Ministry of Agriculture & Fisheries

Pillar of the Belizean Economy

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Annual Report 2006

Glossary

ACP	African, Caribbean and Pacific Countries
Agstat	Agriculture Station
AI	Avian Influenza
AQUIF	Aquaculture and Inland Fisheries
ASWAP	Agriculture Sector Wide Approach Programme
ATM	Automatic Teller Machine
BAHA	Belize Agricultural Health Authority
BAS	Belize Audubon Society
BEST	Belize Enterprise for Sustainable Technology
BFR	Belize Farm Registry
BGA	Banana Growers Association
BIARD	Belize Institute for Agricultural Research and Development
BLPA	Belize Livestock Producers Association
BMDC	Belize Marketing and Development Corporation
BOPA	Belize Organic Producers Association
BSE	Bovine Spongiform Encephalopathy
BSI	Belize Sugar Industries
CAC	Central American Agricultural Council
CARICOM	Caribbean Community
CARD	Community-Initiated Agriculture and Rural Development
CARDI	Caribbean Agriculture Research and Development Institute
CARIFORUM	Caribbean Forum
CARTF	CARIFORUM Agribusiness Research and Training Fund
CATIE	Tropical Agriculture Research & Higher Education Centre
CBO	Community Based Organization
CCU	Conservation and Compliance Unit
CDB	Caribbean Development Bank
CDE	Centre for Development of Enterprise
CFA	Cane Farmers Association
CFIA	Canadian Food Inspection Agency
CGA	Citrus Growers Association
CGWCU	Citrus Growers and Workers Credit Union
CITES	Convention for the Regulation of International Trade of Endangered Species
CORECA	Regional Council for Agriculture Cooperation
CREI	Citrus Research and Education Institute
CRFM	Caribbean Regional Fisheries Mechanism
CSF	Classical Swine Fever
CZMAI	Coastal Zone Management Authority and Institute
DAC	**District Agriculture Officer**
DFID	Department for International Development
EU	European Union
FAO	Food and Agriculture Organization

FAOR	Food & Agriculture Organization Representative
FDA	Food and Drug Administration
FTAA	Free Trade Area of the Americas
GAP	Good Agriculture Practices
GEF	Global Environmental Fund
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practices
GOB	Government of Belize
HACCP	Hazard Analysis and Critical Control Point
HIVOS	Humanist Institute for Co-operation with Developing Countries
ICCAT	International Commission for the Conservation of Atlantic Tunas
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IICA	Inter-American Institute for Cooperation on Agriculture
IMMARBE	International Merchant Marine Registry of Belize
INFAL	International Network of Food Analytical Laboratories
LEO	**Livestock Extension Officer**
MAF	Ministry of Agriculture and Fisheries
MBRS	Meso-American Barrier Reef System
MOU	Memorandum of Understanding
MSY	Maximum Sustainable Yield
NARI	National Agriculture Research Institute
NCCARD	National Committee for Coordination of Agriculture Research & Development
NEAC	National Environmental Assessment Committee
NEMO	National Emergency Management Organization
NGO	Non Governmental Organization
OIRSA	International Regional Organization for Plant & Animal Health
OSPESCA	Central American Organization of the Fisheries and Aquaculture Sector
PAHO	Pan American Health Organization
PHMBPink	Hibiscus Mealy Bug
REMERFI	Meso-American Network for Plant Genetic Resources
RFS	Rural Financial Services
RK	Red Kidney
ROC	Republic of China (Taiwan)
RUTA	Regional Unit for Technical Assistance
SAQS	Strengthening Agriculture Quarantine System
SCPC	Sugar Cane Production Committee
SCQCA	Sugar Cane Quality Control Authority
SICA	Central American Integration System
SICB	Sugar Industry Control Board
SIRDI	Sugar Industry Research and Development Institute
SMP	Synoptic Monitoring Program
SPAGS	Spawning Aggregation Sites
SPFS	Special Project for Food Security

SPS	Sanitary/Phyto-sanitary
TCGA	Toledo Cocoa Growers Association
TCP	Technical Cooperation Programme
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
USA	United States of America
USDA	United States Department of Agriculture
UTN	National Technical Unit for RUTA
VDRU	Veterinary Drug Registration Unit
VPN	Virtual Privacy Network
WFD	World Food Day
WNV	West Nile Virus
WTO	World Trade Organization
WWF	World Wildlife Fund

THEME	Agriculture, Fisheries & Cooperatives: Pillars of the Belizean Economy
VISION	A transformed/modern sector that is fully competitive, diversified and sustainable.
MISSION	To continue as the economic pillar of Belize, ensuring food security, generating income and foreign exchange, creating employment, and conserving natural resources, in order to grow the economy, reduce poverty and empower the local population for sustainable development.
STRATEGIC OBJECTIVES	1. Increase the efficiency, profitability and Competitiveness of the agriculture, fisheries and cooperative sectors 2. Accelerate the diversification in production, processing and exports 3. Improve and conserve the natural and productive resource base to ensure long-term sustainable productivity and viability 4. Improve access to productive resources and services and create economic opportunities for small/young farmers, women and indigenous people, particularly in poor, marginal areas 5. Strengthen the institutional capacities to provide effective support in marketing and trade, research and extension, as well as relevant education and training
OUR CLIENTS and PARTNERS IN DEVELOPMENT	Farmers Fishers Cooperatives Producers and workers Processors and manufacturers Distributors and exporters Consumers and investors National and local government Civil society Local and external donors

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Foreword

I am pleased to present the 2006 Annual Report to all stakeholders in the Agriculture, Fisheries and Cooperative Sub-sectors.

During 2006 the Ministry of Agriculture & Fisheries focused on networking with farmers, producers, fisher-folks, cooperatives and other key stakeholders in order to identify and address critical constraints and challenges to sustainability. The Ministry also formulated appropriate policies and strategies to facilitate the increase in production, and to enhance the quality of our produce that would lead to greater levels of efficiency within a framework of a Market-Oriented and Internationally Competitive basis.

Agriculture continues to remain the pillar of the Belizean Economy as reflected in income accruing to producers from primary output being approximately $400 million while export earnings from agriculture reached $450 million. However, for the sector to continue to enjoy the title **"Pillar of the Belizean Economy,"** it will need to generate greater forward/backward linkages with the most vibrant and competitive sector in the Belizean economy - **the Tourism Sector.**

Henceforth, Agriculture's focus in the next five years will be two-fold: translating growth and development in the tourism sector into tremendous opportunities for growth, development and diversification in the agriculture sector. The second focus needs to be the expanding markets in neighboring countries, particularly, for grains, legumes and livestock products, with the objective of narrowing the current trade deficit and in the long-run being able to boast a trade surplus. The latter objective has been reached in Caricom; thus Belize needs, now, to set this target with respect to trade with Mexico and Central America.

Success of agriculture with respect to greater market-share of the tourist industry, more market participation in the neighboring countries of Guatemala and Mexico, together with consolidation of food security policy/strategies addressing supply, stability, access and quality will ensure that the loss of market share for the traditional exports in Europe and elsewhere become manageable from the point of view of both macro and micro-impact.

It was my pleasure serving Agriculture, Fisheries and Cooperatives during 2006 and I wish the sector all the best in 2007 and beyond.

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Hon. Vildo Marin
Deputy Prime Minister
and Minister of Agriculture &Fisheries

Acknowledgements

Many thanks to the three departments (Agriculture, Fisheries and Cooperatives) for submitting their reports for 2006. Many thanks also to Mr. Miguel Balan for submitting photos, to Mr. Phillip Tate for compiling all the reports from the departments and the partner agencies, to Mr. Horace Jones for assisting with the format and preparing the cover page, to Mr. Alfonso Bautista for preparing the statistics. Thank you also to the nine partner agencies and programs for providing Executive Summaries of their major accomplishments and activities during 2006. With your support and cooperation the Annual Report was once again made reality.

Executive Summary

Primary Output Primary agriculture output expanded by 9% from $411 million to $448 million in 2006. The main engine for growth came from sugar which expanded by 41% from $50 million to $71.3 million and citrus which had a growth rate of 26% from $57.6 million to $72.8 million. Other smaller contributors to growth included the fisheries sector which expanded by 3% and the fruits/vegetable sector which exhibited growth of a merely 1%. The only sector which demonstrated decline was the livestock sector to the tune of a negative 3%.

The traditional sector of citrus, sugar and bananas was responsible for 43% of agriculture output while the non-traditional sector of fisheries, fruits/vegetables and livestock was responsible for 57% of all agriculture output in 2006. Responsibility for growth in 2006 was attributed to the traditional sector since it expanded by 22% while the non-traditional sector remain stable at 1% growth.

Table 1: Primary Agriculture Output Value for 2006			
Product	**2005**	**2006**	**Change**
Sugar-Cane	$50,373,046	$71,264,711	41%
Bananas	$51,080,810	$50,591,638	-1%
Citrus	$57,593,479	$72,773,076	26%
Sub-traditional	$ 159,049,340	$ 194,631,431	22%
Fisheries	$87,225,348	$89,456,218	3%
Fruits/Vegetables	$87,385,766	$88,922,899	2%
Livestock	$77,439,738	$75,024,646	-3%
Sub-non-traditional	$252,050,852	$253,403,763	1%
Total Output	**$ 411,100,192**	**$ 448,035,194**	**9%**

Fruits/Vegetable Output: The fruits/vegetable sector expanded by 2%. Most of this growth came from papayas and from other fruits/vegetables category (includes 50 fruits/vegetable products). The four major categories of fruits/vegetables (papayas, beans, corn and rice paddy) constituted 65% of fruits/vegetable output and declined by 4% while the remaining category of fruits/vegetables represented 35% of fruits/vegetable output but expanded by 9% in 2006.

Papaya production expanded by 24% from $25.0 million to $31.0 million due to increased real output from 58.2 million lbs to 73.4 million lbs in 2006. Negative growth was experienced for beans (-16%) which decreased from $9.7 million to $8.2 million, corn (-18%) decreased from $15.3 million to $12.5 million and rice paddy (-33%) which decreased from $8.6 million to $5.7 million. The main factor responsible for negative growth in the beans sector was a reduction in real output of 21% from 11.7 million lbs to 9.2 million lbs. Reduction in corn was again attributed to a reduction in real output of 33% from 39.2 million lbs to 26.1 million lbs. Rice

paddy reduction was also attributed to a reduction in real output from 39.1 million lbs to 26.1 million lbs.

Table 2: Fruits/Vegetables Production			
Product	**2005**	**2006**	**Change**
Papayas:			
Quantity in lbs	58,240,463.00	73,368,900	26%
Price per lb	$0.43	$0.42	-2%
Value	$25,043,399	$31,041,396	24%
Beans:			
Quantity in lbs	11,722,100	9,281,725	-21%
Price per lb	$0.83	$0.86	4%
Value	$9,783,677	$8,225,974	-16%
Corn:			
Quantity in lbs	39,152,894	26,136,078	-33%
Price per lb	$0.20	$0.20	0%
Value	$15,275,285	$12,521,363	-18%
Rice Paddy:			
Quantity in lbs	39,152,894	26,136,078	-33%
Price per lb	$0.22	$0.22	0%
Value	$8,613,636	$5,749,937	-33%
Sub-total	$58,715,997	$57,538,670	-2%
% of Total Fruits/veg	67%	65%	-4%
Other Fruits/Vegetables	$28,669,769	$31,384,229	9%
Total Fruits/Vegetables	**$87,385,766**	**$88,922,899**	**2%**

Livestock Output: The livestock sector declined by 3% from $77.4 million to $75.0 million. The main products responsible for this decline were beef production which decreased by 14% from $12.8 million to $11.0 million, milk output which declined by 20% from $2.7 million to $2.1 million, and poultry output which decreased by 2%. Exports of beef (on the hoof) decreased by 55% from $3.9 million to $1.7 million or in pounds from 3.2 million lbs to 1.5 million lbs. Reduced exports was the main variable responsible for reduced earnings for the beef sector.

Positive growth was achieved in pig production by 3% from $7.7 million to $7.9 million due, mostly, to increased domestic demand from 3.6 million lbs to 3.7 million lbs of dressed-weight. Growth in beef production was achieved, in spite, of reduced exports of beef (on the hoof) from 3.2 million lbs to 1.5 million lbs. Other sector which demonstrated growth included egg

production by 10% from $3.6 million to $3.9 million and honey production which expanded by 55% from $311,238 to $481,878.

Table 3: Livestock Production			
Product	**2005**	**2006**	**Change**
Beef:			
Beef (Value) Slaughtered & Exports	$12,774,420	$ 11,021,220	-14%
Export Price on the Hoof	$ 1.20	$ 1.20	0%
Domestic Price (Dress-weight - lbs)	$ 2.50	$ 2.50	0%
Pigs:			
Pigs (Value) slaughtered & Exports	$7,730,794	$7,975,040	3%
Export Price on the Hoof	$1.40	$1.40	0%
Domestic Price (Dress-weight - lbs)	$3.00	$3.00	0%
Poultry (Value):*	$50,164,143	$49,290,845	-2%
Sheep	$179,043	$169,155	-6%
Milk (Value)	$2,671,148	$2,126,280	-20%
Eggs (Value)	$3,608,952	$3,960,228	10%
Honey (Value)	$311,238	$481,878	55%
Total	**$77,439,738**	**$ 75,024,646**	**-3%**

Agricultural Exports: Agricultural exports expanded by 9% from $363.7 million to $396.4 million. However, the contribution of agricultural exports relative to aggregate exports declined from 85% to 74% due to the discovery/ export of oil products. The three major commodities responsible for growth in exports were sugar/ molasses exports which expanded by 43% from $72.7 million to $104.3 million, papaya exports which increased by 16% from $26.8 million to $31.0 million and fisheries exports which increased by 3% from $83.9 million to $86.1 million Negative growth was exhibited in the remaining commodities such as citrus which decreased exports by 2% from $119.6 million to $117.7 million, banana exports decreased by 1% from $51.1 million to $50.3 million, while other agricultural exports declined by 29% from $9.7 million to $6.9 million.

Sugar: Primary sugar-cane income accruing to the farmer increased by 41% from $50.4 million to $71.3 million due to a price increase of 12% from $54.20 to $60.73/ton of sugar-cane, and also due to increased real output by 26% from 929,302 to 1,173,468 tons. Likewise, sugar exports increased by 43% from $69.9 million to $100 million due to increased real output by 7% from 90,000 tons to 96,000 tons also due to increased export prices by 34% from $776.66 to $1042.34/ton of sugar. Increased export of molasses by 49% from $2.8 million to $4.2 million was attributed to increased price by 50% from $0.55 to $0.82/gallon.

Table 4: Exports			
Product	**2005**	**2006**	**Change**
Sugar & Molasses	$ 72,720,000	$ 104,268,000	43%
Citrus Products	$ 119,579,000	$ 117,663,000	-2%
Bananas	$ 51,081,000	$ 50,592,000	-1%
Fisheries	$ 83,871,000	$ 86,061,000	3%
Papayas	$ 26,768,000	$ 31,014,000	16%
Other	$ 9,681,000	$ 6,891,000	-29%
Agricultural Exports	$ 363,699,000	$ 396,444,000	9%
% of Total Exports	85%	74%	-13%
Agric/Non-Agric Exports	**$ 425,740,000**	**$ 536,400,000**	**26%**

With respect to quality of cane, it demonstrated significant reduction as the ratio of cane to sugar increased by 18% from 10.33 to 12.22; however, the increased real output of 26% more than compensated for this reduction.

Table 5: Sugar Production/Exports			
Product	**2005**	**2006**	**Change**
Sugar-Cane:			
Quantity (tons)	**929,392**	**1,173,468**	**26%**
Price/ton	**$54.20**	**$60.73**	**12%**
Value	**$50,373,046**	**$71,264,711**	**41%**
Cane/sugar ratio	**10.33**	**12.22**	**18%**
Sugar:			
Value	$ 69,899,000	$ 100,065,000	43%
Quantity (Tons)	90,000	96,000	7%
Price	$ 776.66	$ 1,042.34	34%
Molasses:			
Value	$ 2,821,000	$ 4,203,000	49%
Quantity (Gals)	5,129,000	5,098,000	-1%
Price	$ 0.55	$ 0.82	50%
Sector Exports	**$72,720,000**	**$104,268,000**	**43%**

Citrus: Citrus exports decreased by 2% from $119.6 million to $117.7 million due to reduced unit exports of orange concentrate and grapefruit concentrate. Orange concentrate exports decreased by 2% from $87.5 million to $86.2 million due to a 23% reduction in unit exports from 8.4 million gallons to 6.4 million gallons; the reduction in unit exports was greatly mitigated by the good market conditions as reflected in increased price of 29% from $10.45 to $13.43 per gallon of concentrate.

Income accruing to farmers increased by 26% from $57.6 million to $72.8 million due to increased real output in grapefruit production by 13% from 1,527,802 to 1,730,833 boxes and due to a 71 % improvement in price per box of oranges from $5.85 to $9.99. Production of oranges declined by 17% from 6,264,847 to 5,182,718 boxes.

Table 6: Citrus Production/Exports			
Product	**2005**	**2006**	**Change**
Grapefruit Production:			
Production in boxes	1,527,802	1,730,833	13%
Price per 80 lb box	9.82	9.23	-6%
Value	$ 15,003,015	$ 15,975,588	6%
Grapefruit Concent Exports:			
In Gallons	1,255,000	1,246,000	-1%
Price per gallon	$ 15.48	$ 18.31	18%
Value	$ 19,424,000	$ 22,810,000	17%
Orange Production:			
Production in boxes	6,264,847	5,182,718	-17%
Price per 90 lb box	5.85	9.99	71%
Value	$ 36,649,354	$ 51,775,352	41%
Orange Concentrate Exports:			
In Gallons	8,380,000	6,415,000	-23%
Price per Gallon	$ 10.45	$ 13.43	29%
Value	$ 87,547,000	$ 86,176,000	-2%
Fresh Citrus Exports	3,283,501	2,888,588	-12%
Other Processed Citrus Exports	9,359,000	5,796,000	-38%
Orange/ Grapefruit Prod (Boxes)	7,792,649	6,913,551	-11%
All Citrus Exports	**$ 119,613,501**	**$ 117,670,588**	-2%

Both fresh citrus exports and other processed citrus exports experienced growth in 2006. Fresh citrus exports expanded by 39% from $2.3 million to $3.2 million due mainly to an increase of 18% in unit exports of fresh citrus and an improvement in price of 20% per pound of orange, causing nominal exports of fresh citrus to expand by 41% from $2.2 million to $3.2 million.

Other citrus exports expanded by 23% from $7.4 million to $9.09 million due to an increase in unit exports of grapefruit oil by 258% from 182,190 to 652,400 lbs and also due to an improvement in price of 17% from $8.62 to $10.12 per pound, causing exports of grapefruit oil to move by 320% from $1.57 million to $6.6 million. Significant reduction in exports was observed for orange squash which decreased by 73% moving from $2,000,000 to $540,000 while grapefruit squash exports oscillated by a negative 98% from $1.79 million to a merely $30,000.

Table 7: Other Fresh Citrus Exports			
Product	**2004**	**2005**	**Change**
Fresh Lime:			
Quantity (lbs)	236,591	115,000	-51%
Price per lb	$0.07	$0.07	0%
Value	$17,012	$8,050	-53%
Fresh Orange:			
Quantity (lbs)	17,782,032	19,309,335	9%
Price per lb	$0.18	$0.15	-17%
Value	$3,248,356	$2,880,508	-11%
Fresh Grapefruit:			
Quantity in lbs	248,942		-100%
Price per lb	$0.06		-100%
Value	$ 18,133	$ -	-100%
Fresh Citrus Exports	**$3,283,501**	**$2,888,558**	**-12%**

Table 8: Other Processed Citrus Exports in 2006			
Product	**2005**	**2006**	**Change**
Orange Squash:			
Quantity in Gallons	149,000	14,000	-91%
Price per Gallon	$ 3.64	$ 7.64	110%
Value	$ 542,000	$ 107,000	-80%
Grapefruit Squash:			
Quantity in Gallons	38,000	2,000	-95%
Price per Gallon	$ 7.84	$ 13.50	72%
Value	$ 298,000	$ 27,000	-91%
Orange Oil:			
Quantity (lbs)	2,093,000	3,119,000	49%
Price per lb	$ 0.92	$ 0.90	-2%
Value	$ 1,919,000	$ 2,810,000	46%
Grapefruit Oil:			
Quantity (lbs)	652,000	293,000	-55%
Price per lb	$ 10.12	$ 9.73	-4%
Value	**$ 6,600,000**	**$ 2,852,000**	**-57%**
Processed Citrus Exports	**$ 9,359,000**	**$ 5,796,000**	**-38%**

Bananas: Nominal exports decreased by 1% due to reduced unit exports by 4% from 76,000 to 73,000 metric tons since a price improvements of 3% from $672 to $693 per metric ton of bananas was observed

Table 9: Banana Exports			
Product	**2005**	**2006**	**Change**
Quantity (mt tons)	76,000	73,000	-4%
Value	$51,081,000	$50,592,000	-1%
Price/ mt	**$ 672.12**	**$ 693.04**	**3%**

Fisheries: Fisheries exports expanded by 3% from $83.9 million to $86.0 million. Growth originated in the shrimp sector which expanded by 3% from $60.5 million to $62.5 million due to a 20% increase in price since real output declined by 14%. The second source of growth originated in the conch sector which exhibited a 17% increase from $7.2 million to $8.4 million due to a 40% increase in real output since price declined by 16%. The lobster sector experienced a 10% decrease from $14.5 million to $13.0 million, due to 22% decrease in unit exports, even though, prices had improved by 15%. Other fish exports declined by 28% due, mostly, to reduced unit exports of tilapia together with lower prices in the export markets.

Table 10: Marine Exports			
Product	**2005**	**2006**	**Change**
Lobster:			
Quantity (lbs)	510,000	398,000	-22%
Value	$14,499,000	$13,027,000	-10%
Price	$28.43	$32.73	15%
Conch:			
Quantity (lbs)	524,000	732,000	40%
Value	$7,156,000	$8,359,000	17%
Price	$ 13.66	$ 11.42	-16%
Shrimp:			
Quantity (lbs)	18,445,000	15,922,000	-14%
Value	$60,535,000	$62,520,000	3%
Price	$ 3.28	$ 3.93	20%
Other Fish:			
Quantity (lbs)	445,000	540,000	21%
Value	$1,681,000	$1,210,000	-28%
Price	$ 3.78	$ 2.24	-41%
Total	**$83,871,000**	**$86,016,000**	**3%**

Non-traditional Exports: Non-traditional exports expanded by 4% from $36.5 million to $37.9 million. Growth was propelled by growth in the papaya sector where nominal exports snowballed by 16% from $26.8 million to $31.0 million; growth was generated by an increase in unit exports to the tune of 20% from 63.1 million to 76.0 million pounds. A minor source of growth originated in the hot pepper sauce sector where exports expanded by 39% from $1.2 million to $1.6 million.

The remaining sectors all experienced decline. RK beans exports declined by 62% from $5.1 million to $1.9 million due to a 63% reduction in unit exports. Blackeye peas exports contracted by 3% from $3.5 million to $3.4 million due to a 26% reduction in unit exports since prices improved by 31% from $0.43 to $0.57 per pound.

Table 11:Non-Traditional Exports			
Product	**2005**	**2006**	**Change**
Papayas:			
Quantity (lbs)	63,105,000	76,004,000	20%
Value	$26,768,000	$31,014,000	16%
Price	$ 0.42	$ 0.41	-4%
Pepper Sauce:			
Quantity (lbs)	583,000	778,000	33%
Value	$1,154,000	$1,607,000	39%
Price	$ 1.98	$ 2.07	4%
RK Beans:			
Quantity (lbs)	7,430,000	2,734,000	-63%
Value	$5,064,000	$1,912,000	-62%
Price	$ 1.47	$ 1.43	-3%
Blackeye Peas:			
Quantity (lbs)	7,986,000	5,921,000	-26%
Value	$3,463,000	$3,372,000	-3%
Price	$ 0.43	$ 0.57	31%
Total	**$36,449,000**	**$37,905,000**	**4%**

1.0 AGRICULTURE DEPARTMENT

1.1 Crop Development

The Crop Development Program focuses on the provision of technical assistance to farmers and the conduct of research on traditional and non-traditional field crops. In recent years much emphasis has been placed on the promotion and development of technologies to produce crops efficiently. Non-traditional vegetables like celery and potatoes are grown during the cooler months of the year when the production of these vegetables is most suitable. Most of these crops are grown by small farmers under rain-fed conditions, however, the use of irrigation is increasing gradually. An erratic rainfall pattern contributed significantly to reduced productivity and higher incidence of post-harvest losses.

1.1.1 Onion: The production of onion continues to be an important activity for farmers from the northern districts, especially for farmers from the Corozal district. From the 75 acres harvested a total of 1.4 million lbs was marketed in 2006. The average yield obtained by farmers was 20,000 lbs/ac. Wholesales prices averaged $0.50/lb of onion. Yields decreased from an average of 24,000 lbs/ac in 2005 to 20,000 lbs/ac in 2006, due to erratic rains during the last days of crop harvest. Farmers constructed six (6) storage structures with the capacity to store 240,000 lbs of onions.

1.1.2 Irish Potato: Despite minor problems with seed quality and abnormal rains, potato production for 2006 exceeded that of 2005. Farmers marketed 2.6 million lbs of potatoes from the 219 acres harvested. The average yield obtained was 11,769 lbs/ac. Farmers sold their potatoes for an average wholesale price of $0.60/lb. The main varieties planted were the Red Larouge and Cal White. A major achievement in 2006 was the approval of a proposal by FAO for the construction of four rudimentary storage structures that will be used to demonstrate to farmers the use of appropriate storage. Farmers from the Orange Walk district produced 0.5 million lbs of the Cal White variety, a variety that is used to produce fries.

1.1.3 Carrots: Carrots like several of the other crops did not escape the effects of erratic rains as yields were significantly reduced. A total of 0.4 million lbs of carrots were produced from 49 acres harvested. Farmers were paid an average wholesale price of $0.50/lb. The main varieties grown were the Brazilia and Royal Cross. The research program continued to validate new varieties that have better storage and eating quality. A new variety known as Koruda was introduced by PROSSER and was being evaluated for desirable characteristics such as tolerance to pests and diseases, improved quality and high yields.

1.1.4 Lettuce: Lettuce is one of the non-traditional vegetables that has increased in importance. The production for 2006 was 257,138 lbs from 8 acres planted. The wholesale price for the head type was $1.25/lb and $1.50/lb for the leaf type. The main varieties planted by farmers were Tropical Emperor, Jupiter and Salinas. Farmers from the Orange Walk district produced the largest quantity of lettuce. Mr. Baltazar Campos from Orange Walk is the single largest producer of lettuce; he has managed to successfully market this commodity by improving packaging and labeling.

1.1.5 Broccoli, Cauliflower and Celery: These commodities have less economic value than the other non-traditional vegetables; however, these products represent an important source of income for many small farmers. Production decreased due to adverse weather conditions. Only two acres of cauliflower, six acres of broccoli and three acres of celery were harvested. These commodities were produced mainly in the Cayo district. The average wholesale price for broccoli was $1.50/lb, that of cauliflower was $1.50/lb and celery was $1.10/lb. The main variety of broccoli grown was Gypsy, Majestic for cauliflower and Green Giant for celery. The Ministry facilitated the marketing of these commodities by putting producer in contact with distributors/middlemen.

1.1.6 Sweet Pepper, Tomato and Cabbage: The National Vegetable Task Force was instrumental in planning and coordinating production of these commodities. Henceforth, cyclical oversupply was reduced to a minimum. The Ministry through its modernization of the agriculture sector initiative promoted the use of covered structures for high value crops. These three vegetables are grown throughout the year as several varieties have been identified that adopt to different seasons of the year. Farmers marketed 1.0 million lbs of sweet peppers from 90 acres cultivated. Erratic rains caused many farmers to lose their crop; those that managed to harvest fetched on average $2.00/lb. The main varieties produced were Lido, Camelot, Sir Callahan and Double-up.

In the case of tomatoes 2.0 million lbs were produced from 116 acres harvested. The average wholesale price paid to farmers was $1.00/lb. The main varieties grown were Sultan, Tolstoi, Gempride, Terminator, Sunchaser, Chiro and Sumo.

Similar to tomato and sweet pepper wholesale price of cabbage remained high, the average retail price was $1.50/lb. A total of 3.3 million lbs of cabbage were produced from 128 acres harvested. The main varieties grown were Rotonda, Greenboy, Tropicana, Grande and Asia Cross.

1.1.7 Rice: For the past 10 years Belize has been self-sufficient in rice production; using irrigation, the Mennonite community in Blue Creek controlled 79% of total production. Farmers from the Toledo district and Big Falls Ranch in the Belize district produced the remaining 15%, the latter did so under rain-fed conditions while the former under the milpa system. Paddy production decreased from 39.1 million lbs in 2005 to 26.1 million lbs in 2006. This decrease can be attributed to the high rainfall that was prevalent during the planting season and harvest. The Taiwanese Mission produced 80,000 lbs of seeds for distribution to small farmers in the Toledo district The FAO Special Program for Food Security provided funding for the establishment of a 10-acre demonstration plot, to showcase the benefit of producing rice under irrigated conditions to small farmers of the Toledo district.

1.1.8 Beans: The consumption of beans is a staple for Belizeans but a large portion of the production is exported. A total of 4.9 million lbs of black-eye peas were produced with 95% of it being exported. The production of black-eye peas is concentrated in the Cayo district. In terms of R.K beans a total of 5.7 million lbs were produced, most of which was exported to Caricom countries. A total of 3.0 million lbs of other types of beans were produced. Most of the black beans produced in the Toledo district was exported to neighboring Guatemala.

1.1.9 Corn & Sorghum: Corn prices have skyrocketed nationally and internationally since the U.S. is using a large portion of its supply for ethanol production. Corn production for 2006 was 81.2 million lbs, representing a decrease of 18%. The decline in production was due to inclement weather. Of the acreage planted, 77% was yellow and 23% white corn. A total of 10 million lbs of sorghum was harvested and used entirely for livestock feed. The average price per pound of yellow corn was $0.18 and for white $0.20.

1.1.10 Ginger, Cocoyam, Cassava and Sweet potato: These commodities are grown mostly for local consumption. The production of cassava and ginger is centered in the Stann Creek and

Toledo districts while sweet potato and cocoyam are grown throughout the country. The production of cocoyam was 576,438 lbs, cassava 527,649.lbs, sweet potato 141,000 lbs and ginger 65,000 lbs. The wholesale price of cassava was $0.40/lb, cocoyam was $0.50/lb and ginger was $0.75/lb. Bel-Cuisine and Travelers Ltd are the main buyers of ginger and they use it for the production of condiment and wine, respectively.

1.1.11 Soybean: In 2006 farmers from the Orange Walk district produced 1.3 million lbs of soybean grain from 750 acres planted. Soybean production increased by 80%; acreage planted increased from 300 in 2005 to 750 acres in 2006. Yields decreased by 28% due to an outbreak of armyworm and high rainfall. CARDI continues to maintain a supply of soybean germplasm in case the need arises to produce seeds locally.

1.1.12 Peanut: Farmers from the village of San Antonio in the Cayo district dominate peanut production. The production tends to remain constant although there exist the potential to expand production to supply Luna Snacks. Farmers are not keen on supplying this market as the wholesale price is lower than that gotten when they retail the product slowly throughout the year. The Ministry has tried but it bas been difficult to convince farmers of the economies of scale. In 2006 farmers produced 225,000 lbs from the 135 acres planted. The main varieties planted are Tennessee Red and jumbo type.

1.1.13 Papaya: Papaya is the only non-traditional export commodity that has experienced tremendous growth over the years. The production of papaya increased by 26% from 58.2 million lbs in 2005 to 73.3 million lbs in 2006. It is expected that the industry will continue to grow steadily in 2007. The company Maya Papaya from Blue Creek and the Mennonite community of Shipyard in the Orange Walk district have ventured into papaya production. Maya Papaya and Shipyard Producers are shipping their fruits into Texas, while Fruta Bomba and Little Belize Fruit Packers market their papayas in Miami and Canada. In 2006, Fruta Bomba had 1200 acres, while Little Belize had 180 acres, Shipyard had 150 acres and Blue Creek had 225 acres under production. Papaya exports generated an estimated $30.0 million in export earnings. The prospects on the long-term for Belize's papaya is good as it fetches a premium price in the US and Canadian markets due to its superior quality and organoleptic characteristics. Ninety five percent of papaya production is exported; the remainder is sold locally as fresh fruit and some are dried.

1.1.14 Hot Pepper: Hot pepper production reached its peak in 2004 but production figures for 2006 were 53% lower than that of 2005. The Orange Walk district was traditionally the largest producer of hot peppers but in 2006 the Stann Creek district became the largest producer. Farmers produced 0.3 million lbs of hot peppers from the 35 acres planted. The main driver for the decline in production is the bad experiences that farmers have had with marketing their peppers due to improper marketing arrangements. This bad experience has discouraged many farmers from investing in hot pepper production. The problem of low production is further compounded by the fact that the Hot Pepper Task Force and the Hot Pepper Association were dormant in 2006; both groups need to be reactivated. The Ministry worked closely with CARDI in producing and selling to farmers 11 lbs of seeds of the CARDI Red variety.. Hot Mamas, Marie Sharp Ltd and Agro world Ltd exported 35,000 lbs of hot pepper sauce. Farmers were paid $0.80/lb of fresh peppers of exportable quality.

1.1.15 Sugarcane: Favorable weather contributed to increased production in sugarcane, 1.2 million were produced in 2006 versus 0.9 million long tons in 2005. It was estimated that from the total 60,000 acres under cultivation around 100 acres were not harvested. Sugar production increased from 100,435 to 111,394 long tons. Molasses production increased from 37,074 long tons to 41,200 long tons, an increase of 11%. The average sugarcane yield per acre was 20 tons.

The EU approved €40.0 million in early 2007 for the 2006 EU Sugar Accompanying Measures Support (AMS) to facilitate improvements in productivity and competitiveness in order for the ACP Sugar Industry to adjust to the EU sugar reform process. Belize was approved €3.08 which has been earmarked for rehabilitating fields, upgrading sugar roads, improving technology and marketing arrangements, among others. The Sugar Industry Control Board (SICB) approved the funds to hire a Chief Executive Officer for the Belize Sugarcane Farmers Association in order to strengthen the institution and to put a professional management system in place.

1.1.16 Citrus: The citrus sector is experiencing high export prices. World prices have increased as a result of the hurricanes that damaged orchards in Florida. Total production for 2006 was 6.9 million boxes. Orange production declined by 21% from 6.6 million in 2005 to 5.2 million 90–lb boxes in 2006. Grapefruit production decreased from 2.2 million in 2005 to 1.7 million 80-lb boxes in 2006. Production decreases were the result of a variable weather pattern and trees inability to recover from the bumper crop of 2005, when two harvests were gotten. Total acreage in production is estimated at 30,400.

The Orange Walk district has become the largest producer of limes; in 2006 a total of 236,000 boxes were produced of which 115,000 boxes were exported. Mr. Doug Fox has 20 acres under cultivation in the San Estevan village area.

1.1.17 Banana: The production of bananas decreased by 5% in 2006, it went from 4 million to 3.8 million 40-lb boxes. The total acreage in production was 6,000. Similar to sugar-cane the banana industry will also loose its preferential prices in the EU market. Through EU grant funds the industry has been assisted with infrastructure projects in irrigation and drainage in order to improve efficiency and its competitiveness.

1.2 Livestock Development

The livestock sector continues to exhibit growth through increased production and improvement in productivity.

1.2.1 Livestock Feeds: The MAF provided grass seeds for the establishment of eight-1.5 acre demonstration plots with different varieties of grasses. The demonstration plots were established in the Toledo, Cayo, Belize, Orange Walk and Corozal districts. In addition, the eight farmers also established one task of protein banks composed of Mulberry and Nacedero cuttings supplied by the MAF. Approximately 2,330 acres of improved pasture were established countrywide; the Toledo District accounted for 872 acres.

1.2.2 Beef Production: The sale of live beef cattle to Guatemala decreased as Guatemalan middlemen were only offering $1.15/ lb. Nonetheless a total of 1,609 heads of cattle were exported compared to 3,210 heads in 2005, this reflected a decrease of 50 %. Slaughter returns reflected a slight increase from 7,057 heads in 2005 to 7,150 heads in 2006. The survey carried out in the last quarter of 2006 showed a national beef herd size of 67,611 heads. Most production system are range pasture but due to the demand of quality beef for the growing tourist industry some farmers from the Orange Walk district have invested in grain feeding.

A total of 62 farmers procured breeding stock from GOB Stations; 48 young bulls and 25 heifers. Through the CARD project, Toledo farmers were beneficiaries of 63 beef heifers which will be used for breeding purposes. With regards to bull service two breeding bulls were transferred to the Corozal and Toledo districts for breeding purposes. Likewise two Barbados Black Belly rams were sent to the Toledo district. A ram of the Dorper sheep breed was rotated for breeding purposes to assist farmers from the Belize and Cayo districts. The private sector also played its role in genetic improvement as producers from Cayo, Orange Walk and Belize districts imported cattle/sheep breeding stock from Mexico. Forty one Nelore bulls, 16 Brahman bulls, 1 cow, 1 calf and 6 heifers were imported.

1.2.3 Dairy Production: Milk production for 2006 declined by 19.3% from 8.3 million to 6.7 million lbs. The Cayo District continues to be the largest producer of milk. Western Dairies in Spanish Lookout processed 4.4 million lbs. of milk, a decrease of 14% relative to 2005. With regards to milk price, 2006 experienced an upward trend due to an increase in the cost of animal feed. The average price paid for milk delivered to the processor was $0.35 per pound.

1.2.4 Poultry Production: The 2006 slaughter returns for broiler production showed an increase of 2.0%, from 8.0 million in 2005 to 8.2 million birds in 2006. However, the dressed weight decreased by 2.0%, from 30.5 million lbs in 2005 to 29.9 million lbs in 2006. This decrease was due mostly to the slaughtering of smaller birds. The Cayo district continues to be the leading producer of poultry; it produced 4.4 million birds, followed closely by Orange Walk with 3.3 million and Corozal with 0.5 million birds.

The demand for turkey meat has been increasing over the years as a result of local consumption at special celebrations like: Christmas, graduation parties, weddings and Thanksgiving holiday. Turkey production increased from a total of 321,643 lbs. in 2005 to 355,095 lbs. in 2006, representing an increase of 10%.

1.2.5 Honey Production: Honey production increased by 56%, it went from 69,164 lbs in 2005 to 107,784 lbs in 2006; roughly, 1,000 lbs of pollen was exported to Taiwan. Several training sessions were conducted for Livestock Extension Officers (LEOs) and beekeepers in Good Agriculture Practices (GAP) and disease control. The trainings were co-sponsored by PACT, BAHA, OIRSA, UNDP/SGP, the

Cooperative Department and other partners in development. The Cayo district Extension personnel on behalf of the Cayo Quality Honey Producers Cooperative spearheaded the preparation of project proposals that
were submitted to PACT and UNDP/SGP which
resulted in grant funds to the tune of $134,000.00.

1.2.6 Swine Production: Swine producers faced challenging times as the price on the hoof was relatively low and cost of feed had increased. Several farmers went out of pig production due to the high cost of feed and marginal returns. The average price fetched for live pigs was $1.30, with a high of $1.50. A livestock survey indicated a decrease in the national swine population of 5.9% from, 15,387 in 2005 to 14,533 heads in 2006. In late December a total of 16 Landrace and Large White pigs (12 females and 4 males) were imported for breeding purposes; this introduction should improve the quality of breeding stock.

1.2.7 Small Ruminants: Mutton consumption has been increasing since consumers have developed some taste for it and are willing to pay the additional cost of purchasing this meat. In 2006 900 heads were slaughtered as compared to 842 heads in 2005 representing a slight increase of 6.9%. Some exports to the Mexican market were reported. Many farmers are venturing into sheep production as this activity is very economic, family friendly and is a source of food security for the household. Running-W Farms expanded their sheep fattening operations and in 2006 imported a total of 31 Dorper sheep from Mexico. Running-W plans to supply retail outlet stores and also offer breeding stock to farmers. A newly registered company by the name of Belize Sheep and Goat Ranch imported 90 Boer goats for chevron production.

The FAO Regional Small Ruminant project TCP/RLA 3009 came to a close in 2006. This project established four semi-intensive rotational production systems in the Belize, Toledo and Cayo Districts with the purpose of increasing the overall production and productivity of small ruminants (sheep and goat). Pasture improvement and the establishment of protein banks formed part of the technological tools to improve performance levels. Training was carried out for producers in improved management skills and animal husbandry practices. The project was also successful in the genetic improvement component through the introduction of breeding rams. However, the artificial insemination component was post-poned to 2007 as it was difficult to coordinate the acquisition of frozen semen of the Barbados Black Belly breed from Barbados.

1.2.8 Belize Livestock Producers Association: In 2006 the Belize Livestock Producers Association (BLPA) collaborated with the MAF in the coordination of training for livestock producers. A well attended seminar on cattle management and feeding was carried out in the Orange Walk district where more than 75 producers participated.

1.2.9 Pig Council: The Pig Council has drafted its Articles of Association but no progress was made with the legislation to move the Council into an Association. Consequently, it continues to function under the auspices of BLPA, with no say with respect to the cess being collected from pig slaughters.

1.2.10 Bovine Rabies: The Belize district reported for the first time a case of rabies in beef cattle. Three animals died from rabies in Spanish Lookout, but the spread was contained quickly via the trapping of bats and the vaccination of animals in the focus area. The success of this

initiative was made possible through the joint effort of the MAF and BAHA in close collaboration with farmers. BAHA has been advising farmers to use the anti-rabies vaccine since cost is affordable at $8.00/animal.

1.2.11 Avian Influenza (AI): Cabinet approved the Avian Influenza Preparedness Plan presented by the Ministry of Health (MOH) in November 2006. Since then, DACs and LEOs countrywide were exposed to several trainings and seminars on Poultry Disease Identification and AI in order for them to be updated on the threats of this disease. Around the middle of the year a two-day workshop and simulation exercise on AI took place in the Cayo district involving MAF, MOH, BPA, BAHA, OIRSA and poultry producers. This exercise was necessary in order to get all relevant stakeholders on board and to prepare them to respond in the event there is an introduction of AI/IP to Belize. In the meantime the routine AI surveillance continues to ensure Belize AI free status.

1.3 Agro-Processing Development

The Agro-processing Development Program has contributed significantly to national development via the training of farmers, processors, students and teachers. The program impacted in terms of better quality products and/or new bi-products. Other spin off effects involved service providers that supply food additives, containers, packaging materials and labels.

1.3.1 School Meal Program: Since August of 2006, the School Meal Program has been a major activity of the Agro-processing Development Program. The ITVET facilities in the Toledo and Corozal districts are being used to dehydrate pineapples, bananas and papayas with the assistance of the ROC Mission in Central Farm. The program had responsibility for producing 8000 packs of dried fruit per week. However, only 5000 bags per week were produced due to delays with the installation of equipment at the ITVET facility in Corozal town.

1.3.2 Expansion of Agro-processing Lab:
The regional agro-processing facility at Central Farm has been expanded. The unit will serve as an incubator for entrepreneurs. Therefore, the unit will create economic opportunities for small and medium size processors. The expansion is a joint investment between the ROC (Taiwan) and the Government of Belize. The expansion will increase the floor space by 2,460 squared feet. It is expected that the building will be completely finished by December of 2007.

1.3.3 Horchata Recipe (Rice drink): Several trainings were conducted in the Corozal District to assist the Corozal Bay Women's group in developing a recipe for processing "horchata" in large quantities with longer shelf life. This project is being headed and funded by the Social

Investment fund. The Horchata recipe was developed and the product shelf-life was extended from 14days to 30 days.

1.3.4 Cayo Honey Day 2006: The first ever Honey Day was celebrated in the Cayo District. The event was a very successful one. It was jointly organized by the Agriculture Extension Service of the Cayo District, the Cooperative Department, the Agro-processing program, the Cayo Quality Honey producers Cooperative and other stake holders. On display were many by-products which included pollen, a pollen drink (Solid Man), propolis, pollen, milk drink and bee venom.

1.3.5 Cohune oil Assessment: The UNDP program requested assistance in cohune oil production for farmers from Flowers Bank village in the Belize District. The ROC is working on improving quality of the oil and efficiency in cohune oil extraction.

1.3.6 Craboo Products: Craboo is a seasonal fruit that is in production between the months of July to September. Every year a large amount of craboo is lost due to the small size of the domestic market. However this fruit may be preserved by soaking and storing in a sugar solution, then stewed. Research was done on the following: dried craboo raisins and craboo juice.

1.3.7 Other Trainings: Trainings were conducted on improving the shelf life of sea weed drink, improving the quality of wine for the export market and on techniques for white cheese processing. Sodium benzoate was recommended to increase the shelf life of the sea weed drink to 21 days. Wine makers in the Belize District received training in wine making. The training focused on the procedures and materials to be used for obtaining a high quality wine; this included the sterilization of the water used via the use of sulfur; marketing was enhanced by having more appealing bottles and labels. The quality of the white cheese was enhanced by improving on the amount of culture needed to coagulate the milk; the processing temperature was also fine tuned.

1.3.8 Agro-processing Workshop: Every year a national agro-processing workshop is conducted to strengthen the knowledge and skills of new farmers, processors, students and teachers. In 2006 some 34 persons participated in the workshop; topics covered included Good Agricultural Practices, Good Manufacturing Practices, HACCP, CODEX, Food Standards and Food Nutrition. At the end of the workshop, processors displayed their products and exchanged ideas.

1.3.9 ROC Agro-processing Program: Since the arrival of Mr. Carson Huang, the new ROC agro-processing expert, the Mission has been focusing on: breads and pastries, soy bean sauce, mushroom products and cohune oil.

1.4 Extension

During 2006, the main focus areas of the Extension Service were capacity building and organizational strengthening. The Extension service also collaborated closely with partners in development viz. CARDI, IICA, CATTIE, BAHA, BRDP, FAO, the Rural Development Department and sister agencies.

1.4.1 Training and Capacity Building: Eighteen officers received training in project writing, strategic planning, performance management, writing skills, principles and methodologies for public administration/management. Seventy-five farmers and fifteen Extension Officers also received training in Integrated Pest Management, soil and soil fertility, adequate water management for crops, adequate use of pesticides, post-harvest and livestock husbandry practices. Four senior Extension Officers attended trainings abroad in Extension and Rural Development.

1.4.2 Organizational support and infrastructure: For 2006, six District Development Committees were formed to support the implementation of the Belize Rural Development Project in all six districts. The District Agriculture Coordinators headed these committees where the main purpose was to provide guidance and endorse projects that were economical, sustainable with impact on rural communities.

To further support the Extension Service, an Irrigation Technical Support Unit was established mainly to provide technical support and guidance in water management issues. Through the FAO Food Security Project, it received $17,000 worth of field instruments and equipments to collect data and information for proper planning and designing of irrigation and drainage systems. Similarly, to enhance communication and information flow, five of the six districts became linked to DSL/internet, and each district received one desktop computer. The Extension service also received one multimedia project and three all terrain vehicles for the Cayo, Stann Creek and Corozal districts, with plans to provide the other three districts in 2007.

1.4.3 Information and Communication: To continue highlighting the various district activities, three field days were held in Corozal, Orange Walk and Stann Creek districts. Farmers and other Ministry Officials toured field stations and farms to see firsthand vegetable, fruit tree and livestock production. The service also actively supported the National Agriculture and Trade Show with the selection of the farmers of the year, and by displaying products. Three events were held simultaneously in Belize District, Stann Creek and Toledo for the launching of dried fruit snacks for the School Feeding Program. Extension also participated actively in World Food

Day celebration held in Dangriga Town. Finally at the national level three quarterly newsletters and ten brochures were published.

1.4.4 Management of Extension Service: Each district had its full complement of Extension Officers, except the Belize District. One additional officer was hired, one resigned and one was transferred to the Irrigation Unit. At the end of 2006, the Service had twenty-eight officers. As part of a means of building the image for the Extension Service, officers were provided with uniform shirts and caps. An award scheme to recognize the Extension Officer of the Year was introduced and each district extension service received an Extension Service Reference Guide that standardizes procedures. Close monitoring and evaluation of the extension service through quarterly, bi-annual and annual meetings was also carried out.

1.4.5 Networking and developmental activities: The Extension Service continued to support the organization of farmer groups. In 2006, the Orange Walk Producers Association (OWAPA) was formed with fifty-seven members and the Corozal Agriculture Producers Association (CAPA) also elected a new executive. In the Southern part of the country, Extension worked closely with pineapple producers and the grain growers of Toledo.

The Ministry supported the irrigation well drilling program in conjunction with the Belize Rural Development Department. The Ministry provided $500 toward the cost of the well and the beneficiary provided the balance. Five of ten wells drilled yielded fresh water for agriculture cultivation under irrigation. A macro irrigation system was designed for Central Farm; a Memorandum of Understanding was signed by CARDI, the University of Belize, the Chinese Technical Mission and Central Farm committing to meet equal shares of the budget. Due to some unforeseen delays and cost over-runs only the well was dug this year. Implementation of the reservoir and other components of the system were deferred to 2007.

The school garden program continued in all districts with much better success in the Stann Creek and Toledo districts. Extension had collaborated with NGOs and CBOs in establishing over fifteen school gardens in both districts. Other districts were having less success.

Under the FAO Food Security Project, farmers established ten acres of irrigated rice at Santa Ana, but yields were only 3,100 lbs per acre as compared to 5,500 lbs per acre obtained in 2005. Reasons for the decrease were the change in variety from Jasmine to CARDI 70 and the unusual high rainfall that affected the execution of cultural practices in the field. At Tumul Kin School, the seedling nursery and small irrigation system for 0.25 acres was established for vegetables production. In Corozal, Orange Walk and Belize districts, FAO project farmers continued producing crops using wells and drip irrigation.

1.5 Fruit Tree Program

Since the formation of this program in July 2005 the Fruit Tree Program has made significant steps.

1.5.1 Cashew: Teakettle Farms Ltd has constructed a cashew processing facility in the village of Teakettle. The Company has projected processing of 3,000 lbs of raw seeds in 2007. The

Company has established 10 acres of the Australian varieties to ensure that it can meet some of the demand. The Company has indicated that initially it will only purchase grade one cashew kernels. Local production continues to increase since farmers are optimistic that price will increase once the investor gets hold of processing and marketing. In the meanwhile traditional processors continue to get good prices for their processed nuts on the local market. There were many set backs in the industry as in some areas of the country such as Burrell Boom the production was poor due to poor rainfall distribution during flowering and fruit setting period.

1.5.2 Coconuts: Despite the devastating loss of most of the coconut trees in the early 1980's to Lethal yellowing the industry is slowly recovering. The coconut program continues to produce some 6,000 Maypan hybrids and another 3,000 Malaysian dwarf seedlings annually. In 2005, the MAF established 5 acres of hybrid seedlings at Central Farm in order to cater to the high local demand. This field is expected to come into production in 2007. The Ministry continues to provide training to farmers in the areas of improved management of fields, disease and insect identification and control methods.

1.5.3 Pineapple: Pineapple has become an important fruit for many farmers in southern Belize because it offers an alternative for income generation and employment. The acidic soils and high rainfall lends itself to pineapple production. In an effort to offer farmers greater income during the growing stage of their citrus fields, the Citrus Product of Belize Limited (CPBL) promoted the intercropping of pineapple with young citrus trees. The factory initially bought and processed the Sugar Loaf variety but two years ago informed that it would only process the Smooth Cayenne variety by the 2007 season. Smooth Cayenne is known as a processing variety. In an effort to assist farmers meet the demand for Smooth Cayenne the Ministry imported seeds, from Guatemala and Mexico in 2005. CPBL continues to process the Sugar Loaf variety since farmers have been unable to meet the demand for Smooth Cayenne. CPBL paid 17 cents per pound for Smooth Cayenne and 15 cents per pound for Sugar Loaf.

1.5.4 Pitahaya: The Pitahaya Growers Association continued to expand production from 7 acres to 12 acres to supply the local market. The demand for the crop continues to grow as more and more people appreciate the medicinal properties the fruit offers. Present yields are about 10,000 lbs per acre. The price at the market is $2.00 per pound for good quality fruits. The association is still pursuing the possibility of exporting pitahaya fruits to the United States. A Pest Risk Analysis is being worked out with the Belize Agriculture Health Authority (BAHA) to prepare for possible export to the United States or elsewhere in the region.

1.5.5 Avocado: Avocado is a crop with good market potential. In an effort to extend the harvesting time, over 1200 seedlings of avocado of the early and late local varieties were propagated in the three major nurseries. The demand for avocado seedlings has been rising since more farmers have expressed interest in this commodity. A farmer in Consejo Village in Corozal has plans to establish 5 acres of avocados.

1.5.6 Sour sap: Sour sop production has been on a steady decline due to poor management. The selection of new varieties has proven successful in the Cayo District. In 2006 a two acre demonstration plot was established in order to meet the high demand for sour sap fruits.

1.5.7 Passion Fruit: A passion fruit demonstration plot was established in the Belize district to show other farmers how to produce the crop. The propagation of cuttings is now fast- tracked to achieve the target of 5 acres for the production of passion fruit juice to supply the tourist industry.

1.6 Projects

The focus of projects was on enhancing of the agriculture extension services, strengthening of small producer organizations through cooperative movement or other viable associations, SME development with specific crop/livestock systems suited to the small producer, marketing niche products, value adding and the promotion of the agriculture- nutrition linkage. Sixteen externally funded projects were implemented or initiated during 2006, four new proposals were submitted to FAO and preparatory work for two technical cooperation proposals continued.

1.6.1 Food & Agriculture Organization (United Nations): Three technical cooperation projects (TCP) under FAO's special programme for food security (SPFS) continued: Promoting CARICOM/CARIFORUM Food Security, Small Ruminant Development and South-South Cooperation. Under the latter programme a Cuban technical expert in water management was recruited to assist in the irrigation/drainage components of the food security project whilst another expert in livestock development completed his tenure with a focus on small ruminant and other varied livestock development activities. Four other TCPs were undertaken: Upgrading BAHA's legislation through "Strengthening the Biosecurity Framework" project, improving public awareness and education with respect to the threat of Avian Influenza, management of the spiny lobster fishery through an FAO/OSPESCA collaborative project and fielding of expert missions in phyto-sanitary standards and institutional strengthening under a new project in support of SPFS.

Four FAO Telefood funded projects in bee-keeping, community gardens, pineapple seed propagation and crop/livestock production at the Youth Hostel were completed. Three other proposals were submitted for Telefood funding: construction of farmer level potato storage facilities, small farmer production of organic crops for the tourism market and expansion of vegetable and livestock production at Escuela Secundaria Tecnica Mexico. A proposal for strengthening the Cooperative sector was submitted for funding under a recently initiated FAO special TCP facility. A follow up FAO field mission resulted in the preparation of a draft TCP proposal for Deep Slope Fisheries, while communication continued regarding technical and policy aspects of the coconut water preservation TCP being prepared at FAO headquarters.

1.6.2 European Union: The EU funded Banana Support Programme continued with accelerated implementation of programme activities under various SFAs (annual financing agreements). The 9th EDF Belize Rural Development Project got under way with the establishment of the Project Management Unit in March followed by initiation of sub-project activities in all six districts. Under the 2006 Accompanying Measures for Sugar Protocol Countries the EU committed $7 million for Belize's first year of implementation. Work commenced on the preparation of the financing proposal and terms of references for several activities to be included in the sugar strategy.

1.6.3 Others: Significant advances were made with the UNEP/GEF funded biosafety project with the development of a draft bio-safety policy following a series of national public consultations. In addition to the preparation of the draft policy, the national Biosafety Committee also presented a proposed mechanism for the administrative process of policy implementation. The CARD project executed its exit strategy that was prepared in 2005 with the preparation of business plans for productive organizations, community development plans, the village road upgrading and TCGA/organic cacao strengthening projects.

1.7 Bananas

Banana production in 2006 was approximately 71,086 tonnes, a 3% decline from 2005. A new tariff regime was implemented in January 2006 which included a flat tariff of Euro 176/tonnes for non-ACP countries coupled with a duty free quota for ACP countries of 775,000 tonnes. This quota was allocated under a combination of country specific allocations and a first come first served basis. Belize sold 63,772.67 tonnes under the ACP quota at average price of US$6.24 per box and the balance was sold at US$4.13 per box.

Under the EU Banana Support Programme (EU BSP), a strategy for the management of black sigatoka was developed in order to deal with observed pesticide resistance. Trials undertaken in two areas to test the strategy resulted in significantly improved efficiency in sigatoka management for the banana industry. The trials also identified a need for improved nematode management and a proposed intervention to this effect was built into SFA 2006. SFA 2006 also made provisions for lab and nursery equipment to upgrade local facilities for future development of meristem plants. Marketing and fruit processing studies were undertaken, having been identified as needed interventions under previous SFAs. However, the findings of the market study were not considered useful since marketing arrangements through Fyffes remains in effect.

A Cabinet decision was made to allocate the bulk of remaining SFA funds to the rural development component of the BSP. A Rural Development Expert was recruited and a strategy prepared for broad based economic assistance including micro-credit access and the provision of education, water, electricity and health care for eligible villages under the BSP. All these community-based socio-infrastructural developments fit into GoB's master plan ensuring maximum impact and sustainability.

2.0 FISHERIES DEPARTMENT

In 2006, the Fisheries Sector continued to contribute significantly to Belize's Economy with export earnings valued at approximately $86 million. This sector also provided direct employment to 2,131 fishers and to 1,182 processing plant personnel (123 personnel involved in wild capture fisheries and 1,059 in aquaculture).

2.1 Capture Fisheries

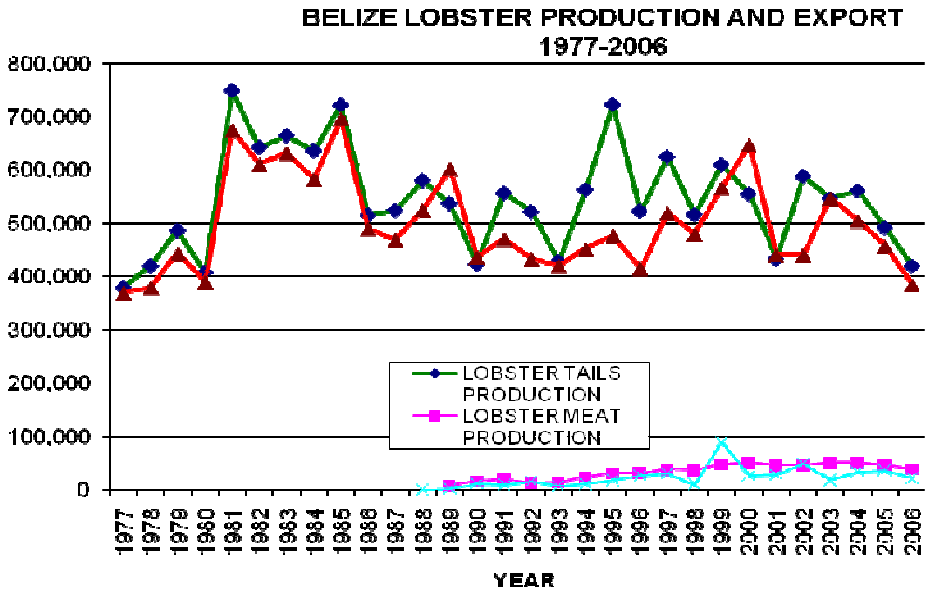
Fisheries production decreased by 4.45% from 589 tonnes (1,296,962 pounds) in 2005 to 563.3 tonnes (1,239,231 pounds) in 2006. The overall monetary value of the exports of the capture fishery commodities amounted to $23,361,428. In general, conch and fish fillet production

volumes increased by 9.5% and 23.3%, respectively, compared to 2005. On the other hand, lobster tails, lobster head meat, marine shrimp, whole fish and stone crab claws production volumes decreased by 14.6%, 16.3%, 33.9%, 45.1% and 30.3%, respectively, compared to 2005. Lobster head meat and crab claws were marketed and sold primarily to the local tourism sector.

2.1.1 Shrimp Farming: There was no expansion in the production area for the shrimp farms; hence, the production area remained at 6,888 acres. Production figures for farmed shrimp was estimated at 15,916,425 pounds with a total value of BZ$ 62,435,262.00.

2.1.2 Finfish Farming Operations: In 2006, Fresh Catch Belize Limited, which is the only commercially-oriented tilapia farming operation, exported 148,016.9 pounds of tilapia fillets and 392,324.0 pounds of whole tilapia. This resulted in total export earnings of $1,209,720 for 2006. The total capacity of Fresh Catch is **4,000 MT per annum** with estimated annual revenues of over **Bz$12 million** (US$6 Million); Fresh Catch has 140 acres under tilapia production with an additional 150 acres of (60.7 Ha) of production ponds being developed. With respect to small-scale fresh water aquaculture, there was 15 acres focusing mainly on tilapia production.

2.1.3 Lobster Fishery: Although, the spiny lobster (*Panulirus argus*) maintained its position as Belize's most important marine fishery resource in monetary terms with a value of $13.9 million, the production of lobster tails experienced a sharp decline of 14.6%, from 223.5 tonnes (491,615 pounds) in 2005 to 190.8 tonnes (419,863 pounds) in 2006. The decline in lobster tail production produced a decline in lobster head meat production equivalent to 16% in weight from 20.5 tonnes (45,184 pounds) in 2005 to 17.2 tonnes (37,835 pounds). The decline in lobster production volume was observed despite a 5 % (105 new fishers) increase in the number of licensed fishers compared to 2005. The Department has taken the decrease in production for 2005 and 2006 very seriously and as a result, will perform a full stock assessment on the Spiny Lobster Fishery in 2007. This assessment will be carried out by the Department Staff, in conjunction with Mrs. Maria Estella de Leon, a Cuban fisheries scientist who has been working on lobster fishery for the last 15 years.



2.1.4 Conch: Since the mid-1990s conch production has shown an increasing trend. Conch production volume increased by 9% from 287.8 metric tonnes (633,070 pounds) in 2005 to 314.7 tonnes (692,302 pounds) in 2006. During the period from August to December 2006 the CFU with the support of the 8 marine reserves conducted a national conch survey to assess the status of the conch population in Belize. Based on the results of the study and after having consultation with stakeholders, the BFD decided to establish Belize's conch production quota at 720,000 pounds for the 2007/08 conch fishing season.

2.1.5 Status of Shrimp Fishery: In 2006, marine shrimp production remained stable. Only two trawlers were operating; together, they produced 46,241 lbs of which 5,900lbs was exported at a value of $84,574. The remainder of the production was sold on the local market. The Northern Fishermen Cooperative has plans to increase its shrimp trawling activities in 2007 given high demand for marine shrimp by the tourism sector and also new markets in the Caribbean.

Table 12: Comparison of fisheries production for 2005 & 2006

Commodity	Production volume (lbs)		Increase %	Decrease %
	2005	2006		
Lobster Tails	491,615.5	419,863	-	**14.6**
Conch Meat	633,070	692,302.5	9.36	**-**
Marine Shrimp	69,964	46,241	-	**33.91**
Fish Fillet	35,047.5	43,205.5	23.28	-
Whole Fish	16,583	9,111	-	**45.06**
Stone Crab Claws	8,745	6,098.5	-	**30.26**
Lobster Head Meat	45,184.5	37,835	-	**16.27**
Squid	352	17	-	**95.17**
Conch Trimmings	-	185	-	**-**
Conch Operculum	-	3	-	**-**
TOTAL	**1,300,561.5**	**1,254,861.5**		

2.1.6 Management of the High Seas Fishery: The year 2006 was a very successful year for High Seas Fisheries. Among the new developments was the acquisition of additional quotas for regulated species, licensing of fishing vessels in the ICCAT Convention Area, signing of MOU between IMMARBE and the MAF for the Fees Sharing Agreement.

Belize secured quotas from the International Convention for the Conservation of the Atlantic Tuna (ICCAT) in 2006; this resulted in catch quotas for the Belize registered fishing fleet dealing with commercial species as described in **table 13**.

Table 13: ICCAT QUOTAS

	SPECIE	QUOTA(metric tones)
1	Big Eye Tuna	2100
2	Yellow Fin Tuna	2000
3	Skip Jack	Unlimited
4	North Atlantic Albacore	200
5	South Atlanic Albacore	200
6	Wahoo	Unlimited
7	Dolphin Fish	Unlimited
8	Mackerels	Unlimited
9	North Atlantic Swordfish	130
10	South Atlantic Swordfish	150

The total Monies generated by the High Seas Fishing Section is US$71,345. In 2006, 102 fishing vessels were licensed. In 2007 it is projected a 25 % increase in the financial performance of the High Seas Fishing Section due to a 50% in the High Seas Fishing License Fee and the acquisition of 130 Tons Quota of North Atlantic Sword Fish and 150 Tons Quota of South Atlantic Sword Fish.

2.2 ECOSYSTEMS MANAGEMENT

The Ecosystems Management Unit (EMU) of the Fisheries Department consists of the marine reserves and the Conservation Compliance Unit (CCU). The new management paradigm has shifted from specific species and site protection to the protection of entire ecosystems and the regulation of the activities within those systems.

2.2.1 Enforcement: Patrols at the various reserves and surrounding areas focused on illegal activity hotspots. The Fisheries Department had 32 convictions out of 32 arrests. There were 110 first time offenders with small quantities of illegal products. The offenders signed affidavits proclaiming their culpability and acknowledging that they would be dealt with severely on a second offense. The most frequent infraction was fishing without a valid license. This was followed by fishing of undersized conch, fishing within a no-take zone and usage of restricted gear in a marine reserve. The infraction of not having a boat license was also significant.

Enforcement in the marine reserves has been geared towards sensitization of the main stakeholders and users on the regulations for the different reserves. Countless warnings were given in 2006 for various infractions. In 2007 the staff from the different reserves will be more stricter and will start to arrest and charge repeat offenders.

2.2.2 Monitoring: The Synoptic Monitoring Program (SMP) was developed to try to answer some of the questions with respect to the health of the reef and its associated ecosystems, in order to assist in the management of this unique and shared resource. The Synoptic Monitoring Program (SMP) looked at fish populations, sea-grass and mangrove productivity as well as coral

reef health in 2006. Data was inputted into the REIS database created by the Mesoamerican Barrier Reef System (MBRS) Project. Results of the analysis were made available at the International Tropical Marine Ecosystems Management Symposium (ITMEMS) held at Isla Mujeres, Mexico, in October 2006.

The staff from the various reserves and CCU participated in another national grouper aggregation monitoring exercise for key months in 2006. To date, NE Pt. Glover's Reef and Gladden Spit appear to have maintained, or possibly increased, numbers of spawning Nassau groupers. Fluctuations in natural systems, however, are normal and many more years of monitoring data is needed before clear trends can be seen

Table 14: SPAGS Monitoring Results

Site	*# fish 2006*	*# fish 2005*	*# fish 2004*	*# fish 2003*
Rocky Point	0	200	200	0
Dog Flea Caye, Turneffe	2	-	100	1,500
Sandbore, Lighthouse	1,205	1,800	2,500	1,800
Caye Glory	7	350	1,000	1,000
NE Pt., Glover's	3,000	2,240	1,700	2,400
Gladden Spit	700	360	450	250
Nicholas Caye	48	80	~50	52

Monitoring of turtle nesting sites continued at all the reserves and at the Gales Point area. Even though turtles nest on all the marine reserves, the nesting areas within the Bacalar Chico Marine Reserve are the most significant. The reserves are important because the Hawksbill, Loggerhead and Green Turtles rely on the beaches as nesting sites.

A total of 60 research licenses were granted in 2006. Research conducted varied from corals, fish, invertebrates and socio economic studies. Special attention should be given to the research on Nassau Groupers at the Glovers Reef Marine Reserve by Dr. Enric Sala. Dr. Sala's work shows that there is a steady decline of this species. The decline, as shown by the spawning aggregation monitoring, is consistent with the capture efforts for the species during a normal fishing year by fishermen on the Glovers Atoll. Even though deep water stocks for the species have been documented during spawning, this virtual migration has not helped increase the shallow water stocks.

The "telemetry studies to define patterns of movement and use of critical habitats by Goliath Grouper and Elasmobranchs in Belize" by Dr. Rachel Graham is another important report to note. The Report shows continual decline of the various species in Southern Belize. The Goliath Grouper is in the IUCN endangered species list. Dr. Graham's work will expand to include central and northern Belize. This expansion should show a more holistic picture on the status of the species studied. However, anecdotal information from Central/Northern Belize paints a similar picture as southern Belize. The information on sharks will be used to further develop the shark action plan for Belize.

Buoy maintenance and installment picked up pace in 2006. Mooring and marker buoys were installed at the Hol Chan, Caye Caulker, Port Honduras and Sapodilla Cayes Marine Reserves.

More mooring buoys will be installed as the National Mooring Buoy Program is being expanded in 2007. The National Wildlife and Fisheries Service (NFWF) of the United States of America awarded $50,000 US dollars to the Fisheries Department for the installation of mooring buoys in the marine reserves; this grant will be made available in 2007. Friends of Nature along with volunteers from the Placencia tour guide industry are in the process of installing mooring buoys at various dive sites in southern Belize. The Fisheries Department will be assisting the Monkey River Tour Guide Association in installing moorings in front of Monkey River, given the increase in tourist visitation to Monkey River Village.

The Fisheries Department again played an important role on the various site visits which assessed national developments and Environmental Impact Assessments (EIAs). The biggest contribution was made on coastal and marine development. Most of the coastal development site visits for 2006 were concentrated on development suitability, dredging operations, pier construction and anchor damage assessment. For the calendar year 2006 the AQUIF Unit conducted these activities for the following EIAs: Stake Bank Development, Maya Plantation, Blackadore Caye Resort, Vaca Hydroelectric Project, Ara Macao Development, Belize Cruise Terminal and Free Zone; Smuggler's Run Residential Development, Progresso Heights Subdivision, Seismic Activities for Orange Walk District, Ma'lo Ha Development and the Ambergris Belize Resort Development.

2.3 AQUACULTURE AND INLAND FISHERIES (AQUIF)

2.3.1 Finfish Farming Operations: Interest in fish farming continued in the Mennonite communities of Orange Walk and farmers in the Toledo District; hence, most of the site visits and sale of fingerling was done in these areas. During these visits the AQUIF personnel conducted complete site assessments on the technical & financial feasibility of potential aquaculture projects. During 2006 the unit conducted 27 site assessments and follow-up visits to fish farmers.

2.3.2 Biscayne Related Activities: In order to improve the quality and quantity of fingerling production at the Biscayne Farm the unit conducted a selective breeding program for the hybrid tilapia brood stock. The program entailed the hand sexing and selection of the best specimens. The program resulted in the production of 50,000 high quality red hybrid tilapia fingerlings which were delivered to fish farmers country-wide.

Throughout the year the Biscayne Facility is visited by fish farmers and prospective fish farmers seeking to familiarize themselves on the daily activities of fish farming. During 2006 six community groups visited the farm. These include the Belize Baboon Sanctuary Group, Patchakan Cooperative, Selena Village Cooperative and the Boston Village Group.

2.3.3 Monitoring: The AQUIF Unit assisted the PREPAC Project in the characterization of the New River Lagoon during the period of October 2005 to March 2006. One officer was assigned to the project to collect biological, physical and environmental information on the lagoon on a bi-monthly basis. This activity consisted of measuring physical parameters using a Hydro-lab multi-parameter probe and the collection of water and fish samples for laboratory analysis.

The unit investigates occurrences of fish kills and other events affecting fisheries resources in inland bodies. In 2006 the Unit responded to reports of a fish kill in the Crooked Tree Lagoon. A site assessment was conducted where water quality was tested, however the unit was unable to determine the cause of the fish kill, since all parameters were within normal ranges and the only affected species was the tilapia.

The Unit was also involved in the collection of fish samples for testing of mercury levels in fish of the Macal River. This exercise was in compliance with the monitoring program that BECOL is mandated to carry out under the ECP for the Challillo Hydroelectric Plant. The Fisheries Department is the supervising agency for this component of the monitoring program. In this same regard the Unit provided assistance to the Department of the Environment with Water Quality Monitoring program at the Chalillo Dam

The AQUIF Unit conducts patrols of major inland water bodies as a measure to increase compliance with fisheries regulations as it relates to inland fisheries resources. Sustained presence of patrol vessels is the greatest deterrent to illegal fishing activities and as such the AQUIF Unit tries to conduct as much patrols as resources permit. During 2006 this activity was conducted in Crooked Tree Lagoon, Cox Lagoon and New River Lagoon, Sibun River, Rio Bravo, Belize and New River as well as Mussel Creek and Spanish Creek.

2.3.4 Intra-Institutional Activities: The AQUIF Unit has coordinated activities and various meetings between Northern & National Fishermen Cooperatives, Nova Companies and the IDB office for the funding of a cage farming operation of cobia (Rachycentron canadum). A final document was prepared after various consultations and presented to the IDB technical consultant for further follow-up and endorsement. The Unit has assisted in the development of a concept paper which will form the basis for a project proposal to be submitted to the IDB for possible funding.

At the request of the Community Baboon Wildlife Sanctuary the AQUIF Unit provided assistance for the development of a UNDP fish farming pilot project proposal. As part of this activity fifteen farmers were visited in seven communities along the BELRIV Area; two community meetings were conducted. This resulted in five potential sites being identified. A final report was submitted to the UNDP Consultant for onward follow-up and endorsement and possible funding. The proposal has been endorsed and will be implemented during the first quarter of 2007.

The Unit has been actively cooperating with the Belize Rural Development Project in the development of rural aquaculture operations in the Belize District. In this regard various site assessments and community meetings have been conducted in the Belize River Valley and other

areas in the district. The concept document that was developed has been endorsed by the National Committee and will be implemented in mid-2007.

The AQUIF Unit developed and presented a grant fund proposal to OSPESCA. The proposal was for the publication and dissemination of the 'Draft Freshwater Regulations'. The project amounting to $8,300.00 was approved by OSPESCA and the Spanish Agency for International Cooperation (AECI)

2.3.5 Policy: The AQUIF Unit has the mandate to develop and implement policies and plans for the sustainable stewardship of freshwater fisheries resources in Belize. To attend to this mandate the AQUIF Unit developed a Draft Freshwater Legislation which went through the consultation process and was subsequently submitted to the Solicitor General Office. At the request of Cabinet the AQUIF Unit placed this piece of regulation to a second round of consultations with stakeholder and was resubmitted to cabinet for consideration.

The Department has embarked on developing a National Fisheries Management Plan. The AQUIF Unit developed an outline for the said document and all heads of Unit were assigned a section. The Unit had developed one module for the FMP and is currently working on a module for the Shell Fishery of Belize.

2.4 Conservation Compliance Unit - Enforcement

The Conservation Compliance Unit (***CCU***), which is the enforcement arm of the Belize Fisheries Department, is responsible for enforcing fisheries regulations throughout the Belize Fishery Limits. This includes the sea and land areas including all the cayes, rivers, lagoons and other inland water bodies.

In 2006, sixty eight (68) persons were arrested. All 68 persons were prosecuted and convicted resulting in fines of **$52, 960**. Additionally, a variety of fish products and some fishing tackles were confiscated. The fish products were distributed to various feeding programs countrywide as ordered by the courts; nets and other confiscated tackles were destroyed. Two skiffs with engine were handed over to the Fisheries Department to support its activities by the courts.

Figure 2: Arrests

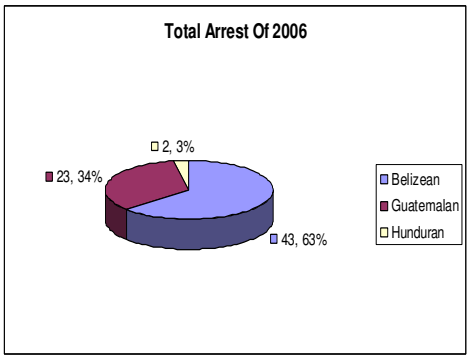
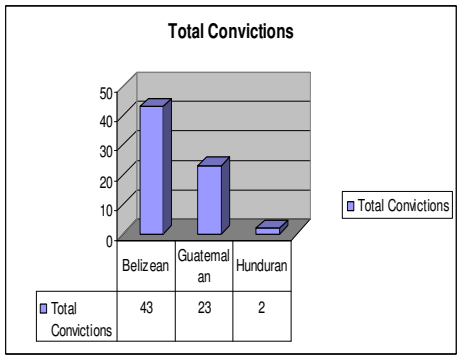


Figure 3: Convictions



2.5 INTERNATIONAL COMMITMENTS and COORDINATION

2.5.1 Convention for the Regulation of International Trade of Endangered Species (CITES): The Fisheries Department participated in several CITES meetings regionally. The meetings focused on the establishment of a regional calendar to develop Management Plans and to determine the status of the Queen Conch. Other meetings attended by the CITES Management Authorities of Guatemala, Belize and Mexico focused on the status of the Morelet Crocodile and the Hicatee; Mexico is requesting the United States of America (USA) to remove from its Endangered Species List the Morelet Crocodile; the justification is that this specie has recovered. By the USA removing the crocodile from its Endangered Species List, crocodile farming products would be able to enter the USA market. The three countries also agreed to leave the Hicatee in Appendix II of CITES until there is further data to determine the specie status.

2.5.2 Caribbean Large Marine Ecosystems Project (CLME): The Caribbean Large Marine Ecosystems Project started in June 2006. Representatives from twenty-five countries from the Caribbean and Latin America including Belize, formulated the guidelines and terms of reference for the creation of the Block B document which will be submitted to Global Environmental Facility (GEF). The project focuses on shared transboundary resources especially the pelagic species. The project headquarters is based in Barbados at the University of the West Indies Campus.

2.5.3 OSPESCA: The Fisheries Department continued to work with OSPESCA to discuss and streamline ongoing projects: PREPAC, FIINPESCA, Data/Registry/ Database, Sports Fishing, Conch and Plan of Action. These projects require serious commitments by the Central American Countries in terms of personnel especially from the Fisheries Administrations. The country's benefits are many. The Belize PREPAC equipment was officially handed over to the Fisheries Department.

2.5.4 Gulf and Caribbean Fisheries Institute (GCFI): The Fisheries Department with the support of the Ministry of Agriculture and Fisheries, MBRS, WWF, Hol Chan Marine Reserve and both National and Northern Fishermen Cooperative Society Ltd. hosted the 59Th Gulf and Caribbean Fisheries Institute Symposium. The symposium was a great success since over 350 scientists, reserve managers, fishermen and other stakeholders operating in the regional marine and coastal environment attended. The topics presented and discussed included fisheries management, marine protected areas management, invertebrate science (including conch and lobster), socio-economic studies, special case studies and pilot projects.

2.0 Cooperatives Department

The Department of Co-operatives is a government regulatory organization with responsibility of ensuring good governance, enhancing small enterprise and rural development, and assisting with

poverty alleviation and the promotion of women and youth to co-operative development activities.

The National Co-operative register remained constant with respect to the number of registered or deregistered co-operatives. However, there were differences in the percentage of active and inactive societies during the period under review. Currently, there are 195 registered co-operative organizations in the country: 69.2% agriculture, .5% consumer , 2.56 % fishing , 1.5% handicraft /industrial craft , 9.2% housing , 2.56% tourism related , 10.3% transport , 4.1% secondary institutions and 0.5% tertiary institutions. The Department of Co-operatives will be making a submission to liquidate 58.5% of registered co-operatives because of their inactiveness.

Total co-operatives contribution to GDP is approximately $28 million; this represents a decrease of almost $6 million compared to 2005. The major cause of this decrease is attributed to reduction in fishing and agricultural cooperatives output attributed to the following: climate change, reduction in marine supplies, limited access to credit facilities and cost increases in production inputs. Total employment created by these co-operative institutions is approximately 5,920 jobs (self employment and employment created as a result of activities executed by co-operative members). The majority of jobs created are in the sugar, fishing, agriculture and transport industries.

During 2006, the fishing cooperatives generated $27.4 million in foreign exchange earnings. The main products exported by fishing co-operatives are conchs, lobsters and shrimps. Major achievements for the sector were the fulfillment of the marine product quota and the payment of members' first and second payments; however, Northern Fishermen Co-operative had financial difficulties in meeting the 2006/2007 product second payments; the Co-operative's financial difficulties led to renegotiating its existing credit portfolio with financial institutions, and be able to meet its financial obligations to co-operative members and creditors. Fishing cooperative members amount to 1,482 of which 49.3% were active in 2006.

Taxi cooperative membership reached 172, which represents an increase of 16.2%. Indirect beneficiaries in this sector are well over 250,000 users per year. The total assets for these organizations has shown an increase from $25,000 in 2005 to $34,000.00 in 2006. The department of Cooperatives provided support to taxi cooperatives in the following manner:

a) Facilitated First Stop Taxi Co-operative Accounting System
b) Assisted the First Stop taxi Co-operative in the preparation of its financial statements for their annual general meeting
c) Developed identification tags for First Stop Taxi Co-operative as a tool in further increasing its marketability
d) Facilitated members of First Stop Taxi Co-operative in finding amicable solutions to grievances hampering the development of this co-operative society
e) Facilitated the reorganization and the election of new officers to the management committees for Downtown, Belcan and First Stop taxi co-operatives
f) Ensured that a standard format is implemented by Taxi Co-operatives for the collection and easy access of statistical information

g) Assisted and facilitated all taxi co-operatives with expert advice in effective business development, specifically in areas of debt monitoring, collections and the introduction of new benefits for co-operative taxi members
h) Facilitated training programs for taxi co-op members in areas of management, customer's services, and marketing.

The Belize Bus Owners Co-operative Society Limited and Valley of Peace Transport and Agriculture Cooperative operated with the following challenges: mistrust, disorganization, inadequate accounting system, lack of commitment, dishonesty and financial disloyalty; all of this had a negative impact on performance.

There is one active consumer co-operative with 64 members and a cash flow in excess of $250,000; indirect beneficiaries amount to 1,500 people. Major achievement for this co-operative was the approval of a $25,000 project for an internet and data collection center. The project was written by the Department of Co-operatives and was funded by the Belize Rural Development Project. Other achievements in this sector was the completion of the 2005/2006 audit exercise, facilitation of a one day training in income/ business tax preparation and the approval of dividends/rebates for distribution of 5% and 6%, respectively.

Agriculture Cooperatives remained active in 2006. Total output by agriculture cooperatives is estimated at $659,800. Yo Creek Farmers Co-operative Society limited delivered 309 tons of sugar cane. Patchakan Farmers Co-operative delivered 195 tons of sugar-cane. Pine apple producing co-operatives sold 355,880 lbs of pineapples to Citrus Company of Belize with estimated revenue of $117,440. Sarteneja Farmers Co-operative planted 8,000 Curare Enano plantain suckers. Other activities reported by cooperatives in 2006 included the following: six acres of onions with an estimated value of $ 162,000, 12 acres of potatoes with an estimated value of $ 124,800, and 20,000 lbs of peanuts with an estimated value of $16,000.

There are 5 active honey producers cooperative; total production by these cooperatives was estimated at 60,000 lbs with an estimated value of $240,000. Cayo Quality Honey Producers Cooperative Society Limited, succeeded in obtaining funding for two beekeeping expansion projects from the Government of Belize, the Protected Areas Conservation Trust Fund and the Global Environmental Fund; the amount of the funding was $163,000. Major achievements by the Honey co-operative included the erection of a central processing facility, installation of stainless steel extractors, expansion in hive population to 550 colonies (65% in colonies). The total number of members affiliated to the Cayo Quality Honey Producers Cooperative is 40, which includes 1% women. Norbee Beekeepers Co-op succeeded in obtaining funding for a beekeeping expansion project, from the Belize Rural Development Project.

Northern Peseros Cooperative ended operations with a profit of $3,000. The cooperatives is unique in nature as it is one that trades on the exchange of foreign currency; its revenue is

generated by services offered to its members who are trading financial resources at the Northern Border. Its assets stand at $51,000 with a total membership at 39.

4.0 Projects/Statutory Bodies

4.1 **Belize Agriculture Health Authority (BAHA)**

The certification programme continued to ensure that established markets for papaya, black eye, red kidney beans, Tahiti lime and sugar, which represent a major source of foreign exchange and employment were maintained; BAHA safeguarded agricultural exports valued at more than $396 million. BAHA facilitated exports of citrus to the United Kingdom, and assisted with export of Xate and grain into the USA and Honduran markets, respectively. Two import consignments of restricted articles which posed risk to human health and life were destroyed. The Avian Influenza Programme was strengthened during 2006, in order to deal with the global concern relating to the threat of the avian influenza and a potential influenza pandemic.

Animal Health: In support of Belize's agricultural export trade, BAHA staff issued more than 205 international veterinary certificates certifying Belizean animal products (fresh shrimp, shrimp feed, live pigs, cattle hides and pet dog); livestock exports exceeded $86 million. Through BAHA's prevention, detection, control, and eradication activities and its strict import controls, the Authority played a significant role in helping Belize remain *free* of World Organization for Animal Health (OIE) listed diseases, such as, highly pathogenic avian influenza, foot-and-mouth disease, Classical Swine Fever and Newcastle disease. In addition, BAHA staff helped Belize remain free of many of the other listed diseases that must be reported to the OIE.

A company from Norway started importing Cobia fingerlings from Miami USA. The company has set up fish farming in cages at the Robinson Point Caye under the oversight of BAHA and the Fisheries Department.

Food Safety: The Authority worked to ensure that food produced in Belize is safe and wholesome for consumers. The inspection programme of the Food Safety Department deployed food safety inspectors that provide regulatory sanitary oversight of Belizean food processing plants for fish and fishery products, meat and poultry, and to a lesser extent, milk, dairy, fruit and vegetables. There are three shrimp processing facilities in Belize that are HACCP certified by BAHA.

Plant Health: The Authority worked to prevent, detect, control and eradicate plant pests within Belize. In 2006 only one new pest of quarantine importance was found; that was Asian Soybean Rust (*Phakopsora pachyrhizi)* found affecting soybean in the Cayo District. Certain endemic pests such as palm weevil (*Rhynchofhorus palmarum*), frog hopper (*Aneolomia postica*) and melon thrip (*Thrips Palmi)* presented significant outbreaks affecting coconut plantation, sugar cane fields, and cucurbits and potato, respectively.

The Plant Health Department witnessed the removal of several citrus trees due to severe strains of the Citrus Trizteza Virus (CTV), as corroborated by ELISA tests and bioindexing, at Mile 6 on the Humming Bird highway.

The National Medfly Surveillance Programme was once again successful in maintaining Belize free of the Mediterranean fruit fly (*Ceratitis capitata).* There were two sterile male medfly detections, one at the Benque Viejo Western Border and one at Dump, in the Toledo district. The surveillance programme accomplished 97.91% trap servicing.

The Pink Hibiscus Mealybug Programme continues to effectively control the spread of the pink hibiscus mealybug through a biological control programme that includes the systematic release of the parasitic wasp *Anagyrus kamali.* For 2006, a total of 156,797 parasitic wasps were produced, of which 125,691 were used for release in the field and 31,106 were used in the laboratory for further reproduction. Surveillance reports showed that 82 new sites were detected. However, all showed presence of the parasitic wasp and native predatory beetles. This showed that the parasitic wasp has established itself well to our climatic conditions and is moving along with the pest.

Quarantine: BAHA issued 6,499 landing permits based on the inspection of agricultural and food imports, inspected 2,533 vessels, 4,272 aircrafts and observed 42,064 treatments conducted by OIRSA at all official ports of entry into Belize to prevent the introduction of exotic pests and diseases and ensured that regulated products complied with national regulations. During those inspections, 30 pests were intercepted and 411 violations were fined and recorded. Failure to safeguard Belize's forests, crops, livestock and fish could halt valuable exports and could result in embargoes on agricultural and fishery products.

Financial Sustainability of the Authority: The Profit & Loss Statement for 2006 shows a 5.2% increase in revenue collected compared to previous fiscal year. Government subvention accounted for 33.3% of total revenue, while BAHA generated 63.1% ($2,184,734) of total revenue. Overall, the performance of the Authority was constrained by a budget deficit of $83,612.

4.2 Belize Livestock Producers Association (BLPA)

The Belize Livestock Producers Association worked closely with the Ministry of Agriculture & Fisheries for the development of the livestock industry. BLPA in collaboration with the livestock division of the MAF provided training to 145 producers. Training was provided in animal health, general herd management, pasture management, supplemental feeding, and the use of urea-molasses block.. Training in pasture management included exposure to pasture species/ establishment and weed control in established pastures.

Cattle: The national herd is estimated at about 68,000 heads. Cattle producers are estimated at 2,000 of which 92% have less than 50 heads (35% of the national herd) and 85% own less than 20 heads. Land use for cattle production is estimated at 119,000 acres with 35% consisting of improved pasture species. Stocking rate is estimated at almost 2 acres per head of

cattle. With improved pasture and proper utilization/ management practices this stocking rate could, at least, be improved by 50%.

	Nelore	Brahman	Charolais
Bull	41	16	1
Cow	1	0	0
Heifer	3	13	0
Calf	1	0	0

Slaughter figures (for cattle, pigs and sheep) are based solely on BLPA's cess collection records. Slaughter trends had been on the decline due to an increasing trend in exports. However, in 2006 slaughter returns increased by 6.7% since exports reported a decline (-49%) for the first time in 4 years.

Cattle Slaughtered in 2006

District	**2004**	**2005**	**2006**	**Change**
Corozal	456	76	472	
Orange Walk	2,746	2,477	2,542	
Belize	188	261	128	
Cayo	2,622	2,577	2,555	
Stann Creek	26	30	15	
Toledo	76	75	146	
Sub-Slaughtered	**6,114**	**5,496**	**5,858**	**6.7%**
Heads - Exported	**2,804**	**3,210**	**1,609**	**-49%**

Pigs: Pig population is estimated at around 6,500 with 200 farms ranging from 5-70 sows per unit. In 2006, pig slaughtered expanded by 30% from 12,784 to 16,635 due to reduced importation of hams and bacon during the Christmas season; major expansion in slaughter returns were recorded in Corozal, Orange Walk and Cayo Districts.

Pigs Slaughtered in 2006

District	**2004**	**2005**	**2006**	**Change**
Corozal	572	114	707	
Orange Walk	7,373	5,592	8,315	
Belize	667	727	487	
Cayo	5,535	5,536	6,570	
Stann Creek	56	58	51	
Toledo	731	757	505	
Heads - Exported	**41**	**2083**	**1058**	**-49%**

Sheep: Sheep slaughtering has been exhibiting an increasing trend over the past 4 years. Consumption has increased from 535 in 2003 to 900 heads in 2006. Exports of sheep in 2006 were recorded at 230 heads.

District	2004	2005	2006	Change
Corozal	26	12	48	
Orange Walk	631	710	788	
Belize	33	40	17	
Cayo	91	78	44	
Stann Creek	NA	NA	NA	
Toledo	4	2	3	
Sub-Slaughtered	785	842	900	6.9%
Heads - Exported	4	NA	230	

4.3 The Coastal Zone Management Authority and Institute

Sustainable Development, through the cross sector discussions with developers , tourism sectors and fishery sectors, remains the overarching theme for coastal zone management. Part of this theme is marine pollution due to land based sources, which include runoffs from agricultural activities, increased sedimentation due to increased land clearing, and of course improper solid waste management.

A. In Transition

Having concluded the formalities of project closure the CZMAI maintained its transition status. Staff consists of six members with an approved budget of $200,000. During this period Cabinet officially reinstated the Board of Directors, an act which was critical for the continued leadership of the institution. The BOD felt that it was timely to review the CZM ACT in order to confirm the organization's role. The consultation process for the revision of the Act was therefore initiated.

During this period gradual integration of CZMAI into the mainstream activities of the MAFC was encouraged. This provided for a refreshing means of support to the work of CZMAI by inclusion in policy and management meetings. CZMAI coordinating role as outlined in the CZM ACT is to be pursued in the next period under the careful leadership of its BOD. The challenge for the next two years will be revitalizing the role of the organization to fit the need of Integrated Coastal Zone Management. It is essential that progressive work continues each year so that the organization can reach a pitch where it is coordinating all coastal activities and also is financially able to maintain this pitch.

B. Partnerships

The Ag. Director represented the organization at partnership meetings. Efforts specifically focused on assisting with the assessments of development proposals under the Environmental Impact Assessment process, using the Coastal Development Guidelines and the Cayes Development Policy as a reference. Support was given to NEAC for the establishment of a monitoring fund targeting monitoring of projects during their construction phase.

Under the Marine Litter programme the CZMAI worked closely with Department of Environment and the Belize Scouts Association in gathering data on garbage floats along the coast. Data collected shows that recreational activities along the coast and at the Cayes generate the most garbage in comparison to ocean and waterway activities, smoking related activities , dumping activities and Medical/ Personal Hygiene activities. The greatest collection was caps and lids(21.3%) and plastic bags(13.2%). Additional to this, CZMAI also garnered financial donations from the private sector to assist with the Coastal Clean Up day in September and assisted in the distribution of the materials.

Membership in various committees continues. These include the Maritime Safety Committee coordinated by the Coastguard Unit, Gulf Of Honduras Steering Committee and the PACT advisory Committee.

4.4 Belize Marketing & Development Corporation

Marketing has been identified as the number one constraint to agricultural development in Belize. The BMDC has been a key player in marketing of commodities on the domestic level. Its activities continue to be dominated by agricultural products, particularly rice.

1) Current Financial status of the BMDC

1. Bank Balances as of November 2007 :

Belize Bank #1- 3442	$219,299.76
Belize Bank #2- 68354	$ 76,142.74
Belize Bank -5016	$ 22,102.09
Atlantic Bank - 7913	$ 2,799.09
	$320,343.68

Overdraft limit of $500,000.00.

Total liabilities of the BMDC *are $ 1,623,324.26*

Operational costs are:

Salaries -	$31,224.05/ month
Operating expenses -	$29,600.36/ month
Loan repayments -	$11,500.00/month
Subtotal -	$77,824.41/month

***2)* Business Plan –Strategic Action Plan**

1. Increase effort in collecting receivables using collection agencies;

2. Marketing of traditional products.
   a) Rice – Sold 300,000 lbs per month. *This is an essential service that allows 1,200 rice farmers in Southern Belize to survive.*
3. Marketing of packaged and value added products.
   a) Beans – importation and distribution of RK beans when domestic supply falls short;
   b) Sugar – Sold 10,000 lbs of sugar, repackaged in 5 and 10 lbs;
   c) Chilly Willy peppers will be distributed in 5 oz bottle;
   d) Honey – will be bottled and distributed.
4. Marketing and promotion of Organic Rice – Rice being produced in Toledo is in the process of being certified as organic. The plan is to export organic rice at premium prices. The BMDC will seek to market and promote organic rice for local consumption through its various outlets in the country.
5. BMDC is involved in the importation of onions and potatoes and is also involved in the purchase/sale of locally produced onions.
6. Marketing of inputs to producers and small and medium-size enterprises – The plan is to supply sacks, bottles, jars and other form of packaging for producers and small and medium-size entrepreneurs at accessible prices. This service will include labeling.

4.5 Belize Rural Development Project

This is the 1st Annual Progress Report of the Belize Rural Development Programme (BRDP) and covers the period from 1st March – December 2006.

BRDP is an NGO type of broad based rural development programme that consists of 300-600 small projects (infrastructures, productive enterprises, etc.) – to be identified by poor rural beneficiaries and communities - plus many other small activities (e.g. 120 marketing studies). BRDP is a type of project that – under actual field implementation conditions – will last 6-8 years taking into consideration the timeframe needed for bottom-up, participatory approaches. The selection of this type of approach was a deliberate policy decision by the GoB and the EC Delegation. This decision was a clear response particularly to the concern that early EU interventions were large-scale and infrastructure-based projects. Although these projects had served well the national infrastructure needs and thus fulfilled their objectives, they had by-passed the poorest in the remoter areas of the country, who increasingly are falling deeper into poverty due to a lack of economic wealth- creation options.

The first 2 months of operations (March & April 2006) were used to introduce the project and project staff to many institutions and stakeholders in the country. An important activity was the consolidation, official establishment and orientation of the 6 District Development Committees (DDCs).

The subsequent 4 months (May to August 2006) concentrated on carrying out a detailed survey and analysis of the rural and agricultural situation throughout the country. Lucrative economic options for small rural producers and agricultural processors were identified, together with, the specific components of the BRDP strategy that are essential for achieving the overall objective and expected results of the programme. Based on a 3 day workshop in August with members of

the DDCs for the 6 districts, an operational manual was produced that outlined procedures to be followed for identifying, formulating and evaluating BRDP project proposals. The EC had kindly agreed to a Start-up Programme Estimate (1st PE) so that field mobilization of beneficiaries could start. The start-up PE was approved for the period August – October, 2006 but due to the late arrival of the 1st funds on 24th August (amount of B$89,200) the period was subsequently extended to the 20th November, 2006.

The period September to December 2006 concentrated on large-scale mobilization of beneficiaries via 6 major information/start-up/visibility/ training field days held in remote villages in each district of the country. Village authorities, groups, trade associations, teachers, public officers, religious and political leaders attended a one-day field seminar in which an overview of BRDP was given and procedures for applying for funds were outlined. Representatives of the various groups were given application forms and trained on how to fill them out. Up to 200 persons turned out per field-day, including Ministers of Government, television and radio personalities, etc. Three service provider seminars were held, one per each region of the country; these seminars briefed individuals, NGOs and associations on the type of support services BRDP will need. Over 100 potential service providers attended the three workshops.

The 1st full Programme Estimate (PE) was prepared by the PMU via a lengthy bottom-up and participatory process. A PE for the period November 2006 to October 2007 for $3.5 million was prepared by the PMU and endorsed by the EC Delegation.

5.0 Partner Agencies/Programs

5.1 United States Department of Agriculture/Animal & Plant Health Inspection Services

The United States Department of Agriculture, Animal and Plant Health Inspection, International Services (USDA/APHIS/IS) maintains an office in Belize to support Belize's Plant and Animal Health Inspection Programs. Hence, USDA/APHIS chief counterpart organization in Belize is the Belize Agriculture Health Authority, BAHA.

The USDA APHIS office in Belize has as its main function, supporting Belize's Plant and Animal Health surveillance programs. The three main Surveillance program are, the Medfly Surveillance Program, The Papaya Certification Program, and the Exotic Plant and Animal Health surveillance programs executed by BAHA.

Medfly: In an effort to maintain Belize Status as a Medfly free country, USDA provided BAHA with all the Medfly trapping supplies for the year. On three different occasions quality control activities were carried on the medfly trapping itself. The results on all occasions were very good; medfly technicians are doing a superb job with respect to the trapping system.

Papaya Certification Program: During the year regular visits were paid to the Papaya Packing facilities and the Papaya farms along with the BAHA Certifying officer to ensure a high quality Papaya Certification Program. The BAHA Officers are well qualified and highly respected by

all Papaya Producers and Packers; hence, the industry is exporting high volumes of papayas to the United States without significant hindrance.

Plant and Animal Health Activities: In an effort to increase awareness on the Avian Influenza disease threat, the USDA Co- sponsored along with BAHA, the Ministry of Agriculture, OIRSA, and the Belize Poultry Association a three day Avian Influenza Simulation Exercise. The exercise was very successful and created a lot of awareness among stakeholders.

The USDA has in country sets of protective gear for two persons to wear when doing a suspected case of Avian Influenza. The USDA also has in hand 8 sample submission boxes for the transportation of diagnostic samples to the USDA laboratory in Ames, IOWA, USA. The USDA donated a Fumiscope to measure the concentration of Methil Bromide when practicing Methil bromide fumigations on wood pallets. USDA also donated 4GPS units and field toolboxes to BAHA for Plant and Animal health activities.

5.2 Taiwan Technical Mission (Agriculture)

Rice project:

1. Produced 90,000 pounds of rice seed.
2. Trained 70 persons in rice cultivation.
3. Trained 86 persons operating agro-machinery.
4. Compiled more than 24 varieties of rice.
5. Donated two powder tillers to farmers.

Horticulture project:

1. Cultivated more than 50 acres of vegetables.
2. Introduced/ demonstrated dwarfed cultivation in papaya.
3. Propagated 30,000 pineapple seedlings for farmer.
4. Provided 100,000 vegetables seedlings for farmer.
5. Provided 5 training courses.

Tropical fruit processing project:

1. Involved in the School meal Program
2. Expanded the food processing factory in Central Farm
3. Provided food processing training
5. Provided advice to private sector on food processing technology and transformation

5.3 International Regional Organization for Agriculture Health (OIRSA)

OIRSA's quarantine treatment service treated 45,987 vehicles, containers and airplanes. OIRSA worked very closely with BAHA in continuing to control the pink hibiscus mealy bug, a quarantine pest of Belize and the OIRSA Region. This pest is under control since it has only infested live hibiscus hedges in urban and rural areas; it has had no impact on crops of

commercial importance. The biological control program managed to produce 157,797 wasps; of these 31,106 were used for reproducing the wasp and 125,691 were used to combat the mealy bug infestations.

With the BID/FOMIN project coming to an end, OIRSA managed to secure funds for the purchase of equipments to implement the online import permit system by BAHA. OIRSA also provided funding for the training of personnel in the use of the data base and the software.
OIRSA worked very closely with the Ministry of Agriculture and Fisheries in relation to the use of excess funds from OIRSA's 2005 budget; a series of mini project proposals geared towards agricultural health issues were financed. Small-scale farmers from Sarteneja were assisted in obtaining clean and disease free planting material to establish a plantain orchard geared towards the export market. Support was provided to the swine production unit in Central Farm. Furthermore, the research department at Central Farm was assisted through the provision of construction material for a nursery. OIRSA provided several spraying knapsack to small farmers in order to encourage better control of pest and diseases in their respective farms and apply good agricultural practices.

OIRSA participated in various committees or working groups:

1. Biosafety- for the establishment of a national Biosafety policy to regulate GMO's and LMO's.
2. CREI- To assist in the technical Project for the establishment of a pilot Project for Mexican Fruitfly *Anastrepha ludens* free area; and for the establishment of a citrus certification program to be regulated by law so as to prevent the introduction and distribution of emerging diseases such as citrus canker, citrus leprosis virus, and Guanglonbin among others.
3. Poultry Health Committee- for the development of an emergency work plan in the event Belize has an outbreak of Avian Influenza and to coordinate other emerging issues of the industry along with the PREA Project and to conduct a simulation exercise.
4. National Zoonosis Committee – To deal with emerging exotic diseases such as rabies in bovine and to coordinate efforts to have the vampire bat under control.

5.4 Inter-American Institute for Cooperation on Agriculture (IICA)

IICA's Contribution to the Repositioning of Agriculture and Rural Life: The IICA Office in Belize supported and facilitated the implementation of the Agro-Plan 2003-2015 through the establishment of a monitoring mechanism for Agriculture and rural life in order to identify trends, threats, critical emerging issues and opportunities. This information was used to support the efforts of the Ministerial Delegate to meet national obligation and prepare the required reports.

Promoting Trade and the Competitiveness of Agribusiness: A Strength Weakness Opportunities Threats (SWOT) analysis of the Belize Trade and Investment Development Services (BELTRAIDE) was conducted. The results of this exercise will be used to strengthen BELTRAIDE's capacity in export promotion services.

IICA organized a visit to Miami by Private Sector Exporters. The objective of the mission was to understand the services provided by The Inter-American Program for the Promotion of Trade, Agribusiness and Food Safety, to become familiar with the export promotion activities of the Costa Rican Trade Promotion Corporation (PROCOMER) and by the Costa Rican Agro-commercial Office in Miami (Oficina Agrocomercial de Costa Rica en Miami), to become familiar with the produce market trends in the Florida market and to identify potential market opportunities for products from Belize. The trip provided valuable trade intelligence information and established meaningful contacts for future marketing ventures in Florida.

Strengthening Agricultural Health and Food Safety Systems: IICA coordinated and provided logistical support for Belize's participation at the World Trade Organization/ Sanitary and Phytosanitary (WTO/SPS) committee meetings held in Geneva in 2006. Participation at this meeting enabled the Belizean delegate to adequately represent the national interest of Belize. Support was given to a national SPS Committee, a consultative body between public and private sector officials on national SPS trade related issues. The committee serves as a forum for dialogue and information sharing in order to ensure that the interests of the private sector are represented in international trade meetings.

Promoting the Sustainable Management of Natural Resources and the Environment: Technical assistance provided to the organic cacao program resulted in the establishment of a field sanitation program that resulted in effective control of the frosty pod disease by the Toledo Cacao Growers Association. This intervention significantly minimized economic losses from frosty pod infestation.

Strengthening of Rural Communities Based on the Territorial Approach: IICA signed a contract with the Sugar Industry Control Board (SICB) and executed a consultancy for the preparation of a "**National Sugar Adaptation Strategy** for **Belize"** and accompanying financing proposals for solicitation of funds for implementation of the strategy. The completed document was submitted and approved by the SICB. This is an important input that will address the long-term adjustments that the sugar industry will undertake to remain competitive after preferential EU prices are reduced by 36 % over the next 4 years. This strategy will significantly impact the livelihood of the northern districts of Corozal and Orange Walk.

Introducing Technology and Innovation for the Modernization of Agriculture and Rural Life: Under the chairmanship of IICA the National Bio-safety Committee completed a national policy and draft legislation for bio-safety and bio-security. Nation wide broad based consultations encourage dialogue and provided input from stakeholders and the general public. The consultation process also served as an excellent source of public education and sensitization on Bio-safety issues. The consultation process served as the foundation for the preparation and implementation of the national strategy for Bio-safety in Belize.

Work on the preparation of standards and legislation for organic agriculture continued in 2006. This process has increased awareness on this topic and its role in facilitating the development of organic agriculture in Belize.

Other Technical Programs: The IICA Belize office was instrumental in establishing a partnership between IICA, CATIE and the University of Belize for the establishment of a document centre for public use at the University of Belize Central Farm Campus. This along with the execution of a training workshop in Information Technology Management for University of Belize Librarians facilitated an improvement in Library services offered by the University.

5.5 Caribbean Agriculture & Research Institute (CARDI)

The CARDI (Belize Unit) Annual Technical Report 2006 covers two cropping seasons, the November/December 2005 planted crop which was harvested in March/April 2006, and the June/July 2006 planted crop and harvested in September/October 2006. Additional crops planted in the November/December 2006 season are not covered in this report since harvesting would commence in March/April 2007.

Corn: Assessment of the performance of the seven hybrids and one open pollinated variety in the **CARDI 2006 Yellow Hybrid Corn Trial** indicated that the hybrids **Pioneer *30 K 73*** and **Pioneer *30 K 75*** demonstrated the best overall performance. Both hybrids were similarly susceptible to foliar diseases, but ***30 K 75*** was observed to be less susceptible to insect damage. Of the two hybrids, husk cover was better in ***30 K 73*** but there were fewer exposed ears in ***30 K 75***. Shelled grain percentage was higher for ***30 K 73***, which, among all the entries, had the highest yield of shelled grain while ***30 K 75*** recorded the third highest yield of shelled grain. The open pollinated variety ***CARDI YC001*** did not perform; yield of shelled grain was the lowest among all the entries, but the variety matured the earliest and recorded the lowest level of exposed ears.

Assessment of the performance of the nine hybrids in the **CARDI 2006 White Hybrid Corn Trial** indicated that the hybrid **Pioneer *30 F 96*** not only had the highest yield of shelled grain but also demonstrated the best overall performance. **Pioneer *30 F 96*** was the earliest to mature and, although, the plants were among the tallest, they appeared less likely to lodge at either the root or the stalk. The hybrid also demonstrated high tolerance to insects and diseases and had good husk characteristics.

Hot Pepper: Seeds of four hot pepper cultivars, ***CARDI Red***, ***CARDI Green***, ***West Indies Red*** and ***Scotch Bonnet*** were set in October 2005 and seedlings were raised in the screen house for the production of Stock Seed. 'Mother Plants' were grown for the entire period in the screen house thus eliminating the possibility of cross pollination by insects. Fully mature fruits were harvested and the seed manually extracted, dried and stored. Seedlings of the four cultivars were also raised for the production of Commercial Seeds by selected farmers. Ripe fruits were received and the seeds extracted, dried, cleaned and stored at the Unit.

Each of the four varieties from the CARDI collection – ***West Indies Red, CARDI Red, CARDI Green*** and ***Scotch Bonnet*** – had some appreciable level of acceptance/preference among Belizean stakeholders in the hot pepper industry. Farmers had a high preference for the varieties but were concerned about their levels of tolerance/resistance to viruses and diseases, which should be considered in the CARDI Hot Pepper Breeding and Selection Programme. The

present production strategies involve managing the whitefly (*Bemesia* spp.), together with the introduction of tolerant/resistant varieties; all of this will result in lower cost of production. Stakeholders' preference for the four varieties also means that the CARDI Belize Unit will have to ensure the availability of adequate quantities of Seed to meet local demands. Nucleus Seed of the five (5) varieties, ***West Indies Red, CARDI Red, CARDI Green, Scotch Bonnet*** and ***Savina*** were in storage at the end of the reporting period.

Grain Legumes: Ninety-seven soybean entries were planted in December 2005 in an unreplicated preliminary evaluation trial and germplasm maintenance. Data was collected on seven entries for the days to maturity and yield per plot. There were a few entries which matured in less than 100 days and also had higher yield as compared to the control entry, ***CARDI S-15***, which matured in 100 days and had yield of 295 g per plot. Those entries will be further evaluated.

Seed Production: Nucleus and stock seeds of selected crop types and varieties were produced during November 2005 – April 2006 and June – October 2006 at Central Farm. The crop types were chickpea, cowpea, mungbean, peanut, pigeon pea, sesame, and soybean. Corn, cowpea and soybean seeds were produced, cleaned and distributed to farmers.

Integrated Pest Management: Draft work plans were prepared and discussed with relevant persons from collaborating departments of the Ministry of Agriculture and Fisheries. Planting of soybean trials was scheduled to begin in June 2006 in Orange Walk but this was delayed to September 2006. The soybean crop was planted at Central Farm in November 2006. The baseline data collection on hot pepper pests will be conducted in trials at Central Farm, Cayo District and Lucky Strike, Belize District. The trial on the chemical management of the pepper weevil will be conducted in a farmer's field in Isabella Bank, Belize District and CARDI's Research Station at Central Farm, Cayo District; seedlings for these trials were raised under screen house conditions at Central Farm and will be transplanted in January 2007.

Memoranda of Understanding (MOU) to provide technical assistance, mainly in the entomological field, to the Belize Agricultural Health Authority (BAHA) and Citrus Research and Education Institute (CREI) were prepared by CARDI in the last quarter of 2005. These MOUs sought to establish a framework for the provision of technical assistance through entomological support services to these organizations. Dr. Kathy M. Dalip, Entomologist, joined the staff of the CARDI Belize Unit in November 2005 to help fulfill these MOUs. Draft 2006 work plans for BAHA and CREI were prepared in December 2005, and discussed and revised periodically during 2006.

During the first quarter of the year, training modules on the Basic principles of IPM, General Insect Taxonomy and Introduction to Common Classes of Insects were developed. Training for Irish potato farmers in the identification and management of *Thrips palmi* is expected to be carried out early in 2007.

Other requests came from BAHA throughout the year for entomological assistance. These included the assessment of damage from the infestation of palm trees affected by the American palm weevil, *Rhynchophorus palmarum* (L.) and recommendations on its management,

determination of the presence and severity of the onion thrips, *Thrips palmi*, in vegetable farms, identification of required research for the pink hibiscus mealybug parasitoid rearing programme, and diagnosis and recommendations for management of pest problems in corn and coconut farms.

As part of the CARDI-CREI work programme, investigations on the identification of the trunk girdling larva (TGL) commenced in 2006. Photographs of the larvae were sent to scientists in the USA. Light trapping was carried out at a farm in south Stann Creek but none of the insects caught in the trap were suspected to be the adult moth. Three pupae, thought to be TGL, were collected from the field and placed in a muslin cage for adult emergence but only one moth successfully emerged. However, it is not certain that this is the adult of the TGL as another moth emerged from a puparium which was quite different. A crude plastic mesh cage was erected around the trunk of a TGL-infested citrus tree but no adult moths had emerged after four weeks.

During November and December 2006, a total of 20 citrus farms were visited to determine if the TGL was present. The incidence of TGL-infested trees ranged between 0.1 and 3% of trees (n = 40) in 20% of the farms, except in one farm which had a very high incidence (75% of trees infested) in one small area. None of the infested trees had more than four larvae feeding on the trunk.

A project proposal, worked on by the Mex-fly committee, was submitted by CREI to the IAEA for approval. The proposal was approved; project implementation is scheduled for January 2007. The Belize Citrus Certification Program (BCCP) technical sub-committee began work on developing the action plan for citrus pests of quarantine importance. Work on the management of the leaf-cutting ant, *Atta* sp., did not progress very far and it was decided that this activity should be discontinued until an extension officer is hired.

NCCARD: CARDI is represented and participated in the National Committee for Coordinating Agriculture Research & Development (NCCARD) meetings. The CARDI Agronomist served as the Chairman of the NCCARD Technical Committee at the request of the Ministry of Agriculture.

Technical Assistance: In 2006 efforts continued to be directed at providing technical assistance, on request, to the Extension Service and the Research Division of the Ministry of Agriculture. The Unit continuously provided technical support to other organizations including, the Pesticides Control Board (PCB), the Citrus Research and Education Institute (CREI), the Belize Agricultural Health Authority (BAHA), the Faculty of Agriculture and Natural Resources of the University of Belize, the Belize Enterprise for Sustainable Technology (BEST), International Regional Organization for Health in Agriculture (OIRSA), the Inter-American Institute for Cooperation on Agriculture (IICA), and the Belize Bureau of Standards. Technical support and advisory service was also provided to individual farmers and farmer groups.

5.6 Food & Agriculture Organization (FAO)

The Food & Agriculture Organization of the United Nations (FAO) assisted Belize with seven Technical Cooperation Programmes (TCP), six Telefood projects, the preparation of Belize's

National Medium Term Priority Framework for partnership assistance, and dissemination of technical information on crop/livestock production, trade and marketing. FAO further facilitated staff participation in meetings, workshops and training courses in fisheries management, plant and animal health, irrigation technology, rural education, agriculture trade and trade policy, small ruminants, food security, avian influenza, sanitary/ phyto-sanitary measures and forest policy.

Under the special programme for food security (SPFS) the vertical component of project GTFS/RLA/141/ITA continued to promote improved irrigation and integrated crop management technology in five districts. The irrigated rice production system set up in the Toledo district proved to be sustainable; farmers continued with a second cycle. The project's Technical Advisory Committee approved assistance for another group of farmers for the purpose of transforming from milpa to irrigated system of production. Various resource persons were enlisted to conduct training for farmers in post harvest technology, farmer group organization, soil management, integrated pest management, record-keeping and rice crop management. In support of the SPFS another South-South Cooperation (SSC) technician was recruited under TCP/BZR/3001 to assist with water management aspects.

The Small Ruminant Development project TCP/RLA/3009 continued in full swing with the establishment of four small ruminant production models, complete with night shelter, feed rack and water tank, improved pasture grasses, fodder banks and rotational grazing system. Farmers and technicians were trained in the production and management of several nutritious forages and grazing systems for increased productivity. Since importation of live breeding stock proved difficult, the project managed to procure two black-belly breeding rams locally to assist with the genetic improvement component of the project. Preparatory measures were undertaken for an artificial insemination training activity using semen from high quality stock from Barbados. The training was scheduled for August 2006, but was delayed due to veterinary requirements.

In early 2006 a full-fledged FAO staff mission comprising experts in legislation, animal health, fisheries and food safety drafted and presented legislation for a parent "Bio-security" or "BAHA" act and four subsidiary acts in food safety, animal health (including fisheries), plant health and bio-safety to stakeholders in December.

FAO initiated two regional projects to address the potential impact of avian influenza on the Caribbean and Central American regions. Under the Central American project, TCP/RLA/3104, Belize appointed a veterinarian counterpart who participated in training activities as part of project implementation. The project focuses on issues of public awareness and education with respect to the threat of avian influenza.

Studies in management of the spiny lobster were undertaken under another regional project, TCP/RLA/150/SWE, a collaborative effort between FAO and OSPESCA. In May FAO fielded a follow-up mission to work on a previously requested TCP in deep slope fisheries and a draft proposal was prepared as a result of the mission.

A special TCP facility was introduced by FAO to facilitate and expedite financing to eligible countries for strictly technical assistance projects amounting to US$200,000 over a two year period. The first facility was opened in April 2006 and will run until December 2007. In 2006

two proposals, one for reduced impact logging training and the other for strengthening the cooperative sector, were submitted under this new facility. The reduced impact logging proposal was approved by the end of 2006, with an allocation of US$80,000.

Four Telefood projects in school bee-keeping, pineapple seed propagation and community gardens in Toledo and crop/livestock expansion at the Youth Hostel were completed in 2006. Three more proposals were submitted for the construction of potato storage facilities in the Cayo district, expansion of vegetable and livestock production at Escuela Secundaria Tecnica Mexico (ESTM), and pilot organic production plots in Santa Familia and San Antonio in the Cayo district. Two of these submissions, potato storage TFD-05/BZE/001 and vegetable/livestock production (ESTM, TFD-05/BZE/002), were approved by year's end.

World Food Day 2006 was celebrated in Dangriga on October 13th under the global theme "Invest in Agriculture for Food Security". The all day event featured agricultural products/nutrition/ educational booth displays, a food fair offering an array of ethnic and regional /international cuisine, award ceremonies for school poster and poetry competitions, the launch of Belize's public consultations on biosafety and the promotion of a new local cookbook. The promotion of WFD countrywide was successful, as the event was well attended by primary and secondary schools, food/nutrition stakeholders and the general populace from Dangriga and surrounding villages.

5.7 Regional Unit for Technical Assistance (RUTA)

Cocoa Report Action Plan Completed: RUTA conducted a technical assessment of cocoa production in Belize. The study involved a feasibility study and collection of baseline data to determine production cost, productivity, management practices and an estimate of income for farmers involved in organic cocoa production. The result of this activity was the completion of a draft report and a Cocoa Action Plan in late December of 2006. A final report will be prepared and presented to both, the Government of Belize and to the Toledo Cocoa Growers Association. The action plan will help the government of Belize in preparing a national cocoa policy that would contribute to the development of the industry, while taking advantage of opportunities being offered by the international market in both organic and inorganic cocoa.

Regional Agricultural Policy for Central America: One of the main objectives of RUTA is to support the formulation and implementation of policies that contributes to poverty alleviation and to the development of the rural sector. RUTA is involved in supporting the formulation of a Regional Agricultural Policy for Central America. The process for the formulation of the policy began during the last trimester of 2005. The RUTA office in Belize assisted the Ministry of Agriculture & Fisheries to organize a national consultation workshop with principal stakeholders in July of 2006. The main objective of this workshop was to receive the contributions of the stakeholders in the formulation of a regional policy for Central America. A draft report was submitted by the end of 2006; by mid 2007 a second round of national consultations will be held with stakeholders in Belize.

2. **IFAD Grant Proposal:** The RUTA office in Belize prepared the IFAD grant proposal and is presently engaged in negotiating for the disbursement of the U.S $200,000.00 grant approved by

IFAD for the Belize Credit Union League and the National Association of Village Council Organizations.

3. **RUTA Support to the DDC in the Cayo District:** RUTA continued to provide technical support to the District Development Committee (DDC) in Cayo. RUTA, as a member of the DDC, was involved in appraising and evaluating project proposals for the Cayo District. RUTA was also involved in the preparation of criteria to be considered for the development of village community plans for the Belize Rural Development Project.

6.0 Senior Management Staff of the Ministry of Agriculture & Fisheries

(31st December 2006)

Ministry:
Hon. Vildo Marin, Minister of Agriculture & Fisheries
Hon. Mario Castellanos, Minister of State
Mrs. Sandra Hall, Chief Executive Officer
Mr Sergio Garcia, Programme Coordinator
Mr Rudolph Gentle, Finance Officer
Mr. Alfredo Cruz, Administrative Officer
Mr. Jose Castellanos, Policy Analyst

Departments:
Mr. Eugene Waight, Chief Agriculture Officer
Ms. Beverly Wade, Fisheries Administrator
Mr. Hugo Miranda, Acting Registrar of Cooperatives

Statutory Bodies:
Mr. Mario Narvaez, General Manger, Belize Marketing & Development Corporation
Ms. Neri Sanz, Managing Director, Belize Agriculture Health Authority
Mr. Harry Parham, Managing Director, BLPA
Ms. Virginia Vasquez, Managing Director, CZMA

Associated Regional/ International Organizations:
Mr. Anil Sinha, Representative, CARDI
Mr. Salvador Monge, Acting Representative, IICA
Mr. Cheng Hsiung-Lin, Team Leader, Agriculture Technical Mission, ROC Taiwan
Mr. Fermin Blanco, Representative, OIRSA
Mr. Crispin Blanco, Representative, USDA/APHIS
Mr. Jose Lisbey, Coordinator, Regional Unit for Technical Assistance
Mr. Karl Goeppert, Project Director, Belize Rural Development Project
Mrs. Francine Magloire, National Correspondent, Food & Agriculture Organization

Appendix I:

Primary Agriculture Output Value 2006 at Producer's Price							
							% change
Commodities	**Quantity (lbs) 2005**	**Quantity (lbs) 2006**	**Price** (BZ$) 2005**	**Price* (BZ$) 2006**	**Value (BZ$) 2005**	**Value (BZ$) 2006**	**In value**
Sugarcane	**929,392**	**1,173,468**	**$ 54.20**	**$ 60.73**	**$ 50,373,046.40**	**$ 71,264,711.64**	**41%**
Bananas							
(40 lb boxes)							
(28 lb boxes)							
(36 lb boxes)							
(40 lb boxes)							
(37 lb boxes)							
(33 lb boxes)							
(26 lbs boxes)							
(31 lbs boxes)							
(28 lbs other)							
(28 lbs other 2nd class)							
Banana Products (lbs)	**161,480,640**	**153,546,000**			**$ 51,080,810.00**	**$ 50,591,638.36**	**-1%**
Apple Banana (Bunches)(30 lbs/bunch)	7,226	149,450	$ 3.00	$ 3.00	21,678	448,350	
Domestic Consumpt (40 lbs/Box)	504,627	504,627	$ 3.00	$ 3.00	1,513,881	1,513,881	
Total Value					**$ 52,616,369.00**	**$ 52,553,869.36**	**-0.1%**
Citrus							
Grapefruit (80lb box)	1,527,802	1,730,833	$ 9.82	$ 9.23	$ 15,003,015.64	$ 15,975,588.59	**6%**
Orange (90 lb box)	6,264,847	5,182,718	$ 5.85	$ 9.99	$ 36,649,354.95	$ 51,775,352.82	**41%**
Fresh Lime Export (lbs)	236,591	115,000	$ 0.07	$ 0.07	$ 17,012.38	$ 8,050.00	**-53%**
Fresh Orange Export (lbs)	17,782,032	19,309,335	$ 0.18	$ 0.15	$ 3,248,356.00	$ 2,880,508.00	**-11%**
Fresh Grapefruit Export (lbs)	284,942	0	$ 0.06	$ -	$ 18,133.36	$ -	**-100%**
Domestic Lime Consumpt. (lbs)	120,000	120,000	$ 0.50	$ 0.50	$ 60,000.00	$ 60,000.00	**0%**
Domestic Grapefruit Consumpt. (80 lbs/bx)	15,278	16,866	$ 6.00	$ 6.00	$ 91,668.12	$ 101,194.02	**10%**
Domestic Orange Consumpt. (90 lbs/bx)	313,242	246,548	$ 8.00	$ 8.00	$ 2,505,938.80	$ 1,972,382.80	**-21%**
Citrus Products					**$ 57,593,479.25**	**$ 72,773,076.23**	**26%**
Marine Products (includes 4% for dom. Consump)					**$ 87,225,348.08**	**$ 89,456,218.76**	**3%**

Conch	**524,146**	**731,950**	**$ 9.75**	**$ 11.42**	**$ 7,155,860.00**	**$ 8,359,097.00**	**17%**
Shrimp	18,444,993	15,922,325	$ 5.01	$ 3.93	$ 60,534,749.00	$ 62,519,837.00	**3%**
Whole Fish		392,324				$ 277,030.00	
Fish Fillet		148,017				$ 932,691.00	
Other	445,411	-	$ 3.77	$ -	$ 1,680,667.00	$ -	**-100%**
Domestic Consumption	796,980	703,712			$ 3,354,821.08	$ 3,440,623.76	**3%**
Other							
Papayas (export)	58,240,463	73,368,900	$ 0.43	$ 0.42	$ 25,043,399.09	$ 31,014,396.85	**24%**
Cowpeas	5,049,000	4,907,100	$ 0.45	$ 0.45	$ 2,272,050.00	$ 2,208,195.00	**-3%**
Hot peppers (export)	269,969	108,700	$ 0.80	$ 0.80	$ 215,975.20	$ 86,960.00	**-60%**
Hot peppers (local)	336,552	173,730	$ 1.22	$ 1.22	$ 410,593.44	$ 211,950.60	**-48%**
Cocoa	47,827	94,925	$ 2.00	$ 2.00	$ 95,654.00	$ 189,850.00	**98%**
RK beans	7,621,550	5,659,700	$ 0.83	$ 0.90	$ 6,325,886.50	$ 5,093,730.00	**-19%**
Black Beans	2,955,850	2,932,800	$ 0.86	$ 0.88	$ 2,542,031.00	$ 2,580,864.00	**2%**
Other Beans	1,144,700	689,225	$ 0.80	$ 0.80	$ 915,760.00	$ 551,380.00	**-40%**
Corn	76,376,425	62,606,816	$ 0.20	$ 0.20	$ 15,275,285.00	$ 12,521,363.20	**-18%**
Rice paddy	39,152,894	26,136,078	$ 0.22	$ 0.22	$ 8,613,636.68	$ 5,749,937.16	**-33%**
Sorghum	14,901,100	10,096,100	$ 0.14	$ 0.14	$ 2,086,154.00	$ 1,413,454.00	**-32%**
Soybean	750,000	1,350,000	$ 0.34	$ 0.34	$ 255,000.00	$ 459,000.00	**80%**
Cabbage	2,007,300	3,259,405	$ 0.69	$ 0.66	$ 1,385,037.00	$ 2,151,207.30	**55%**
Cucumber	332,707	541,300	$ 0.50	$ 0.50	$ 166,353.50	$ 270,650.00	**63%**
Okra	34,930	172,400	$ 0.87	$ 0.95	$ 30,389.10	$ 163,780.00	**439%**
Squash	200,760	48,100	$ 0.45	$ 0.45	$ 90,342.00	$ 21,645.00	**-76%**
Pumpkin	249,900	548,750	$ 0.40	$ 0.40	$ 99,960.00	$ 219,500.00	**120%**
Sweet Pepper	632,600	1,209,488	$ 2.62	$ 2.57	$ 1,657,412.00	$ 3,108,384.16	**88%**
Tomatoes	1,191,179	2,055,119	$ 1.43	$ 1.46	$ 1,703,385.97	$ 3,000,473.74	**76%**
Irish Potato	2,289,900	2,580,700	$ 0.75	$ 0.82	$ 1,717,425.00	$ 2,116,174.00	**23%**
Onion	2,157,273	1,492,905	$ 0.77	$ 0.88	$ 1,661,100.21	$ 1,313,756.40	**-21%**
Carrots	484,740	239,000	$ 0.71	$ 0.78	$ 344,165.40	$ 186,420.00	**-46%**
Cassava	396,600	527,645	$ 0.45	$ 0.44	$ 178,470.00	$ 232,163.80	**30%**
String Beans	6,300	400	$ 0.80	$ 0.80	$ 5,040.00	$ 320.00	**-94%**
Lettuce	356,300	257,138	$ 0.75	$ 0.75	$ 267,225.00	$ 192,853.50	**-28%**
Chinese Cabbages	43,800	13,500	$ 0.80	$ 0.80	$ 35,040.00	$ 10,800.00	**-69%**
Broccoli	84,000	54,420	$ 1.50	$ 1.50	$ 126,000.00	$ 81,630.00	**-35%**
Celery	43,500	108,645	$ 2.00	$ 2.00	$ 87,000.00	$ 217,290.00	**150%**
Cho-cho	48,200	86,200	$ 0.75	$ 0.75	$ 36,150.00	$ 64,650.00	**79%**
Sweet Corn (ears)	340,000	390,000	$ 0.70	$ 0.70	$ 238,000.00	$ 273,000.00	**15%**
Cauliflower	5,700	24,750	$ 1.50	$ 1.50	$ 8,550.00	$ 37,125.00	**334%**

Cocoyam	**618,880**	**576,438**	**$ 0.96**	**$ 0.83**	**$ 594,124.80**	**$ 478,443.54**	**-19%**
Sweet Potato	165,500	141,000	$ 0.56	$ 0.66	$ 92,680.00	$ 93,060.00	**0%**
Yam	274,000	213,876	$ 0.81	$ 0.83	$ 221,940.00	$ 177,517.08	**-20%**
Yampi	176,000	280,820	$ 0.81	$ 0.81	$ 142,560.00	$ 227,464.20	**60%**
Jicama	66,600	95,600	$ 0.50	$ 0.50	$ 33,300.00	$ 47,800.00	**44%**
Mangoes	4,673,000	2,454,000	$ 0.50	$ 0.50	$ 2,336,500.00	$ 1,227,000.00	**-47%**
Local Papaya	1,164,809	1,467,378	$ 0.42	$ 0.42	$ 489,219.78	$ 616,298.76	**26%**
Peanuts	249,200	225,314	$ 1.33	$ 1.37	$ 331,436.00	$ 308,680.18	**-7%**
Pineapple	4,963,188	3,155,250	$ 0.31	$ 0.31	$ 1,538,588.28	$ 978,127.50	**-36%**
Pitahaya	45,000	300	$ 2.00	$ 2.00	$ 90,000.00	$ 600.00	**-99%**
Plantain (bunches)*	416,650	740,634	$ 5.00	$ 5.00	$ 2,083,250.00	$ 3,703,170.00	**78%**
Watermelon	2,832,500	4,402,500	$ 0.30	$ 0.30	$ 849,750.00	$ 1,320,750.00	**55%**
Coconuts (Nuts)	3,519,600	1,124,400	$ 0.68	$ 0.68	$ 2,393,328.00	$ 764,592.00	**-68%**
Cotton	80,000	200,000	$ 8.00	$ 8.00	$ 640,000.00	$ 1,600,000.00	**150%**
Canteloupe	617,100	872,800	$ 0.40	$ 0.40	$ 246,840.00	$ 349,120.00	**41%**
Annato	49,800	79,000	$ 0.90	$ 0.90	$ 44,820.00	$ 71,100.00	**59%**
Coffee	120,000	210,000	$ 1.35	$ 1.35	$ 162,000.00	$ 283,500.00	**75%**
Avocado	168,000	70,000	$ 0.75	$ 0.75	$ 126,000.00	$ 52,500.00	**-58%**
Cashew (raw nut)	325,920	323,440	$ 1.00	$ 1.00	$ 325,920.00	$ 323,440.00	**-1%**
Ginger	193,000	64,250	$ 0.75	$ 0.75	$ 144,750.00	$ 48,187.50	**-67%**
Nutmeg	14,000	10,280	$ 15.00	$ 15.00	$ 210,000.00	$ 154,200.00	**-27%**
Grapes	0				$ -	$ -	
Craboo	130,000	69,940	$ 0.75	$ 0.75	$ 97,500.00	$ 52,455.00	**-46%**
Guava	26,000	9,000	$ 1.50	$ 1.50	$ 39,000.00	$ 13,500.00	**-65%**
Other Fruit (sapodilla, mamey, etc.)					$ 137,500.00	$ 137,500.00	**0%**
Other Vegetables (radish, cilantro, etc.)					$ 110,000.00	$ 110,000.00	**0%**
Soursop	8,145	20,495	$ 2.00	$ 2.00	$ 16,290.00	$ 40,990.00	**152%**
Fruits/Vegetables					**$ 87,385,766.95**	**$ 88,922,899.47**	**2%**
Livestock:							
Dressweight:							
Beef	3,556,728	3,713,400	$ 2.50	$ 2.50	$ 8,891,820.00	$ 9,283,500.00	**4%**
Beef Export (on the hoof) (lbs)	3,235,500	1,448,100	$ 1.20	$ 1.20	$ 3,882,600.00	$ 1,737,720.00	**-55%**
Pigs	2,353,398	2,559,600	$ 3.00	$ 3.00	$ 7,060,194.00	$ 7,678,800.00	**9%**
Pigs Export(on the hoof)(lbs)	479,000	211,600	$ 1.40	$ 1.40	$ 670,600.00	$ 296,240.00	
Sheep	59,681	56,385	$ 3.00	$ 3.00	$ 179,043.00	$ 169,155.00	**-6%**

Poultry	**30,488,884**	**29,880,350**	**$ 1.60**	**$ 1.60**	**$ 48,782,214.40**	**$ 47,808,560.00**	**-2%**
Turkey	321,643	355,095	$ 3.00	$ 3.00	$ 964,929.00	$ 1,065,285.00	**10%**
Milk (lbs)	8,347,339	6,644,628	$ 0.32	$ 0.32	$ 2,671,148.48	$ 2,126,280.96	**-20%**
Spent hens (No. Heads)	139,000	139,000	$ 3.00	$ 3.00	$ 417,000.00	$ 417,000.00	**0%**
Eggs (Dozen)	2,405,968	2,640,152	$ 1.50	$ 1.50	$ 3,608,952.00	$ 3,960,228.00	**10%**
Honey (lbs)	69,164	107,084	$ 4.50	$ 4.50	$ 311,238.00	$ 481,878.00	**55%**
Livestock					**$ 77,439,738.88**	**$ 75,024,646.96**	**-3%**
All Non-traditional products					**$164,825,505.83**	**$ 163,947,546.43**	**-1%**
Citrus/Sugarcane/							
Bananas/Fisheries					**$247,808,242.73**	**$ 286,047,875.99**	**15%**
Total Agri. Output					**$412,633,748.56**	**$ 449,995,422.42**	**9.1%**
**** 1 Bunch = 45 lbs***							
Source: MAFC, District Agriculture Offices Reports							

Appendix IIA:	Agricultural Exports 2002 - 2006				
	Value ($'000 Bze)				
Commodities [a]	2002	2003	2004	2005	2006
Sugarcane Sector:					
Sugar (Long Ton)	$ 65,981	$ 71,227	$ 81,534	$ 69,899	$ 100,065
Molasses (gals)	$ 2,678	$ 2,476	$ 1,766	$ 2,821	$ 4,203
Sugar/Molasses	*$ 68,659*	*$ 73,703*	*$ 83,300*	*$ 72,720*	*$ 104,268*
Bananas	$ 33,499	$ 52,579	$ 52,991	$ 51,081	$ 50,592
Citrus Sector:					
Orange Concentrate (gal)	$ 53,493	$ 65,538	$ 55,489	$ 87,547	$ 86,176
Orange Squash (gal)	$ 3,094	$ 1,479	$ 1,996	$ 542	$ 107
Orange Oil (lbs)	$ 809	$ 566	$ 2,050	$ 1,919	$ 2,810
Oranges (lbs)	$ 2,439	$ 2,406	$ 1,973	$ 3,248	$ 2,881
Grapefruit Concentrate (gal)	$ 13,950	$ 12,516	$ 23,817	$ 19,424	$ 22,810
Grapefruit Squash (gal)	$ 7,080	381	$ 1,792	$ 298	$ 27
Grapefruit Oil (lbs)	$ 306	$ 24	$ 1,573	$ 6,600	$ 2,852
Citrus	*$ 81,171*	*$ 82,909*	*$ 88,690*	*$ 119,579*	*$ 117,663*
TRADITIONAL EXPORTS					
Marine Products	$ 70,363	$ 110,157	$ 107,334	$ 83,871	$ 86,016
Lobster	$ 13,236	$ 13,598	$ 15,142	$ 14,499	$ 13,927
Conch	$ 3,440	$ 3,741	$ 5,810	$ 7,156	$ 8,359
Shrimp	$ 53,563	$ 92,762	$ 85,153	$ 60,535	$ 62,520
Whole Fish	$ 124	$ 30		$ -	$ 277
Fish Fillet	$ -	$ -		$ -	$ 933
Crab	$ -	$ 26		$ -	0
Other Fish			$ 1,228	$ 1,681	0
Traditional Sector	*$ 253,692*	*$ 319,348*	*$ 332,316*	*$ 327,250*	*$ 358,539*
Other					
Pepper Sauce	$ 414	$ 607	$ 866	$ 1,154	$ 1,607
Papayas	$ 15,508	$ 16,752	$ 22,818	$ 26,768	$ 31,014
Red Kidney Beans	$ 2,059	$ 1,659	$ 1,872	$ 5,064	$ 1,912
Black Eye Peas	$ 2,457	$ 3,410	$ 1,418	$ 3,463	$ 3,372
Mangoes	$ -	$ 1	$ -	$ -	$ -
Cocoa Beans	$ 29	$ 94	$ 69	$ -	$ -
Honey	$ -	$ -	$ -	$ -	$ -
Peanuts			$ 12	$ -	$ -
Chicle	$ 63	$ 22	$ -	$ -	$ -
Total Other	$ 20,530	$ 22,545	$ 27,054	$ 36,449	$ 37,905
Other Exc. Papayas	$ 5,022	$ 5,793	$ 4,236	$ 9,681	$ 6,891
Agriculture Export Earnings	$ 274,222	$ 341,893	$ 359,370	$ 363,699	$ 396,444
Source: [a] Central Statistics Office					
N/A = Not Available					

Agriculture Exports 2002-2006

Appendix IIB:					
	('000 Units)				
Commodities [a]	**2002**	**2003**	**2004**	**2005**	**2006**
Sugarcane Sector:					
Sugar (Long Ton)	**103**	**99**	**114**	**90**	**96**
Molasses (gals)	**5,618**	**5,610**	**5,037**	**5,129**	**5,098**
Sugar Products					
Bananas (tonne)	**42**	**73**	**79**	**76**	**73**
Citrus Sector:					
Orange Concentrate (gal)	**3,621**	**4,921**	**6,445**	**8,380**	**6,415**
Orange Squash (gal)	**950**	**418**	**570**	**149**	**14**
Orange Oil (lbs)	**508**	**244**	**1,222**	**2,093**	**3,119**
Oranges (lbs)	**15,627**	**13,636**	**12,636**	**17,782**	**19,309**
Grapefruit Concentrate (gal)	**730**	**768**	**1,813**	**1,255**	**1,246**
Grapefruit Squash (gal)	**1,519**	**107**	**347**	**38**	**2**
Grapefruit Oil (lbs)	**58**	**11**	**182**	**652**	**293**
Marine Products (lbs)	**7,332**	**17,063**	**18,394**	**19,925**	**17,593**
Lobster	**499**	**536**	**538**	**510**	**398**
Conch	**465**	**450**	**596**	**524**	**732**
Shrimp	**6,330**	**16,052**	**16,999**	**18,445**	**15,922**
Whole Fish	**38**	**24**			**392**
Fish Fillet	**-**	**-**			**148**
Crab	**-**	**1**			
Other Fish			**261**	**445**	
Other:					
Pepper Sauce (lbs)	**285**	**399**	**513**	**583**	**778**
Papayas (lbs)	**24,465**	**36,522**	**55,606**	**63,105**	**76,004**
Red Kidney Beans (lbs)	**3,940**	**3,118**	**3,058**	**7,430**	**2,734**
Black Eye Peas (lbs)	**5,913**	**8,130**	**3,167**	**7,986**	**5,921**
Mangoes (lbs)	**0**	**10**	**-**	0	0
Cocoa Beans (lbs)	**55**	**45**	**45**	0	0
Chicle (lbs)	**27**	**19**	**-**	0	0
Honey (lbs)	**N/A**	**N/A**	**-**	0	0
Peanuts (lbs)	**N/A**	**N/A**	**21**	0	0
Source: [a] All export commodities figures are from Central Statistics Office					
N/A = Not Available					

Appendix III:	Agriculture Imports 2002 - 2006				
	($' 000 bze)				
IMPORTS	**2002**	**2003**	**2004**	**2005**	**2006**
MEAT;#	**$ 8,323**	**$ 9,524**	**$ 9,120**	**$ 8,075**	**$ 7,744**
BEEF	$ 101	$ 168	$ 126	$ 250	$ 294
PORK	$ 1,599	$ 2,199	$ 3,502	$ 2,812	$ 1,541
POULTRY	$ 98	$ 397	$ 329	$ 319	$ 36
OTHER	$ 6,526	$ 6,760	$ 5,163	$ 4,694	$ 5,873
DAIRY	$ 22,594	$ 23,053	$ 23,567	$ 24,291	$ 24,085
EGGS	$ 1,030	$ 1,195	$ 895	$ 853	$ 829
RICE	$ 821	$ 297	$ 136	$ 132	$ 175
FLOUR	$ 696	$ 216	$ 210	$ 287	$ 247
OTHER CEREALS*	$ 9,716	$ 18,595	$ 18,870	$ 18,612	$ 18,882
FRUITS AND VEGET.	$ 11,236	$ 11,168	$ 12,353	$ 9,089	$ 8,827
RK.BEANS	$ 339	$ 498	$ 45	$ 129	$ 162
OTHER FOOD*	$ 69,617	$ 76,223	$ 61,674	$ 72,353	$ 72,474
TOTAL FOOD	**$ 107,840**	**$ 118,730**	**$ 109,232**	**$ 120,203**	**$ 118,241**
inc Ani. Feed & Seed	$ 124,373	$ 140,768	$ 126,870	$ 133,821	$ 133,424
% of Total Imports	**12%**	**13%**	**12%**	**11%**	**10%**
INPUTS:					
SEEDS	$ 1,561	$ 1,336	$ 1,273	$ 1,510	$ 1,840
FERTILIZERS	$ 11,311	$ 9,423	$ 8,435	$ 6,802	$ 11,560
HERBICIDES	$ 4,306	$ 3,903	$ 4,171	$ 3,900	$ 4,650
INSECTICIDES	$ 4,711	$ 4,829	$ 3,890	$ 5,433	$ 4,134
FUNGICIDES	$ 2,745	$ 3,043	$ 3,454	$ 3,243	$ 5,348
ANIMAL FEED	$ 14,971	$ 20,702	$ 16,366	$ 12,108	$ 13,343
TOTAL INPUTS	**$ 39,605**	**$ 43,236**	**$ 37,588**	**$ 32,996**	**$ 40,875**
TOTAL AG. IMPORTS	**$ 147,445**	**$ 161,966**	**$ 146,820**	**$ 153,199**	**$ 159,116**
% of Total Imports	**14%**	**15%**	**14%**	**13%**	**12%**
OTHER IMPORTS	$ 901,585	$ 942,208	$ 881,397	$1,028,518	$1,161,699
TOTAL IMPORTS	**$1,049,030**	**$1,104,174**	**$1,028,217**	**$1,181,717**	**$1,320,815**
# INCLUDES FRESH, CHILLED, PRESERVED, PROCESSED & PRODUCTS					
* INCLUDES PROCESSED AND UNPROCESSED PRODUCTS					
Source: Central Statistical Office					