1991 occurred in spite of a 17% increase in the harvested area. This occurrence may be explained by the decline in sugarcane productivity in that year as manifested by a yield of 54.6 tons sugarcane per hectare in 1991 compared to a yield of 73.3 tons sugarcane in 1990. Notwithstanding the relatively constant yields (tons sugarcane per hectare), the continued decline in sugarcane production between 1991-1993 was attributed to a combination of adverse weather conditions, an

increase in unplanned cane fires and labour relations problems which resulted in a reduction in harvested area.

The reduced harvested area was also an outcome of the gradual transfer of some of Caroni's land holdings out of sugarcane cultivation to facilitate the company's diversification programme. The effect on sugarcane output was temporary and the 6.4% decline in output in 1993 was a consequence of the worst drought experienced since 1986. The level of output in the post-1993 period was generally higher, averaging above 1.3 million tons. Amidst the reduction in harvested area, the increased output was facilitated by the improvement in yields in the latter part of the period.

In addition, the company was able to maintain high levels of sugar production from a reduced total sugarcane cultivated area due to improvements in technical efficiencies. Between 1991-1995, improved plant operational efficiencies, including improvements in cane harvesting techniques and in the conversion factor (i.e., the volume of sugar cane required to produce one ton of sugar) contributed to a higher level of sugar production, averaging over 100 thousand tons per year. In 1992 the sugar industry recorded a 15-year high in the cane/sugar conversion ratio of 11.7 (Table 9).

Between 1991-1995, production of both raw and refined sugar trended upward. However, raw sugar production exhibited greater annual variability in production. Growth in refined sugar output averaged 4.8% per annum. The TC/TS ratio of 11 in 1994 and a 20% improvement in sugarcane/per hectare yields was largely responsible for the improved performance in 1994. A number of factors, including improved agronomy, favourable weather conditions and a relatively harmonious industrial climate were also contributory factors. The shortfall in sugar production in 1995 was primarily due to low water content in the soil, due to the dry weather conditions which prevailed during the harvesting period. As was to be expected, the TC:TS ratio increased to 11.4% reflecting the difficulties of extracting sugar from dried cane.

Notwithstanding the fall in production, high inventory levels enabled the industry to fulfill its external contractual arrangements that year.

In general, the improved situation in the sugar industry was in large measure, attributable to Government's strategy for improving industry viability in the post-1993 period. This strategy was based on the restructuring of Caroni Ltd., the continuation of the Company's diversification program and the introduction of improved varieties of higher sucrose content sugarcane in 1990.

Sugar has traditionally been the leading agricultural commodity export earner, averaging 38% per annum of total agricultural exports over the 1991-1995 period. Sugar is exported to the UK under preferential market access granted by the Lomé Agreement (EC-ACP sugar protocol). The original UK sugar quota established for T&T in the mid-1980s was 73,815 tons. However, the inability to meet its quota obligations resulted in a subsequent reduction of its UK quota to 47,813 tons at TT\$19,962/ton. Since then (post-1986) sugar production has been geared to fulfill the UK quota requirement.

Lesser volumes of sugar are also exported to the United States market through the Caribbean Basin Initiative (CBI). The difficulties associated in meeting the UK sugar quota, coupled with the increased competition from caloric and non-caloric sweeteners and the protectionist policies of the US, resulted in similar reduction of the US sugar quota from 21,500 tons in 1985 to 7,500 tons in 1986/87. This was further reduced to 5,234 tons in 1987/88 a loss of 54% of the US market. Since then exports to the US markets have been variable and based on the quota allocated to T&T for a particular year.

The value of sugar exports increased slowly between 1991-1993, averaging under 5% per annum. From 1994, however, the industry recorded phenomenal growth in the value of sugar exports. This apparent phenomenal growth in export value was reflective more of the effects of the devalued T&T dollar during that period than of actual rapid growth in sugar export volumes (Table 8). More recently, (post-

1993 period) sugar was also exported to Portugal under the Lomé agreement, albeit at a lower market price than was offered in the UK. Although sugar remains the leading contributor to agricultural exports, there was a steady decline in its share in total agricultural exports, from 61.9% in 1985 to 31.9% in 1994. This decline may be explained by the rapid growth in the other categories of agri-food exports.

#### □ *Cocoa and Coffee*

Between these two beverage crops, cocoa is produced more extensively than coffee. In fact, Trinidad was once a leading Caribbean producer of fine-flavoured cocoa until the 1970s, and a leader in cocoa research since the first Cocoa Research Project was launched in the early 1930s. The germplasm available in Trinidad is considered to be among the best in the world with the potential to produce yields of over 1.5 tons/2.47 acres (1,500 kg/ha) of premium priced flavour cocoa.

Cocoa is one of the most suitable crops for many parts of T&T. In 1994, combined cocoa and coffee cultivated area was 21,000ha with approximately 5,000 farmers in the industry. Cocoa and coffee purchasing and marketing are regulated by the statutory Cocoa and Coffee Industry Board (CCIB). Actual purchasing and sales are undertaken by agents of the CCIB and in some instances, by other independent organisations and private farmers who inform the CCIB of the status of their operations. Almost all the cocoa beans produced are exported either as plantation or estate grade cocoa, compared to coffee beans, where approximately 50% is processed locally into ground coffee.

The cocoa and coffee industries declined in the 1977-1986 period as a consequence of the termination of production of many of the large estates, high wages rates, labour supply problems and the incidence of the black pod disease. This resulted in a decline in new cultivation, field maintenance and crop husbandry with farmers resorting to the mere gathering of the fruit.

During the 1991-1995 period, the pattern of growth and decline in cocoa and coffee

production may be partially explained by contraction in cultivated acreage as well as cutbacks in the rehabilitation efforts as a consequence of fiscal constraints. Unfavourable weather conditions and problems in respect of labour costs and supplies were also contributory factors. Coffee production appeared to be more severely affected as indicated by an annual 10% decline in output during the 1991-1995 period (Table 9).

**Table 9: Trinidad and Tobago.**

Cocoa, Coffee Production and Exports					
Production	1991	1992	1993	1994	1995
Cocoa (tons)	1,512	1,140	1,578	1,489	1,694
local sales	20	261	523	543	230
Coffee (tons)	914	706	874	1,015	830
local sales	645	914	516	1,014	779
<b>Exports: beans</b>					
cocoa, 000kg	1,877	935	1,503	1,327	1,453
TT\$'000	21,559	11,267	20,087	19,769	21,269
coffee 000kg	406	1	445	42	3
TT\$'000	1,811	5	2,286	na	n

Source: Annual Economic Survey, Central Bank; CSO

This rapid rate of decline was precipitated by the significant (52%) reduction in output in 1991. Although cocoa production was highly variable, positive average growth of 2.7% was registered for the 1991-1995 period. This favourable growth was primarily the result of a significant (77%) growth in output in 1993.

In 1993, favourable weather conditions and higher yields contributed to the improved performance of cocoa and coffee, with significant increases in output of 36.5% and 21.7%, respectively. Despite the depressed international prices for cocoa throughout most of 1993, increased emphasis on marketing was largely responsible for offsetting the decline in production, which would have otherwise resulted. In addition, local sales in 1993 were at their highest in many years. A market surplus due to high global stocks of coffee resulted in the continued weak international coffee prices in 1993. As a consequence, coffee production, which had declined substantially in the 1991-1992 period, recovered only slightly in 1993. Local sales represented only 45% of production in 1993 with a high stock of coffee accumulating on the domestic market. By 1994, however, domestic sales of coffee had recovered significantly, due to strong domestic demand.

While most of the dried cocoa and coffee beans were traded within the regional market (Grenada and the Bahamas) and a small balance exported to Ireland, the US held the largest share of total semi and processed cocoa exports (domestic and re-exports) from T&T. The data indicate a steady increase in the value of exports in spite of the decline in production. This may be explained by the fact that a large proportion of raw material for the chocolate industry is imported, thus allowing the export of chocolate by-products.

#### □ Citrus

Citrus, particularly oranges, is the most organised production of all fruits cultivated in T&T. A 1992 estimate of average yield of citrus groves at full production (year 10) in T&T was 26 ton/2.47 acres for oranges and was considered low by any standards. The existing citrus groves may be categorised into the relatively large and young orchards belonging to Caroni (1975) Ltd. and to Palo Seco Agricultural Enterprises, mixed groves operated by some 1,000 small farmers, old citrus groves (at least 25 years old) under complete or partial cultivation, old totally or partially neglected groves and groves owned by small to average size growers.

Production from the older citrus orchards has been affected by pest and disease problems, particularly nematodes and the tristeza virus, poor agronomic practices relating to spacing, planting techniques, pruning and fertilisation, the relatively high farm to market costs due to distance of orchards from major outlets and high production costs. The primary outlet for citrus fruit is the Co-operative Citrus Growers Association (CCGA).

Overall citrus production generally increased over the 1991-1995 period. The rehabilitation program initiated in 1982, an expansion in cultivated acreage (through the entry of Caroni), orchard replanting, pest and disease control, improved agronomic practices and the general rationalisation of the industry and upgrading of facilities were all factors which contributed to the improved position of the citrus industry during the period under review (Table 10).

Table 10: Trinidad & Tobago

Table 10: Trinidad &amp; Tobago

Citrus Production and Exports					
tons	1991	1992	1993	1994	1995
Citrus production	3,459	2,212	8,617	10,41	10,25
Oranges	2,215	1,220	5,949	8	5
Grapefruit	1,244	992	2,668	6,385	5,963
				4,033	4,292
<b>Exports</b>					
Fruit Juice TT\$m	13.49	10.43	14.96	21.43	27.05
% domestic	100%	100%	100%	100%	100%
'000 lbs	na	na	2,848	3,622	4,352
<b>Fruit Preserves</b>					
Total TT\$m :	6.23	6.95	7.91	11.10	13.19
% domestic	99.4%	100%	98.2%	11.01	13.13
'000 lbs	460	664	781	568	718

Source: Annual Economic Survey, Central Bank; CSO

A bumper citrus harvest, led by orange production, was recorded for the 1992/1993 period due primarily to favourable weather conditions and the maturity of Caroni (1975) Ltd. orchards, the single largest producer. Orange production, which accounted for 40% of total citrus production in 1985, increased to 58% of total citrus production by 1995. However, at the end of the period, there was a slowdown in the rate of growth in citrus, which declined by 6.6% in 1995 due mainly to the fact that Caroni's orchards had attained full maturity.

Although the level of output in the post-1991 period was substantially higher than during the 1987-1990 period, further expansion in citrus production was constrained by declining acreage, praedial larceny and problems arising from unsatisfactory marketing and pricing arrangements for delivery to the CCGA. Prior to 1992, the fresh fruit market (mainly Barbados) accounted for a 75% market share of citrus production in Trinidad. Since the incidence of the mealy bug infestation in Trinidad, the Barbados government instituted a ban on agricultural commodity imports from Trinidad, an action which significantly reduced the options for fresh citrus exports. In spite of the higher prices offered for fresh citrus, Caroni (1975) Ltd's output was geared almost exclusively for processing by the CCGA. Caroni's market share was estimated at 70% of total citrus production.

#### □ Coconut

Coconut was once an extensively produced traditional crop. In fact, remnants of coconut estates are still found scattered around T&T.

The youngest coconut plantation in Trinidad is between 70-120 years old and efforts to cultivate a new generation of trees have been less than successful due, in part, to disease problems. The nut formed the foundation for the oil-extraction industries in T&T for the production of products varying from soaps and other household chemicals and cosmetics as well as cooking butter, margarine and oil.

While production data for coconuts and copra were not available, industry officials indicate a continuation in the declining trend in copra production. 1996 estimates of 2,600 tons of copra, compared to 3,000 tons in 1995, satisfied only 1/8th of the 800 tons per month requirement of the coconut-oil processing industries. The decline in the industry has reached crisis proportions and a more popular and viable use of coconut in T&T is as "water nut". This rapidly growing consumption trend has increased the problems of praedial larceny of coconuts, further reducing the volumes available for processing. The situation has led to the traditional-oil-based coconut industry in T&T being described as a "sunset" industry.

#### □ Food Crops

The domestic food production sub-sector is a large, albeit poorly organised agricultural sub-sector dominated by a multitude of small farm production units. A wide variety of vegetables, root crops, pulses and paddy rice are cultivated on plots averaging less than 0.5 ha in size and in most cases under rudimentary agronomic systems. A fair amount of production, particularly vegetables and root crops, tends to be concentrated along major roads. Vegetable production, in particular, occurs under a rather intensive system of cropping and cultivated area varies from period to period depending on the market conditions of the previous harvest period, and on weather conditions.

While there are no less than 15 varieties of vegetables produced, the most commonly cultivated are pumpkin and cauliflower, cabbage, tomato, cucumber, egg plant (melongene), hot pepper, lettuce and sweet pepper. With the possible exception of sweet potato, and to a lesser extent, eddo, root crops

are manually cultivated, particularly so for dasheen which is grown mainly for its leaves.

Food crop production in T&T is geared primarily for domestic consumption. Output is marketed through wholesalers and retailers buying directly from small farmers for sale in major city markets, green-groceries and supermarkets. A significant volume of fruit is however sold through roadside vending.

Due to a number of limitations associated with data collection, production estimates may not be reflective of the size of output in the domestic food production sector. The data, may, however, be used as indicators of the annual trend in production of the main commodities over the 1991-1995 period (Table 11). Generally, it is estimated that the level of output in overall food crop production increased between 1991-1994, declining slightly in 1995. The expanded activity in food crop production was facilitated through the provision of planting material, extension services and research and technology and other support services offered by the MALMR.

**Table 11. Trinidad and Tobago.**

Root Crop & Vegetable Production					
mt	1991	1992	1993	1994	1995
Tomato	1,463	1,272	1,736	2,004	2,000
Cabbage	2,658	1,999	963	1,281	1,864
Cucumber	2,982	2,634	2,510	3,917	3,697
Cauliflower	339	192	112	263	-
Egg plant	1,083	1,457	1,699	2,125	-
Beans	75	118	164	123	-
Pigeon Peas	1,807	1,335	1,839	2,095	3,308
Pumpkin	3,024	3,976	4,363	4,915	7,548
Ginger	165	177	285	226	134
Dry Corn	229	342	1,690	677	510
Dasheen	1,277	2,207	1,925	1,806	894
Cassava	1,107	530	954	933	696
Tannia	27	43	16	14	-
Yam	130	165	255	181	147
Sweet potato	33	58	140	68	500
Rice (paddy)	19,950	22,022	16,204	17,514	9,000

Source: CSO

The production of pulses also increased steadily over the period, exhibiting consistently high levels of output. While accurate data on domestic production of this group are difficult to obtain given the widely dispersed production structure, it is generally agreed that pigeon pea is the most commonly grown pulse (grain legume) in Trinidad. Pigeon pea

production was estimated to have reached high levels in 1995, with corn (green and dry), sorrel, tomato, bodi and green seasoning also reporting expanded production. The variable production in the other categories of vegetables may have been attributed to a general cutback in area under cultivation, an increase in the incidence of pest and disease, problems associated with praedial larceny and extreme weather conditions (drought and flooding).

Paddy rice is the most organised of the domestic food crop production, in terms of government policies and level of assistance targeted to rice farmers. Expanded rice production was stimulated with the entry of Caroni (1975) Ltd. in the late 1980s. Given its land resources and other assets, the company evolved as the single largest rice producer in T&T. Caroni had made significant progress in rice cultivation and is a year round producer of rice. By the end of 1994, Caroni (1975) Ltd., cultivated approximately 2,000 acres under irrigated rice and 2,247 acres under rain-fed conditions. The irrigated rice produces two crops per year with yields ranging from 9.1 - 13.6 tons/acre (20,000-30,000 lbs per acre). These yields are considered very high by international standards. Paddy rice is also cultivated by a multitude of small independent farmers who have lagged behind Caroni (1975) Ltd., in terms of wet season rice production. The National Flour Mills, the sole rice processor, is the primary outlet for local rice.

Paddy rice production, which averaged almost 19,000mt. per year in the pre-1990 period, showed signs of decline from 1993. This decline in the post-1992 period was closely associated with poor rice quality and post-harvest and marketing problems, which resulted in a reduction of purchases by the NFM. The continued decline in rice production in 1995, however, may be largely associated with the adverse effects on independent farmer profit margins following the gradual elimination of rice subsidies. The introduction of a system of grades and standards for quality control and the discontinuation of rice cultivation in the Nariva Swamp region (one of the major rice growing area) also contributed to the decline in rice production. The termination of rice



growing in the Nariva Swamp was in response to the growing environmental concerns about the negative impact of rice cultivation on its delicate ecological balance.

In addition to problems of land availability, rice production in Trinidad is generally constrained by inadequate irrigation and drainage facilities, low yields, low levels of mechanisation and a high dependence on manual operations. Consequently, rice production costs are relatively high and the potential of domestic production replacing rice imports remains low. The industry satisfies less than 30% of the country's rice requirements. In general, expansion of domestic food crops is constrained due to the nature of these crops (relatively short shelf-life) and their low rank on consumers' preference, thus resulting in limited demand. Expansion of domestic food crops, particularly as it relates to grain legumes, is also constrained by the lack of stable and reliable supplies of good seed quality material. In addition, lack of proper marketing infrastructure, high cost of labour, access roads, drainage and irrigation problems, post harvest problems, and the general lack of modern technologies adversely affect the production of roots and other short term crops.

#### □ *Cut Flowers and Foliage*<sup>3</sup>

The cut flowers and foliage industry is one aspect of the ornamental plant industry which also includes the florist and nursery/pot plants/landscaping businesses. In the pre-1975 period, the ornamentals industry was aimed primarily at satisfying local demand and a very small export activity. However, since the late 1970s, there has been a strong drive into the commercial development of the ornamentals industry generally, and in particular, the development of the cut flower and foliage segment.

The cut flower and foliage industry is small, but exhibits significant potential in T&T where commercial acreage increased from 85 acres in 1989 to 103 acres in 1997. Cut flower and foliage production systems are either very intensive

<sup>3</sup> Situation and Analysis of Agricultural Sub-Sectors for the Priority Setting Process in Trinidad and Tobago. NIHERST (1998)

protected production, as is the case with anthurium or extensive production in small fields, as is the case with ginger lilies and heliconias. Commercial anthurium production usually requires high levels of investment in infrastructure and establishment costs as well as science-based production methods. On the other hand, extensive cut flower and foliage production have lower establishment costs.

T&T produces cut flowers mainly for the US market, while maintaining a brisk trade in the local market. Both the export and local markets are highly competitive for cut flowers. Since the early 1990s, cut flower and foliage production and exports have been increasing (Table 12).

Table 12: Trinidad & Tobago

Cut Flower and Foliage Exports				
TT\$'000	1992	1993	1994	1995
Total Exports	3,633	5,736	8,958	7,848
Fresh Anthurium	2,367	4,243	7,226	5,451
Fresh Ginger lilies	316	168	507	846
Heliconias	16	14	157	401
Orchids	551	740	589	620
Other cut flowers*	369	548	447	508
Dried, Prepared Flowers	12	23	30	3

\* A large amount of "other cut flowers" exported by Ambrosia Farms may well be Heliconia and Ginger Lillies.

Source: NIHERST

As indicated, anthuriums dominate exports, with a 1994 share of 81%. Main markets for cut flower and foliage exports are the US, with the balance shared among Canada, US Virgin Islands, CARICOM Countries and Germany. Part of the apparent growth in the value of cut flower exports is explained by the effects of the devaluation in the T&T dollar over the period.

In general, the expansion of the commercial cut flower industry is constrained by the establishment costs and the high level of entrepreneurship required. Other factors, such as pest and disease damage, high production costs (very high water rates, labour and high interest rates on agricultural loans), post-harvest damage, poor marketing arrangements, intense competition in extra-regional markets, particularly for anthurium and low market demand for ginger lilies and heliconia all combine to reduce the viability of the enterprise.

In the post-1995 period, T&T cut flower exporters were confronted by another major restriction on cut flower exports - the pink mealy bug. This outbreak severely constrained exports to CARICOM, which represents an important market for T&T. However, with the control of the PMB and greater attention to phyto-sanitary procedures, cut flower exports are expected to recover.

□ *Livestock*

Dairy and poultry production are considered the main livestock industries, with beef (includes meat from both cattle and the water buffalo (buffalypso) production occurring as an offshoot from the dairy industry. The commercialisation of the dairy and pork industries occurred since the early 1960s simultaneous with the inception of the State Lands Development Project (SLDP). The establishment of Nestlé in 1963, the primary milk processor (and also the administrator of the price subsidy system) as well as the development of domestic feed production capacity also facilitated the expansion of the livestock industry.

The poultry industry also had its beginnings in the early 1960s. Local market demand conditions, the availability of local animal feeds and the development of domestic competence in poultry technology were the factors largely responsible for its development. Pig rearing also emerged as an important livestock industry, with significant linkages to the meat processing sector. In comparison, the ruminant sub-sector (sheep and goats) remains relatively under-developed, with production characterised by subsistent, backyard-type operations.

The dairy industry is characterised by a production structure comprising specialised dairy farms on the State Lands Development Project (SLDP) (averaging 15-20 acres), a few large commercial farms and several small mixed dairy/beef operations (ranging from 0.4 - 4.5 ha). Dairy farming's contribution to agricultural GDP was estimated at 2% in 1996 and milk production satisfies between 10%-12% of the country's milk requirements from an estimated (1994) 3,000 dairy farmers. Within the

context of population growth and industry modernisation, this is hardly considered to be an increase of significance from the 1960 period.

The bulk of milk production, which occurs on small, subsistence-type farm operations, is consumed within the household with the surplus sold at the farm gate. Approximately 42% of the milk produced is supplied to processing establishments and marketed through several distribution channels. The dairy industry is one of the few agricultural industries in T&T which has maintained strong links with the agro-processing sector.

Pork and beef production was largely a product of the SLDP. This was particularly so for the hog (pigs) industry which developed rapidly up to 1985, stimulated by the provision of government subsidies on livestock feeds. Local pork production has expanded and satisfies a significant portion (over 90%) of the unprocessed pork consumption requirements. A small volume is imported mainly for ham and sausage processing. In contrast, local beef production satisfies only one-third of annual domestic beef requirements.

Sheep and goat production in T&T holds a relatively minor role in the livestock sub-sector. Sheep rearing is generally a supplementary activity and the small ruminant industry is dominated by small producers operating backyard farms, distributed throughout the country.

Poultry production recorded the most rapid growth in the livestock sector. Its expansion was facilitated by input and output, other subsidies, duty free concessions on machine and equipment and favourable credit from the ADB. Importantly, import restrictions on broiler meat, provided significant protection to domestic producers and was an influential factor in the industry's rapid expansion. The industry is a relatively closed industry, dominated by a few companies and high levels of integration within the industry.

In terms of performance, most livestock industries reported favourable performance up to 1985. This was primarily attributable to the

large outlays on feed and input subsidies, which totaled \$719M between 1962-1987. Of this, 45% was allocated to the poultry sub-sector. The reforms of the mid-1980s resulted in the removal of subsidies to the poultry industry, the introduction of a grading system for hog purchase with plans for the introduction of a levy on imported milk. In response to a reduction in consumer demand, by 1987, pork and poultry production had fallen by 15% and 18%, respectively. The reform-induced instability which characterised livestock production continued into the 1990s, and was more noticeable in the state farms, i.e., the State Land Development Project and in the reduction in the number of pig farms.

Generally, commercial livestock production is highly dependent on imported feed inputs, a feature which ranks most enterprises low on the scale of value-adding domestic industries. Marketing problems and increased competition from imported meats and the downturn in the economy which lowered demand generally and particularly for high-valued meat products, coupled with the devaluation (1985, 1988) and floating (1993) of the T&T dollar contributed to the contraction in activity in the sub-sector in the 1990s.

Of all the livestock products, only mutton and table eggs recorded high growth over the 1991-1995 period, averaging 5.53% and 5.05% per annum, respectively (Table 14). Growth, though variable, was sufficiently high in the post-1993 period to offset the steady contraction in mutton production 1991-1994. The favourable performance of mutton production compared to the decline in pork and negligible growth in beef and veal production may be explained by the fact that sheep production occurs under a very informal system with limited utilisation of imported animal feed.

In spite of the difficulties experienced in livestock production, the meat processing industries appeared to have performed fairly well. This is partly due to the fact that a portion of the raw material for meat processing is imported. The total export value of meat products (fresh, chilled and processed) increased from approximately TT\$8M in 1991

to TT\$12M in 1995. Of significance, however is the declining proportion of domestic content, from 96% in 1991 to 85% in 1995.

**Table 13: Trinidad & Tobago**  
**Livestock (Meat) Production Exports**

	1991	1992	1993	1994	1995
<b>Production volume</b>					
Total ('000 kg)	3,855	4,266	2,843	3,525	2,865
Beef & veal	1,203	989	1,007	1,148	845
Pork	2,614	3,222	1,790	2,320	1,974
Mutton,	58	55	46	57	46
Broiler '000 birds	12,949	12,120	14,771	13,134	11,280
Table Eggs, '000 doz	3,860	4,118	4,486	4,315	3,177
Milk, '000 litres	11,391	10,538	9,162	9,069	6,951
<b>Exports, TT\$m</b>					
Meat & Prep.	7,996	6,464	8,431	9,592	12,593
of which pork (\$)	1.34	0.52	0.95	1.41	1.25
Milk & Cream	8,971	9,324	21,790	41,947	65,575
-share domestic %	77.8%	72.1%	52.5%	54.2%	52.1%
Pork & Products	1.34	0.52	0.95	1.41	1.25

Source: Annual Economic Report; Trade - CSO

Activity in the poultry (broiler) meat sub-sector remained relatively constant over the 1991-1995 period, averaging 0.4% per annum. This may be attributable to market instability, such as variations in demand from one of its major customers (the fast food enterprises), high cost of feed and reductions in the availability of broiler chicks as a result of adverse weather conditions or low imports. In 1990 in particular, extremely humid weather conditions contributed to high mortality rates among chicks and reduced the hatchability of eggs. This affected production in 1991 which declined by 14% from 1990. Production was also affected by increased price competition among producers, the removal of subsidies, the inability of farmers to pay off debts and the failure of contractors and farmers to honour agreements.

T&T achieved self-sufficiency in poultry meat and table eggs in the mid-1970s and has improved its food security status in meat, particularly pork, with a self-sufficiency ratio estimated at 83.2% in 1995. This improvement is reflected in the trade data which indicate a slight decline in meat and preparations imports, from TT\$107M in 1991 to TT\$94 in 1995. Overall, imports of meat and preparations averaged 1% per annum of total expenditure on food imports between 1991-1995.

In spite of its constrained performance, the poultry sub-sector is regarded as the most successful of the livestock industries because of its high capital investment, contribution to GDP, employment generation and self-sufficiency in domestic production. The problems which confront the poultry industry include dependence on foreign inputs, tendency of firms towards complete large scale integration and the rigid, often disadvantageous terms of supply contract arrangements of small independent broiler farmers. In 1994, the poultry industry comprised seven major broiler contractors operating private supply arrangements with some 250 small broiler farmers in addition to some 45 independent broiler farmers.<sup>4</sup>

Milk production declined by approximately 2% per annum over the 1991-1995 period, falling to its lowest production level in 1995. This decline at the end of the period was a result of decreases in the output from the SLDP and government farmers whose production declined by 3.5% and 8.6%, respectively in 1995. In contrast, there were significant improvements in milk production by small private farms, output of which increased from 1.01 million litres in 1985 to 4 million litres in 1995. This was not sufficient, however, to offset the decline in production of the other category of producers.

The decline in domestic milk production is reflected in the trade data which indicate a reduction in the share of domestic value in total export value of milk and cream from Trinidad over the 1991-1995 period. In 1991, out of total milk and cream export value, 78% derived from domestic activity, with the balance due to import of raw materials. By 1995, however, the share of domestic value declined to 52%. In spite of the introduction of improved technology and genetic stock, domestic milk production remains limited by the generally poor animal husbandry which contributed to quality problems and poor reproductive performance of existing stock. The tendency of dairy farmers to be part-time farmers, with

<sup>4</sup> Report of the Task Force on the Monitoring of the Poultry Industry; MALMR, 1994.

livestock production secondary to crop production or some alternative economic activity does not bode well for the industry's sustained development. In addition, the high cost of inputs, reduction in land availability for expansion of herd size, inadequate water supply, competition from imported milk and the general inadequacy of industry regulation (including Nestlé milk quotas, subsidy price programmes) were identified as serious constraints which were outside the realm of control of the dairy industry.

#### □ Fisheries

Marine fishing is an important activity in T&T, particularly in the coastal villages. The Revised 1988-1992 National Agricultural Development Plan suggested that fish has traditionally been relegated as a secondary source of protein in the national diet. Among the non-crop agricultural sub-sectors, fisheries development appeared to have been accorded relatively less emphasis compared to livestock and the respective development priorities were not based on any informed assessment of the relative returns to investment in these sub-sectors. Such an assessment would have revealed that, given the domestic ecology and natural resource endowments, the returns to investments may have been higher in fisheries than in livestock.<sup>5</sup>

The industry comprises artisanal fishery as well as industrial trawling and is also characterized by high diversity in species harvested and gear employed. The industrial fishery industry comprises fleets of trawlers utilising more sophisticated fishing techniques with catches, primarily shrimp, destined for the export market. While the artisanal fishery sub-sector lands over 10 major species of fish (including carite, shrimp, croaker, kingfish, shark), the industrial fishery sub-sector, i.e., the industrial trawl fleet accounts for the bulk of shrimp landings. In the late 1980s, it was reported that efforts were underway to restructure the local fishing industry. Fishermen were increasingly

<sup>5</sup> Unless otherwise referenced, the bulk of the information on the fisheries sub-sector was extracted from the Government of Trinidad and Tobago "National Agricultural Development Plan, 1988-1992" Revised Draft, March 1988, MALMR.

encouraged to move away from in-shore fishing to off-shore fishing by exploiting the resources of the Exclusive Economic Zone (EEZ) and beyond and loan funds were made to fishermen for the acquisition of large fishing vessels. By the end of 1990, the local fishing fleet was expected to have been sufficiently transformed in order to provide a new capability for export earnings.<sup>6</sup>

Data estimates indicate that for the artisanal fishery sub-sector, fish landings increased over the period, moving from 2,845 tons in 1985 to 4,141 tons in 1988. While there has not been a consistent data series beyond 1988, it has been observed that the annual average level of artisanal landings increased to between 7,000 and 10,000 tons, with a value of \$45 to \$65 million. In the post-1988 period, stimulated by the global shortage of fish and the devaluation of the TT dollar, the fishery industry became a lucrative venture. Landings of shrimp from the industrial trawl fleet were estimated at 400 tons with a value of \$6.5 million. While shrimp fishing has emerged as the most important artisanal fishery in terms of value, when the industrial shrimp catch is included, the annual value of shrimp fishery amounts to over \$10 million.<sup>7</sup> Estimated production of fish and shrimp by the artisanal fishery for 1992 was 14,977 tons, with comparable estimates for Tobago of 5,174 tons. In 1994, it was estimated that artisanal landings were approximately 5,274 tons.

According to trade data, from 1993, Trinidad and Tobago was a net exporter of fish products, realising a \$20 million surplus per year between 1993-1995 (Table 14). Fish export earnings in 1993 represented a 99% increase over earnings in 1992. Fishermen in southern Trinidad have been engaged in an on-going conflict with their counterparts from Venezuela over fishing rights in the Gulf of Paria. While these disputes have been addressed at the highest level, resulting in the signing of agreements between Trinidad and Tobago and Venezuela, problems still remain. The inability

<sup>6</sup> Review of the Economy, 1989, Republic of Trinidad & Tobago.

<sup>7</sup> Additional information provided by the MALMR.

of T&T to effectively monitor fishery operation in the Gulf of Paria continues to make the situation intolerable and dangerous for many fishermen whose livelihood depends on fishing

Table 14: Trinidad and Tobago.

TT\$'000	Fish Export (Domestic) Earnings				
	1991	1992	1993	1994	1995
Fresh/Chilled/Frozen	5,503	9,360	20,624	33,351	36,720
Salted/Dried/Smoked	147	203	431	1,130	432
Crustaceans/Molluscs	5,809	6,423	10,836	19,356	22,165

Source: CSO

Aquaculture (or food fish) was introduced into Trinidad at the Bamboo Grove Fish Farm (BGFF) in 1951 as a research and demonstration unit for the pond culture of non-indigenous African species, (*tilapia mossambica*). This initial project suffered from the lack of support to fresh-water relative to traditional marine fisheries, as well as the unpopularity of the black tilapia variety. Efforts to revitalise the aquaculture industry have included the culturing of cray-fish, marine shrimp, salmon, trout and red tilapia. After much experimentation with appropriate species of fresh-water fish, the industry concentrated on the production of the red hybrid tilapia, the Malaysian prawn and the local cascadu for domestic consumption.

In 1989, Caroni (1975) Ltd was encouraged to diversify into aquaculture. Caroni (1975) Ltd, is the largest producer of tilapia, prawn and cascadu in T&T. By 1994/95, the aquaculture project of Caroni (1975) Ltd. covered 14 acres with 16 production points, a decrease from the initial land allocation to aquaculture of 23.5 acres. This reduction was occasioned by the unsuccessful attempts at rearing Malaysian fresh water prawns which required the mastery of all relevant variables to ensure operational success.<sup>8</sup> In addition, the difficulties encountered with disposal of the products on the target market prompted a re-evaluation of fresh water prawn production. Caroni (1975) Ltd.'s assets consist of a large multi-purpose hatchery and 9.5 ha under ponds. The company

<sup>8</sup> Pre-Feasibility Study for Couva/Tabaquite/Talparo Region as part of a Three Year Development Plan, presented as part of coursework requirement for Economics of Development/UWI, St. Augustine; E. Boodoo, M. Henry, R. McLean and M. Persad., 1995

has since shifted to the production of red tilapia and cascadura for domestic consumption. Market penetration in the U.K. market is currently being explored. At full development in 1998, the Caroni (1975) Ltd.'s aquaculture project is expected to realise net revenues of \$18.2 million.

#### □ *Agro-processing*

Agro-processing includes the food processing sub-sector, drinks, tobacco and sugar refining. Food processing includes the following industries:- meat, poultry, fish, dairy products, fruit and vegetable processing, grain and feed mill, edible oils and fats and bakeries. The main actors involved in the sector are the government (through direct or indirect ownership or share holdings in some processed commodity such as rice, sugar and edible oil, manipulation of price, quantity and quality of other commodities through import permits and guaranteed prices), the multi-national food processors and the small local private sector.

Between 1991-1995, the five leading agro-processing industries, in terms of growth, were dairy products, sugar refining, non-alcoholic beverages, bakeries and fruits and vegetables. Growth, however, was highly variable. Between 1990/91 and 1995, sugar refining recorded three alternate years of decline, compared to dairy products, which recorded a sharp (35%) decline in 1993. Only in the bakeries industry was output maintained at a relatively constant level.

The diversification of the bakery and beverage industries (through the introduction of new lines of products) and the recapitalisation of the plants (through the installation of new machinery) were introduced as a means of increasing the market share of these products, with the ultimate aim of enhancing industry competitiveness. These innovations were sufficient to offset the negative effects which would have resulted from the declining trend in demand for these products. This decline in domestic demand was due to the reduction in incomes, foreign exchange shortages, adverse industrial relations and increased international competition.

The other industries either recorded negligible (meat, poultry and fish) or negative growth. Of the latter category, alcoholic beverages and to a lesser extent grain and feed mills, suffered the most severe contraction in activities, particularly in the years 1992 and 1994-1995. The tobacco and edible oils and fats industries recorded a similar performance over the 1991-1995 period, exhibiting a general decline in activity and output, particularly in the post-1992 period. Table 15 presents information on the index of domestic production in the agro-processing sector for the 1991-1995 period.

**Table 15 Trinidad and Tobago.**

Index of Domestic Production - Agro-Processing							
	1977 = 100	Wght	1991	1992	1993	1994	1995
All Industry Index	1,000		148.1	162.3	151.9	173.5	186.8
<b>Food Processing:</b>	<b>88</b>	<b>128.2</b>	<b>128.4</b>	<b>119.6</b>	<b>117.0</b>	<b>123.7</b>	
Meat, poultry, fish	6	86.2	73.9	75.0	71.1	79.0	
Dairy products	18	102.7	107.9	69.5	71.4	80.8	
Fruit & vegetables	5	151.6	139.0	163.5	147.4	160.8	
Grain & feed mills	15	179.0	177.7	185.6	164.0	155.2	
Edible oils & fats	23	102.7	99.5	99.4	104.2	106.4	
Bakeries	13	139.7	136.1	123.8	126.6	137.4	
All other food	8	161.4	186.9	165.1	168.0	198.5	
<b>Drink &amp; Tobacco</b>	<b>50</b>	<b>119.5</b>	<b>110.7</b>	<b>105.5</b>	<b>108.4</b>	<b>107.8</b>	
Tobacco	17	88.2	82.6	80.5	76.6	84.2	
Alcoholic bev.	19	157.3	130.2	135.0	134.4	111.4	
Non-Alc. Bev.	14	106.4	118.4	95.9	111.6	131.7	
Sugar Refining	53	33.1	38.0	34.8	47.0	44.0	

bev. - beverages; non-alc. - non-alcoholic

Source: CSO

In 1992, it was observed that the food/agro processing sub-sector in general was still in its initial stages of development with rapid expansion constrained by the historically indeterminate role of the sector in the national economy. The industry has succeeded, however, in attracting a large number of small fruit operators in the production of a wide range of products. The few larger producers remain largely dependent on imported raw materials. By 1993, there was an estimated 130 agro-processing operations in T&T, employing an average of 50 persons per firm.<sup>9</sup> The majority of these firms were well established, having been engaged in business for over 15 years and characterised by sole proprietorship and partnership. Trinidad and Tobago was considered as producing the widest range of

<sup>9</sup> Policy Proposals for the AgroIndustrial Development of the Caribbean Region, CARICOM/CONFORMATICA, July 1993. Vol.1.

commodities and services in the agribusiness sector.

Agro-industrial firms in T&T in general, suffered from under-utilisation of productive capacity and external competition, have a high imported raw material content and are constrained by the non-availability of adequate markets, both local and foreign. The availability and quality of workers, foreign exchange, technical personnel, working and investment capital were also identified as constraints to growth. In 1993, an assessment of the agro-industrial sector in T&T concluded that while the country possessed potential for developing non-traditional crops, including citrus, vegetables and spices, the contraction of the local market due to the low income of the population and to the liberalisation of trade laws prevent and inhibit proper development of agro-industry, with the most affected sub-sectors being dairy, meat processing and fruits and vegetable processing.<sup>10</sup>

In T&T, there has emerged a group of agribusiness firms whose products are tailored to the demands of the international market. While this group is still small, over the last 3-5 years, it has shown tremendous promise.

#### Constraints to Agriculture

In T&T, the importance of the agricultural sector is measured, not in terms of relative contribution to GDP, but in terms of its contribution to employment, food supply and social stability, particularly in the rural areas. While agriculture's capacity to contribute to national economic development has improved in recent years, practically all agricultural enterprises are faced with a host of constraining factors, many of which are domestic in nature. The range of constraints to the development of the agri-food sector may generally be summarised as follows:

#### Low Productivity Levels

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

availability and management problems, which adversely impact on yields and productivity;

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

#### Institutional & Structural Deficiencies

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

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

<sup>10</sup> *ibid.*

In T&T, geological constraints continue to be a major hindrance to the development of the agricultural sector. A significant proportion of agricultural production occurs on the interior plains which are not properly served by natural drainage systems. As a result of deteriorated drainage infrastructure, flooding during the wet season is a critical problem for farmers. Thus general water management, with a particular focus on agriculture has become a priority for development in Trinidad in the post 1996 period.

Technological innovations in agriculture have also lagged behind the industrial sector. The following characterisation of the Caribbean agricultural sector continues to be applicable for many aspects of agricultural production in T&T in spite of the fact that T&T has a relatively more developed industrial economy than most other Caribbean countries. However, in general, the agricultural sector has...

*"...not broken out of the cultural and technical mould inherited from the Green Revolution. Irrigation, agrochemicals, mechanisation and improved seeds continue to be the distinguishing characteristics of a system of agriculture still referred to as modern". The intensification of agricultural activity has been based on a combination of technical-productive elements, such as, the use of fertilisers and pesticides, the use of high-yield, pest and disease-resistant crop varieties, prioritising farming on irrigated lands and the mechanisation of farming practices.*<sup>11</sup>

The T&T National Planning Commission Reconstructing for Economic Independence Medium Term Planning Framework, 1989-1995 noted that a critical challenge facing the agricultural sector was the need to improve cultivation practices, improve the level of technology application and generally, to become more modernised. With the possible exception of Caroni (1975) Ltd., sugarcane and rice production and the commercial livestock producers, agricultural enterprises in T&T remain relatively highly labour-intensive and low-technology based. This is particularly acute

<sup>11</sup> Extracted from "AGRIFORUM - Towards an Agenda for Agriculture in the Americas" IICA Headquarters, Costa Rica (August 1997).

in the small farm, domestic food production sub-sector. The use of small farm implements, is widespread, as is the high utilisation rate of agro-chemicals, mainly for weed and pest control.

The increased rate of agro-chemicals utilisation is in an attempt to increase yields and output from highly degraded soils (Table 16). Fertiliser production is a by-product of the petroleum industry in Trinidad. Sales data, though variable from year-to-year, indicate an average annual increase in fertiliser by 2.5% over the 1991-1995 period. Fertiliser import data also indicate the tendency towards increased use of fertiliser, particularly in 1993, when the quantity of local sales and imports increased by 10% and 53%, respectively. Although regulations governing the import, use and marketing of pesticides have been enacted, they are not enforced at the farm level. There remains a tendency among farmers to use pesticides indiscriminately and at time, combine chemicals into "cocktails" which may be hazardous to both health and the environment. Misuse of these chemicals has in some instances, irreversibly damaged ecosystems and has led to the emergence of a new breed of pesticide resistant pests.

Table 16. Trinidad & Tobago

Indicators of Fertiliser Usage, Trinidad and Tobago	1991	1992	1993	1994	1995
	Local Fertiliser sales '000 tons	323	303	335	316
Fertiliser <sup>1</sup> Imports, tons	1,476	5,283*	32,513	6,427	5,798
<sup>1</sup> -crude and manufactured; * excludes crude fertiliser					
Source: CSO					

The general tendency towards curative, as opposed to preventative pest and disease control programmes (based on effective plant quarantine systems) has led to high costs and losses. Such was the case as experienced by Grenada with the Pink Mealy Bug and more recently (1997), with the frog hopper infestation in T&T. The managed implementation of island-wide chemical, followed by biological control programmes has yielded significant results and were successful in reducing the incidence of the pests. These successes has strengthened the use of integrated pest management as a more cost-effective,



sustainable and environmentally friendly method for controlling pests and diseases.

With few exceptions, the productivity and ultimately the viability of most agricultural and livestock enterprises are constrained by inadequate scientific and technological support facilities, such as the lack of mandatory budwood and stock certification programmes to ensure disease resistance planting materials and shortage of certified rice seeds. Typically, most of technology transfer activities have been undertaken by regional public sector organisations, such as the Caribbean Agricultural Development Institute (CARDI), the Food and Agriculture Institute (FAO) and IICA, with support from other international institutions and to a limited extent, the private sector. National research capabilities have been limited to the sugar industry.

Institutional deficiencies are manifested by the weak service and structural support to agriculture, particularly in post-harvest and storage, and transportation facilities as well as in legislation governing redress for preadial larceny. Preadial larceny is a particularly serious impediment to the increased investment in most agricultural enterprises. This growing constraint has adversely affected farmers' control of output and there exists very little avenues for compensation of crop/livestock loss due to preadial larceny.

Public-sector provided infrastructure serving domestic agriculture remains inadequate and was essentially left up to the multitude of small farmers. The approximately 200km of existing rural access roads are in general disrepair and virtually inaccessible during the rainy season, a situation which severely constrains land preparation and harvesting activities and discourages production during the rainy season. Resource limitations have precluded their rehabilitation and/or replacement. This has also contributed to a reduction in productive capacity and an increase in production costs. Outside of public sector support, there has been limited involvement of the private sector in the provision of services and the maintenance of infrastructure facilities,

mainly in commercial poultry, meat and dairy farming.

Adequate marketing infrastructure and distribution channels are similarly lacking. As concluded by a 1992 study, the wholesale marketing system for fresh produce in Trinidad was fragmented, underdeveloped and inefficient.<sup>12</sup> As a result, the system was incapable of performing necessary functions of collection, post-harvest handling, storage (which reduces price fluctuations), financing and risk taking. Some of these functions are left to the farmers who perform them inefficiently and at high cost. Therefore although trade was competitive, costs tended to be high due to the poor quality of services and utilities provided to producers and consumers. The retail marketing system includes the disorganised small temporary and/permanent street and roadside vendors, central open market retailers, residential area green-grocers and modern supermarkets. Facilities for livestock marketing are similarly inadequate, with the limited abattoir facilities usually old, under-equipped and lacking cold storage.

The primary agencies involved in the provision of agricultural market and trade related information are the MALMR, the National Agricultural Marketing Development Company (NAMDEVCO) and the ADB. A Market Information System (MIS) has been established through the NAMDEVCO for the collection, storage, analysis and dissemination of local market information which allows for more informed market decision making and planning. In terms of domestic marketing of produce, the local market, particularly for vegetables and fresh fruit is considered to be very competitive due to the large number of small producers of these commodities.

In many instances, several of the constraints to exporting agricultural products in extra-regional markets believed to be insurmountable, such as transportation, have been successfully addressed by the small, but dynamic group of agri-business firms in T&T.

<sup>12</sup> "Marketing Systems for Fresh Agricultural Products in Trinidad and Tobago" Tahal Consulting Ltd. and AGROCON Ltd. 1992.

In terms of certification and market access, firms in this group have led all others in ISO 9000 and 14,000 certification as well as in certification under the Hazard Analysis Critical Control Point (HACCP). This notwithstanding, there is a widening gap between these firms

and the rest of the agricultural sector which continues to depend on public sector initiatives in almost all aspects of production and distribution. This has further exacerbated the dualism in the agricultural production and marketing system.

### Agriculture in T&T - Prospects

#### International Environment

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

These negotiations included for the first time, reducing the distortions in trade in agricultural products. These distortions resulted from government intervention and support for agriculture. The establishment of the World Trade Organisation in January 1995 thus marked the end of an era of protection the agricultural sector. The main WTO Agreements which impact the agricultural sector are summarized below. While developed countries were given a maximum period of six years for implementing commitments (i.e., 1995-2000), developing countries were allowed a period of ten years (i.e., from 1995 - 2004).<sup>13</sup>

- Agreement on Agriculture: 3 Commitments

*Market Access* commitments require the conversion of all non-tariff border measures (import quotas), to tariffs which provide the same protection (process called tariffication). Tariffication is to be followed by a reduction in all tariffs by 24%. Provision is also made for the institution of a minimum-access tariff quota,

initially set at 3% in 1995, to increase to 5% by 2004.

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

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

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

- Sanitary & Phytosanitary (SPS) Agreement

This agreement covers food safety and animal, plant and health regulations. The agreement stipulates that the use of these measures should only be in instances where human, animal or

<sup>13</sup> "The Trading System After the Uruguay Round" John Whalley and Colleen Hamilton, Institute for International Economics, Washington DC, July 1996.

plant life or health is threatened. Although negotiations towards the development of a globally accepted code of standards are still ongoing, Caribbean countries are encouraged to base their national SPS measures on international standards, guidelines and recommendations; higher standards may only be imposed if there is scientific justification.

• Ministerial Decisions

The Decisions on Measures Concerning the possible Negative Effects of the Reform Programme on LDCs and NFIDC seek to ensure that these countries are not disadvantaged in terms of higher food prices. The provision of food aid and basic food stuffs provided in full grant form constitutes the key elements of these Decisions.

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

**International - Domestic Economy Link**

The Government Trinidad & Tobago is a signatory of the WTO and by virtue of its membership, committed to implementing these reforms within the 10-year period. The WTO also specifies that all commitments are to be included in the country's schedules of agricultural concessions and commitments. T&T has been among the few Caribbean countries which have undertaken reforms in agriculture and trade. Concerns regarding import competition, particularly from products which continue to benefit from domestic supports and export subsidies have, however, contributed to the slow

pace of implementation of WTO commitments in specific industries, such as poultry meat.

The T&T economy is highly open and will continue to be increasingly influenced by the rapid pace of globalisation and trade liberalisation which has been a feature of the 1990s. In addition to fulfilling WTO commitments, T&T must now prepare for the mini-WTO Agriculture negotiations, scheduled to begin in 1999. It is very likely that this Round will place additional pressures in the EU to further liberalise its internal agricultural policy. The EU and the ACP are currently engaged in discussions towards the development of a post-Lomé IV arrangement and preparations are also underway for the review of the EU's Common Agriculture Policy (CAP). The outcome of negotiations will undoubtedly affect the EU's ACP trade preference regime, particularly the special commodity protocols in particular (sugar and rum).

The MALMR Food And Agriculture Policy White Paper, 1995-1997 summarised the situation with respect to T&T's preparedness to negotiate trade agreements and monitor potential impacts as follows:

*.... "Trinidad and Tobago is a signatory to a range of treaties and international agreements which impact on the food and agriculture sector... These agreements require continuous review, discussion and re-negotiation. The matter of concern is that the MALMR did not have the capability to monitor continuously and assess the many treaties, agreements and the technical issues involved so as to prepare the best advice and negotiating position. Rectifying this deficiency is an imperative of the current reform exercise given the vicissitudes of current international trading and the anticipated behaviour of some of our trading partners" (pg. 14).*

As a member of GATT, T&T has committed reduce levels of subsidies and to eliminate all duties on tropical products - with few exceptions. In the absence of detailed empirical analysis on the impact of trade liberalisation on specific industries of the agricultural sector in T&T, the MALMR has identified the following as the industries most sensitive to trade liberalisation: rice, sugar, poultry, vegetables, beef, milk and pork.

T&T is in the process of developing its legal framework and monitoring capacity to address incidents of dumping and unfair trade practices contributes to the presence of these factors in the region. As a means of removing the deficiency in monitoring and assessing the impact of agreements, a Trade Monitoring Unit (TMU) has been recently established (1997) by the MALMR to undertake the examination of the impact of liberalisation on these items. The importance of an effective functioning TMU is that given the fact that agricultural commodities are among the most sensitive items to be covered in trade agreements, there is a need to develop systems that would provide domestic agricultural and trade policy makers with objective and timely trade information.

#### Commodity Market Trends<sup>14</sup>

The dominant trends in world commodity markets reflect the changes in the global context particularly over the last 15 years. Specifically, these trends relate to the changing patterns of production, food sourcing, distribution and consumption. The following section summarises the dominant trends for the T&T's main export commodities.

##### □ *Sugar.*

Sugar continues to be one of the most highly protected agricultural products. In keeping with the commitments of the WTO Agreements, quotas on sugar exports are to be converted to tariffs, which are to be gradually reduced.

The long-term projections suggest eventual convergence of international prices for sugar towards the actual costs of production. This will occur partly in response to increased local and international market interaction and partly in response to the reduction in government intervention in commodity markets. Much of this market dynamism is occurring in the US and similar tendencies are being experienced in Europe. Sugar prices on the UK market are also expected to adjust downwards as a result of the

<sup>14</sup> Information for the main export crops extracted from the USDA's "Situation and Outlook Forum '96 Proceedings", February, 1996 and 1997; CARICOM's "Marketing Developments Relating to the Major Commodities" March 1997; Caribbean Basin Regional Profile 1998 Report.

EU's commitments to tariff reductions of 3.3% per annum to 2001.

For T&T, this global trend implies a gradual decline in sugar export prices. However, in the interim, sugar exports to the UK are expected to proceed fairly smoothly while the current EU sugar regime remains in force (up to June, 2001).

In the interim, particularly given the pending the WTO Mini-Agriculture Round in 1999, major issues of concern will focus on the almost complete elimination of the Uruguay Round regional premium and preference protection of EU sugar by the year 2001. In addition, the T&T sugar industry may benefit from US quota reallocations during periods of shortfalls from traditional suppliers. Based on historical trade to the US, the 1998 US Tariff Rate allocation quota for raw cane sugar to T&T was 7,830mt.

The dynamics of the US and EU sugar markets, the expected increase in world sugar production and the move towards freer trade present significant challenges to T&T's Caroni (1975) Limited. This notwithstanding, the company's competitive position will be strengthened if it is able to increase production and processing efficiency.

##### □ *Coconut/Copra-Oils*

The decline in the coconut-oils industry is in large measure, linked to the reduction in demand for its by-products (particularly in the food industry). Domestic factors, such as lack of raw materials and relatively high production costs of coconut derivatives also contributed to the industry's deteriorating competitiveness. With the liberalisation of agricultural trade, coconut is one commodity which will suffer from competition from low-cost soya and other vegetable oils.

The current unfavourable situation in the coconut oil industry is expected to continue as the decade progresses. In spite of the apparent demand for refined coconut oil both in regional and extra-regional markets (Canada, US, Egypt and the UK), the significantly reduced size of the domestic industries constrains their ability to take advantage of these market prospects. The CGA has experienced difficulties in revitalising

the industry. Coconut harvesting for oil extraction no longer represents a viable activity. Given the changing consumption patterns away from coconut-oil food products and the increasing popularity of coconut water, the industry's prospects appear to lie more in the bottled fresh/frozen coconut water product.

There has been some success in T&T in bottling coconut water. Given the extremely high demand for coconut water the success and expansion of the bottled coconut water will require control over preadial larceny of the water nut. Other prospects for integrated coconut-based industries include the manufacture of coconut meal in animal feed industries and the production of fibre. It must be noted, however, that establishment of such enterprises should be guided primarily on analysis which shows that such cottage industries are economically viable and sustainable. However, the general problem of lack of private sector investment in agriculture may constrain the establishment of a bottled coconut water processing facility as well as these (cottage) coconut product cottage industries.

#### □ *Cocoa*

In the last decade, world cocoa consumption increased, driven by growth in non-traditional consuming countries, such as Japan and China. Increased consumption in these countries led to the domestic preparation and manufacture of chocolate products. However, much of the raw material for these industries is based on the "basic flavour" cocoa.

Fine flavour cocoa (as produced in the T&T), is used mainly in the making of dark chocolate and for solid chocolate slabs, and not for chocolate coating.<sup>15</sup> In 1995/96, fine flavour cocoa accounted for less than 5% of world cocoa consumption, the rest, being basic cocoa produced by several countries. Although fine flavour cocoa is not usually used in large-scale production, changes in the world chocolate industry may impact fine flavour cocoa market segment. Specifically, these trends are:

- the tendency towards the production of more standardised and bulk products for which fine flavoured cocoa is an expensive input;
- the replacement of chocolate in processing with "filled" products such as chestnuts, rice, caramel candy flavours etc., which have a slight influence on the volume of chocolate used; and
- pressures to harmonise the 5% allowance of the use of Cocoa Butter Equivalents (CBE) in the production of chocolate. If successful, this could result in a downward pressure on international prices, in spite of continued growth in demand.

The relatively high value, fine-flavour (aromatic) variety forms the foundation of the T&T cocoa industry. However, T&T is a relatively high cost, producer of fine flavour cocoa. In addition, the productive capacity of the Region's major producers has declined. Various efforts since the mid-to-late 1980s to reverse this deterioration in cocoa production have achieved mixed success.

Competing on the global cocoa market depends on the industry's success at marketing a high quality product at relatively low prices sufficient to compete with the basic flavour. However, since prices for raw cocoa are not projected to increase, T&T cocoa producers should explore the possibilities of entering into the high-value end of production, such as the manufacture of high quality specialty cocoa products.

#### □ *Citrus:*

Most of the world's citrus supplies are produced in the Southern Hemisphere, primarily Latin America (Brazil and Argentina). Israel and Florida are major suppliers of oranges as well as grapefruit. The medium-to-long-term forecast for citrus are:

- increased world production due to increased capacity of new producer countries (Mexico, Eastern Europe)
- fall or leveling off of world prices at a fairly low level;
- the crowding out of Brazilian products from the US market due to increased domestic production and imports from Mexico.

In spite of some improvement in citrus (particularly orange) production in recent times,

<sup>15</sup> Information extracted from presentations made at an IICA Caribbean/Latin America Workshop on the Marketing of Fine Flavour Cocoa, (09/97), Trinidad & Tobago.

given the relatively small production capacity in T&T, the opportunities for citrus products in the international market appear limited to supply of small market segments. Fresh fruit exports are hampered by the presence of serious citrus diseases (*tristeza*, *psorosis*, *phytophthora*) for which controls are difficult. In addition, the fact that most T&T juice processors import a significant proportion of the raw material requirements, is also indicative of the high cost input which domestic citrus represents for the local agro-processing enterprises. As tariffs are reduced further, the trend of intermediate sourcing of citrus concentrate from the US and other countries seems set to continue.

#### □ *Non-Traditional Fruits*<sup>16</sup>

The international juice market represents one of the most important sectors of the global agribusiness market. In addition, the market for non-traditional fruit has shifted towards pulps, segments and purees. Dehydrated tropical fruits (in the form of pre-packaged cubes, slices, wedges or chips) are also becoming increasingly popular among the health conscious population. While the global demand for fruit juice should continue to grow significantly over the next 10 years, competition from temperate fruit juices (berries, apples) is likely to increase.

With the notable exception of paw paw, T&T has not reported any significant growth in the area of non-traditional fruit exports. In 1996, paw paw exports to the Canada and the UK were valued at \$TT5.4 million.<sup>17</sup> Other non-traditional fruit exports were relatively small, with none exceeding TT\$0.5 million in 1996. This situation derives from the limited commercial acreage of non-traditional fruits as well as poor management of existing orchards which results in poor quality fruit thus inhibiting marketability.

#### □ *Cut Flowers*

World flower production has experienced tremendous growth over the past 4 decades and now totals 6 billion dollars (3 billion alone for the cut flower industry). Markets continue to be concentrated in Europe, North America and

Japan. Growth in per capita consumption of flower products in these markets is expected to continue. Producing countries and the range of products have diversified significantly. The tropical flower market has not experienced the same dynamism and has yet to firmly establish itself in the American and European markets. Besides the limited interest of Western consumers for these products, the commercialisation of tropical flowers necessitates particular attention and specialised equipment in order to maintain the market quality of tropical cut flowers.<sup>18</sup>

The small size and limited varieties of T&T cut flowers offer opportunities for penetrating niche and specialists markets. However, the structural domestic constraints confronting cut flower producers need to be effectively addressed if they are to successfully compete in these niche markets.

#### □ *Rum*

The T&T rum industry is an integral member of the Caribbean Rum Industry. The industry faced a serious challenge to its existence as a consequence of the 1996/97 US-EU agreement to accelerate tariffs phase outs for distilled spirits by the year 2000. Had this agreement not been successfully challenged by the Caribbean Rum Industry, the viability of the T&T rum industry would have been seriously threatened by increased competition from US suppliers on the EU market. After much negotiations, the so-called EU-US Zero for Zero Agreement on the treatment of rum in the context of the EU/US Initiative to eliminate tariffs on White Spirits was favourably resolved in early 1997.

From July 1 1997 the EU and the US agreed to subject rum to reduced duty rates within the tariff quota amounts until duty free treatment is reached on 1 January 2003. The EC also agreed to promptly inform the US of any changes between 1 January, 2000 and 1 January 2003 in the preferential treatment accorded to its imports of rum. Caribbean rum exports will continue to benefit from duty-free access to the US market after the year 2000 under the CBI. The EU has also assured Caribbean rum exports that tariffs

<sup>16</sup> Information on non-traditional tropical fruits extracted from of Fruitrop, CIRAD-FLHOR, 1995-1997 issues.

<sup>17</sup> TIDCO

<sup>18</sup> "Development of the Flower Industry in Grenada"; C. Coutin (IICA/FMTC Competitiveness Study), 1997.

and quotas would not be imposed on ACP rum after the year 2000.

Caribbean rum industry officials must ensure that the on-going negotiations to define a post-Lomé IV arrangement will not adversely impact the conditions for rum exports to the EU. Caribbean rum products, including those from T&T, have developed a reputation in the world spirits markets due to the consistently high quality and the exotic nature of the Caribbean region. However, continued emphasis must be placed on product development as well as vigorous market and advertisement campaigns to ensure the continued success of rum in global markets. Caribbean Rum officials should however, closely monitor market signals, particular those which may pose a threat to the long-term growth potential for rum, such as an anti-rum campaign similar to the US anti-tobacco lobby.

#### □ Domestic Food Production

The T&T domestic food production and market sub-sector in T&T continue to be very informal. In most cases, the current production of many indigenous fruit and food commodities can supply the domestic markets without the development of commercial production systems or formal market structures. Trade data which indicate that in recent times, fresh (tropical) fruit and food crop are the least imported commodities into T&T. In addition, despite of the relatively small number of commercial acreage of non-citrus fruits, the domestic market for fresh fruit is seasonally glutted with supplies of mango, avocado and other indigenous fruits.

Given the "inferior good"<sup>19</sup> nature of food crops in particular, the T&T market, which has experienced a general increase in income levels, is close to saturation. This partially explains the declining consumption levels for food staples, particularly in their raw form. Domestic demand for semi-processed food crops is growing in line with the general trend towards consumer preference for consumer-friendly, or "ready-to-eat" foods. This also explains the increasing acceptance of frozen fruit and root crops such as cassava, mango etc.

<sup>19</sup> i.e., consumption tends to decline as incomes increase

For some vegetable and non-poultry meat products, however, the importance of imports in fulfilling domestic demand is apparent from trade statistics. While T&T has expanded its capacity to produce a range of vegetables and meat products, the productive capacity for legumes and higher-valued products, such as tomato, cauliflower, lettuce and broccoli, continues to lag behind demand. This is evidenced by the continued increase in vegetable imports, fresh-chilled and canned in the 1990s, both for final consumption and as raw material in agro-processing

Meat consumption, particularly of chicken, is expected to increase. This increase has been fueled by the phenomenal expansion of fast-food chains in the country. Poultry meat continues to receive import protection. However, given the trends in reduction of import restrictions on most food products and the recent price increases of poultry, the vitality in the domestic livestock sub-sector depends on improvements in genetic stock and in the reduction in production costs, particularly as relates to labour and imported animal feeds. Improved product quality and low cost locally produced meat products will enhance their ability to compete with similar imported products in the absence of government subsidies and import restrictions.

#### □ Agro-Industry

T&T houses the Caribbean's leading and most dynamic agro-processing sector. The country poses the unique advantage of cheap energy and highly skilled labour force which allow T&T entrepreneurs to add-value to imported bulk raw material. In addition, the devaluation of the T&T dollar has increased the competitiveness of its agro-processed commodities in regional markets. The import of bulk raw materials is one of the principal factors accounting for the success of the T&T agro-processing sector. Domestic raw materials are inadequate, in terms consistent volumes, quality and price competitiveness.

Prospects for the expansion of T&T agro-processed commodities appear favourable, particularly as most T&T firms adopt the product processes and standards set by the international community. Adherence to such standards will increase the acceptance in international markets

and continued attention to product quality, new product development, competitive pricing and aggressive marketing strategy will ensure increased market share as T&T takes advantage of market opening a la the WTO.

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

Against the backdrop of the WTO Agreements, all actors in the sector are challenged to develop WTO-consistent mechanisms to increase productivity and competitiveness in agriculture

*.... "Competitiveness in agriculture can be viewed as a dynamic economic concept inherent to globalisation, that takes into account the need to adjust to the macroeconomic environment, adapt to the astonishing pace of technological innovation and be flexible in terms of the requirements of sustainable and equitable development."<sup>20</sup>*

For Caribbean countries, the challenge continues to be one of sustaining efficient traditional crop production while expanding into a more flexible, diverse agriculture. These countries are thus faced with the twin tasks of increasing productivity and competitiveness within a free trade environment while simultaneously keeping the adjustment costs relatively small so as to minimise the negative impact on resource constrained groups.

The compatibility among trade liberalisation, competitiveness and equity has been the subject of great debate both within and outside of the region. Without economic growth, capital inflows and greater technological development that generates more productive employment opportunities and greater value-added, it will be impossible to achieve more equitable social development.

Balanced and sustainable agricultural development must emphasise the production of a total commodity, which is appropriate and ready for any market outlet, rather than commodities differentiated between the domestic and export market. Within the world environment characterised by increased economic integration, consideration needs to be given to a coordinated approach to the production and marketing of Caribbean products. This can only be achieved

through an appropriate mix of enabling policies, technological research and development, investment and continuous human resource development.

Policy decision making for Caribbean Agriculture should place priority on the following considerations in the design of an agricultural development strategy.

- **An Enabling Policy Environment**

Macro-economic variables and economic adjustment processes have had a growing impact on agricultural performance in the Caribbean over the last decade and a half. Despite social repercussions, adjustment processes are necessary in the agricultural sector and halting them could entail higher costs in the long run.

Combining new public policy for rural areas with current macro-economic policy is essential if agriculture is to be more competitive. The adverse effects of adjustment may be mitigated through policies which ensure rational spending of public resources on direct works that support the market rather than replace it. This strongly suggests an increased role of the private sector in all dimensions of the agricultural sector.

- **Dynamic and Flexible Support Institutions**

Economic globalisation has been accompanied by a rapid transformation of the international institutional framework. Trade is now a major driver of production characterised by a growing dominance of the private sector. As a matter of urgency, the Caribbean should seek to ensure the evolution of an institutional framework characterised by an integrated and dynamic public and private sector partnership with the capacity to capitalise on strategic and tactical alliances for developing the sector.

Attention needs to be placed on the reform and development of specialist institutions, such as relates to the provision of credit, insurance, market promotion, among other services.

<sup>20</sup> AGRIFORUM - Towards an Agenda for Agriculture in the Americas, DIREXCOM, IICA Costa Rica, August, 1997.



- **Technology Generation**

No country can maintain leadership in industry unless its research can continue to innovate technology for improved efficiency. Technologies are developed to enhance the exploitation of specific production areas, usually in the industrialised countries. Since different producing areas face different physical and ecological environments, technologies developed to the specifics of a particular region may not be appropriate to the Caribbean. In order to ensure continuous improvements in production efficiencies, the establishment and effective operation of a Caribbean research centre for technology generation and transfer may be a prerequisite for the attainment and maintenance of competitiveness and sustainability in the agricultural sector.

Given the resource limitations of most countries of the Region, the only way to effect this may be to pool regional resources and to establish linkages with other Regions which are confronted with similar

development problems. An important element in this goal is the provision of adequate resources for the continuous development of scientific manpower.

- **Human Resource Development**

Knowledge will become a fundamental factor of production, and investment in human resources will continue to be the basic driving force for technological and economic development. Education will accelerate the adoption of new techniques and will make national economies more productive.

The role of high quality and timely education, which takes into account production and social requirements, cannot be understated. Training and investment in human resources, particularly in the rural areas are inextricably linked to the sector modernisation process, competitiveness and equity.



## Additional Statistics

Table 1: Origin of Gross Domestic Product, Trinidad &amp; Tobago

TT\$ Millions @ 1985 prices	1991	1992	1993	1994	1995 <sup>P</sup>
<b>Primary Sector:</b>					
Agriculture	526.4	553.3	600.0	593.8	562.1
Export Agriculture	24.1	18.8	31.2	34.5	34.2
Domestic Agriculture	335.1	329.1	337.5	301.7	290.0
Sugar	167.2	205.4	231.3	257.6	237.9
Petroleum (oil)	4,406.5	4,228.5	3,937.2	4,287.1	4,303.1
<b>Secondary Sector:</b>					
Manufacturing:	1,365.6	1,348.2	1,296.9	1,323.2	1,396.1
Food, Beverages, Tobacco	620.7	605.1	578.0	575.0	595.4
Wood & Related Products	42.4	50.0	52.3	51.3	62.8
Construction & Quarrying	1,357.4	1,399.3	1,308.0	1,468.9	1,583.9
<b>Services Sector:</b>					
Utilities - Electricity & Water	225.7	237.8	236.4	247.2	257.7
Distribution & Restaurants**	1,816.4	1,635.5	1,745.8	1,839.6	1,928.4
Hotels & Guest Houses	50.8	47.0	47.5	34.3	52.4
Transport, Storage & Communications	1,743.2	1,727.6	1,717.9	1,704.5	2,060.2
Finance, Insurance & Real Estate	1,529.7	1,630.6	1,668.8	1,713.2	1,727.1
Government	2,731.1	2,657.7	2,662.4	2,557.4	2,511.0
Education & Cultural Services	837.5	807.2	821.4	837.9	804.5
Personal Services	434.2	421.1	423.9	442.8	468.5
Less Imputed Service Charge	387.7	399.4	408.7	419.6	390.0
<b>Gross Domestic Product at Factor Prices</b>	<b>16,636.8</b>	<b>16,294.4</b>	<b>16,057.5</b>	<b>16,630.3</b>	<b>17,265.2</b>

\* excludes oil refining and petrochemical industries; \*\*excludes distribution of petrochemical products

Source: The National Income of Trinidad & Tobago, CSO; and the Ministry of Finance, Trinidad & Tobago

Table 2: Retail Price Index by Major Categories, Trinidad &amp; Tobago

Average, year-end, Sept.1993=100	Wghts	1991	1992	1993	1994	1995
All Items	1000	232.0	247.0	97.1	105.6	111.2
Inflation Rate		3.8	6.5	10.8	8.8	5.3
Major Expenditure Categories				...na...		
Food	351	328.2	356.9		111.8	130.6
Clothing	189	149.6	148.9		99.8	98.6
Transportation	86	220.7	241.4		106.8	108.9
Housing	138	151.8	152.7		108.4	107.6
Others*	236	205.7	219.3		103.7	106.5

\* others - includes meals out, drink & tobacco, fuel & light, household supplies, services, education and medical goods and services.

Source: Ministry of Finance, Trinidad & Tobago

Table 3: Summary Central Government Fiscal Operations and Composition of PSIP

TT \$ Millions	1991	1992	1993	1994	1995
Current Revenue	<u>6,740.0</u>	<u>6,083.3</u>	<u>6,721.8</u>	<u>7,505.4</u>	<u>8,455.6</u>
Taxes	5,699.4	5,277.3	5,698.1	6,272.6	7,193.5
Current Expenditure	<u>6,037.4</u>	<u>6,365.9</u>	<u>6,389.5</u>	<u>7,089.8</u>	<u>7,835.9</u>
Wages & Salaries	2,224.0	2,501.7	2,572.7	2,591.8	2,884.4
Interest Payments	1,079.0	1,235.1	1,446.6	1,574.4	1,576.9
Subsidies & Transfers	2,096.7	2,087.4	1,851.5	2,183.2	2,487.1
<b>Current Account Balance</b>	<b>702.6</b>	<b>-282.6</b>	<b>332.3</b>	<b>415.6</b>	<b>619.7</b>
Capital Receipts	17.7	16.4	4.7	23.9	4.4
Grants	0.0	1.6	17.8	36.0	51.6
Capital Expenditure & Net Lending	766.2	379.2	393.8	481.5	622.4
<b>Overall Balance</b>	<b>-45.9</b>	<b>-643.8</b>	<b>-39.1</b>	<b>-6.0</b>	<b>53.3</b>

Source: Ministry of Finance,

Table 4: Distribution of Commercial and Development Bank Credit, Trinidad &amp; Tobago

TT \$ Millions, End of Period	1991	1992	1993	1994	1995
<b>TOTAL: of which</b>	<b>8,256.3</b>	<b>7,996.9</b>	<b>6,842.6</b>	<b>6,062.4</b>	<b>6,741.4</b>
Central and Local Government	35.1	37.7	34.3	32.1	28.6
<i>Agriculture</i>	301.0	314.4	390.6	182.4	211.9
Petroleum	460.6	263.9	339.6	216.7	139.4
Manufacturing	1,081.9	1,238.6	1,070.6	995.9	1,167.4
Construction	311.2	267.8	266.9	164.8	188.8
Distributive Trades	894.5	865.6	866.5	698.7	752.9
Hotels & Guest Houses	46.6	53.9	48.9	30.7	37.3
Transport, Storage & Communication	490.1	384.4	466.8	341.5	500.7
Finance, Insurance & Real Estate	1,014.9	928.4	820.4	841.7	1,075.3
Education, Culture, Community Services	98.8	107.4	115.6	92.4	75.2
Personal Services	228.3	281.0	337.3	350.3	301.7
Electricity & Water	32.5	63.2	49.8	32.8	10.9
Consumers	2,042.9	1,985.7	2,035.3	2,082.4	2,251.3
Real Estate Mortgage, Loans & Lease Financing	1,217.9	1,204.9	1,280.8	1,096.6	921.5

Sources: Ministry of Finance, Trinidad &amp; Tobago

Table 5: Balance of Payments, Trinidad &amp; Tobago

US \$ Millions	1991	1992	1993	1994	1995p
Current Account Balance	-20.7	122.6	-107.8	221.4	269.9
Trade Balance	341.0	494.0	163.4	597.7	592.2
Exports	1,751.3	1,661.9	1,662.2	1,971.9	2,477.4
Imports	1,410.3	1,167.9	1,498.8	1,374.2	1,885.2
Services (Net)	-348.0	-355.4	60.6	43.1	159.4
Investment Income	-439.3	-444.3	-321.5	-413.3	-465.4
Net Unrequited Transfers	-13.7	-16.0	-6.7	-6.1	-16.3
Capital & Financial Movements (Net)	-261.9	-172.5	91.5	-32.5	-27.5
Net Direct Investment	144.1	171.0	372.6	521.0	295.7
<b>Overall Surplus or Deficit</b>	<b>-332.2</b>	<b>-116.8</b>	<b>151.3</b>	<b>181.0</b>	<b>32.5</b>

Sources: Ministry of Finance, Trinidad &amp; Tobago

Table 6: Composition of Merchandise Exports and Imports Trinidad &amp; Tobago

TT \$ Millions	1991	1992	1993	1994	1995
<b>Domestic Exports:</b>	<b>8,436.4</b>	<b>7,943.0</b>	<b>8,142.4</b>	<b>11,055.2</b>	<b>14,129.3</b>
0 Food & Live Animals	383.2	373.9	480.6	563.0	821.0
1 Beverages & Tobacco	99.7	107.6	168.2	235.8	313.9
2 Crude Material	14.4	16.5	16.2	21.8	36.4
3 Minerals Fuels	5,506.5	5,099.3	4,672.3	5,505.6	6,962.6
4 Animal & Vegetable Fats & Oils	13.9	10.2	13.8	25.0	34.5
5 Chemicals	1,425.1	1,216.6	1,473.3	3,040.7	3,633.6
6 Manufactured Goods	786.4	865.0	1,086.6	1,391.4	1,974.0
7 Machinery, Transport, etc	79.4	98.3	93.3	90.9	131.7
8 Misc. Manufactured Goods	118.4	147.4	136.4	180.8	221.5
9 Misc. Transactions	9.4	8.2	1.7	0.1	0.1
<b>Imports:</b>	<b>7,084.8</b>	<b>6,101.2</b>	<b>7,495.3</b>	<b>6,700.9</b>	<b>10,191.1</b>
0 Food & Live Animals	895.2	900.6	938.9	1,010.2	1,344.0
1 Beverages & Tobacco	41.3	29.4	30.4	40.5	44.0
2 Crude Material	44.6	373.6	337.2	656.3	737.1
3 Minerals Fuels	1,038.6	549.1	1,189.0	43.0	51.5
4 Animal & Vegetable Fats & Oils	34.7	20.4	29.8	46.8	34.3
5 Chemicals	892.2	769.0	827.3	919.2	1,332.4
6 Manufactured Goods	1,359.8	1,227.7	1,238.9	1,418.8	2,156.3
7 Machinery, Transport, etc	1,840.9	1,769.6	2,463.5	1,995.7	3,748.2
8 Misc. Manufactured Goods	490.2	422.3	420.9	544.2	699.7
9 Misc. Transactions	47.3	39.5	19.4	26.2	43.6

Sources: Central Statistics Office, Trinidad &amp; Tobago

Table 7: Composition of Agri-Food Merchandise Exports and Imports (SITC 0)

TT \$ Millions	1991	1992	1993	1994	1995
<b>0 Food &amp; Live Animal Exports</b>	<b>383.2</b>	<b>373.9</b>	<b>480.6</b>	<b>563.0</b>	<b>821.0</b>
00 Food & Live Animals (check)	30.1	0.0	14.1	16.8	6.1
01 Meat & Preparations	7.7	5.7	7.7	8.6	10.8
02 Dairy Products & Eggs	7.1	6.8	11.5	23.9	35.5
03 Fish & Fish Preparation	11.5	16.1	31.3	52.2	59.4
04 Cereals & Preparations	55.7	61.4	70.3	97.7	131.2
05 Vegetables & Fruits	25.8	25.8	25.4	38.2	54.4
06 Sugar & Sugar Preparations	148.6	153.9	161.0	202.8	308.9
07 Coffee, Tea, Cocoa & Spices	8.8	27.9	53.7	58.5	68.7
08 Feeding Stuff for Animals	53.6	36.8	61.2	74.0	71.5
09 Misc. Edible Products	28.8	30.4	44.4	61.9	74.5
<b>0 Food &amp; Live Animal Imports</b>	<b>895.2</b>	<b>896.7</b>	<b>938.9</b>	<b>1,010.2</b>	<b>1,344.0</b>
0 Food & Live Animals (check)	4.4	8.5	???	???	260.7
1 Beverages & Tobacco	107.1	77.7	101.9	92.9	94.1
2 Crude Material	171.6	173.8	202.6	204.5	269.5
3 Minerals Fuels	23.2	16.6	22.0	30.2	31.7
4 Animal & Vegetable Fats & Oils	196.6	240.1	270.8	402.0	199.0
5 Chemicals	193.6	192.7	180.8	222.4	168.6
6 Manufactured Goods	31.4	30.8	16.8	12.8	63.7
7 Machinery, Transport, etc	27.3	26.8	29.6	36.1	40.6
8 Misc. Manufactured Goods	82.5	59.4	50.6	79.8	86.4
9 Misc. Transactions	57.5	70.3	73.9	100.0	129.7

Sources: Central Statistics Office

Table 8: Direction of Trade

Trade Share % of total	1991	1992	1993	1994	1995
<b>Export Total<sup>1</sup></b>	<b>8,436.4</b>	<b>7,935.2</b>	<b>8,684.2</b>	<b>11,055.2</b>	<b>14,593.8</b>
UK	2.2	1.7	2.1	1.3	1.7
US	48.6	47.1	45.6	42.9	38.9
Japan	1.3	1.0	1.1	0.2	0.1
Other European Community	6.9	3.6	2.6	5.9	6.7
Canada	2.1	1.8	2.1	0.5	1.8
CARICOM:	12.8	13.8	20.2	20.0	20.5
of which <i>Jamaica</i>	2.1	1.7	4.4	6.3	8.4
<i>Guyana</i>	1.5	2.3	3.6	3.0	3.0
<i>Barbados</i>	3.3	3.4	4.4	3.7	3.4
Puerto Rico & USVI's	1.3	1.6	2.7	2.9	2.9
Central & South America <sup>2</sup>	8.3	7.1	7.3	10.2	8.5
European Free Trade Association	0.2	0.3	0.3	0.1	0.4
Other	16.3	22.0	3.6	16.0	18.5
<b>Total Imports<sup>3</sup></b>	<b>7,084.8</b>	<b>6,101.2</b>	<b>7,495.3</b>	<b>6,700.9</b>	<b>10,191.1</b>
UK	7.4	7.8	8.1	8.3	7.2
US	38.9	41.4	38.9	47.7	49.9
Japan	5.6	6.7	3.8	4.6	3.2
Other European Community	7.3	7.8	11.2	6.8	10.6
Canada	4.9	5.1	4.9	5.7	5.1
CARICOM:	4.8	5.4	3.8	4.7	3.3
of which <i>Jamaica</i>	2.1	2.2	1.4	1.8	1.2
<i>Guyana</i>	0.4	0.5	0.5	0.6	0.6
<i>Barbados</i>	1.5	1.4	1.3	1.6	0.9
Central & South America <sup>2</sup>	19.6	14.6	20.4	10.6	9.0
of which <i>Brazil</i>	3.8	3.4	2.2	5.3	4.1
<i>Venezuela</i>	13.9	9.7	16.8	2.9	2.9
European Free Trade Association	1.5	1.9	1.1	1.9	2.0
Indonesia	0.1	0.2	0.2	0.2	0.1
Other	9.9	9.1	7.6	9.5	9.6

1 - Excluding ships' stores &amp; bunkers;

2 - excludes Guyana, French Guiana, Suriname &amp; Belize

3 - unadjusted for balance of payments purposes

Sources: Central Bank of Trinidad &amp; Tobago

Table 9: Domestic Production of Fertiliser and Imports of Agricultural Inputs

	1991	1992	1993	1994	1995
Fertiliser - Production 000 tons	2,465	2,374	2,291	2,452	2,630
Exports '000 tons	2,102	2,089	1,946	2,185	2,268
Fertiliser Imports: tons	6,050	8,406	11,958	6,427	11,029
TTS'000	9,316	12,274	11,611	12,900	13,156
Imports of Agricultural Machinery	TTS'000	TTS'000	TTS'000	TTS'000	TTS'000
All*				22,097	36,567
Ploughs & Harrows	678	604	967		
Poultry keeping machinery	638	110	212		
Tractors & Parts	4,336	3,730	3,796		
Other	1,245	711	370		

Includes food processing machinery, tractors etc.

Source: Central Statistical Office

Table 10: Agricultural Development Bank Loan Disbursement By Purpose

TTS'000	1991	1992	1993	1994
<b>TOTAL</b>	<b>45,425.1</b>	<b>50,509.9</b>	<b>40,665.6</b>	<b>72,426.4</b>
Crops: of which	16,662.7	20,515.2	12,109.0	13,902.4
sugar cane	6,291.8	7,881.9	6,549.8	7,347.0
cocoa & coffee	1,180.7	1,306.0	576.6	721.7
vegetables	3,657.7	4,288.3	2,187.9	3,015.7
Fish/Meat: of which	14,914.1	10,777.6	3,642.7	4,656.3
eggs/poultry	3,556.1	1,963.7	1,178.3	1,636.4
fish & products	6,488.3	5,259.0	1,401.2	2,131.3
dairy	2,586.3	1,745.6	661.1	644.0
pigs	1,295.9	559.4	137.8	114.6
Non-Food: of which	13,587.6	18,977.4	24,824.1	53,782.2
agro-industry	8,759.6	14,042.2	19,121.5	48,799.0
horticulture	1,907.9	2,420.9	1,787.6	1,889.8

Source: ADB Reports

Table 11: Commercial Bank Loan Disbursement By Purpose

TTS'000	1991	1992	1993	1994	1995
<b>Private Sector:</b>	<b>243,226</b>	<b>254,867</b>	<b>261,436</b>	<b>164,720</b>	<b>162,404</b>
sugar industry	5,818	7,965	26,880	4,499	3,500
cocoa, coffee, citrus	1,916	4,432	3,321	3,585	9,778
veg., roots, rice etc	3,002	3,549	3,953	1,733	1,803
dairy, beef, pork, other	47,765	34,691	57,296	35,055	37,126
poultry & eggs	38,071	34,562	34,650	33,039	28,168
forestry, fishing	9,842	15,714	10,234	6,745	11,137
other domestic agric.	12,137	13,388	11,391	7,310	5,918
Food processing	119,387	138,180	109,554	66,707	63,191
Coconut growing	5,288	2,476	4,157	6,047	1,783
<b>Public Sector:</b>	<b>180,067</b>	<b>216,079</b>	<b>248,723</b>	<b>123,441</b>	<b>173,460</b>
sugar industry	121,350	127,049	168,521	101,144	34,034
cocoa, coffee, citrus	0.0	0.0	0.0	5.0	0.0
veg., roots, rice etc	0.0	10,490	2,633	0.0	0.0
dairy, beef, pork, other	0.0	0.0	0.0	0.0	0.0
poultry & eggs	0.0	126	0.0	0.0	0.0
forestry, fishing	55,839	60,013	67,589	74,285	78,643
other domestic agric.	0.0	0.0	0.0	0.0	0.0
Food processing	2,878	18,401	9,980	39,007	60,783
Coconut growing	0.0	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>423,293</b>	<b>470,946</b>	<b>510,159</b>	<b>288,161</b>	<b>335,864</b>

Source: Central Bank of Trinidad &amp; Tobago

FECHA DE DEVOLUCION


IICA  
E71-59  
Autor  
Título Agriculture in Trinidad y Tobago  
Fecha Devolución Nombre del solicitante






---

**INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE  
CARIBBEAN REGIONAL CENTRE**

**# 3 Herbert Street, Newtown, P.O.Box 1318, Port of Spain  
TRINIDAD AND TOBAGO**

**Tel: (868) 628-4403/4078/4079; 622-7050/7086; Fax: (868) 628-4562; Cable: IICAPOS; Email: [iicatt@iicacarc.org](mailto:iicatt@iicacarc.org)**