Ministry of Agriculture & Fisheries

ANNUAL REPORT 2008

"Agriculture : Pillar of the Belizean Economy"

ACRONYMS

ACP	African, Caribbean and Pacific Countries
AED	Agriculture Enterprise Development Project
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
BBOC	Belize Bus Owners Cooperative
B&E	Business & Entrepreneurial Unit
BELTRAIDE	Belize Trade Investment & Development
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
BRDP	Belize Rural Development Project
BSE	Bovine Spongiform Encephalopathy
BSI	Belize Sugar Industries
BTIA	Belize Tourism Industry Association
BYI	Belize Youth International
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
DOC	Department of Cooperatives
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/SGP	Global Environmental Fund/Small Grants Programme
GG&P	Grain Growers & Producers Pre-Cooperative
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practices
GOB	Government of Belize
GTFC	Georgetown Farmers Cooperative
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
ITVET	Technical Vocational Education Training
LEO	Livestock Extension Officer
MAF	Ministry of Agriculture and Fisheries
MBRS	Meso-American Barrier Reef System
MINAG	Ministerio Agricultural, Cuba
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
NTHC	Northern Teachers Housing Cooperative
OIRSA	International Regional Organization for Plant & Animal Health
OSPESCA	Central American Organization of the Fisheries and Aquaculture Sector
PACT	Protected Areas Conservation Trust
PAHO	Pan American Health Organization
PHMB	Pink 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
SATIM	Sarstoon & Temash Institute for Indigenous Management
SAQS	Strengthening Agriculture Quarantine System
SBWC	Sandy Beach Women's Cooperative
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
SMDG	Small Micro-entrepreneurial Development Grant
SME	Small & Medium Enterprise
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
XCWPC	Xiabe Cyber net Women's Pre-Cooperative

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

In 2008, farmers were affected by two big floods which caused distortion in food security. Despite the drawbacks, small farmers were able to produce food for themselves and the domestic market with assistance from Government. Overall, Belize is self sufficient in basic food items such as corn, beans, rice, beef, poultry meat and eggs. Vegetables were imported to meet the local demand, however, in 2009 Belize expects to reduce importation by 70%. This is because farmers will be assisted with covered structures and irrigation units to produce quality vegetables throughout the year. Already Belize is exporting hot peppers to the US and pretty soon Belize will be exporting pitahaya. The Government of Belize continues to negotiate with Mexico to secure a market for beef and value added products. This will no doubt contribute towards increased foreign exchange earnings.

The United Nations Millennium goal is to eliminate poverty by 2015 throughout the world. This is a tall order but if everyone participates in producing food we should be able to achieve this goal at home. In view of this objective, my Government is promoting integrated farming systems for the production of food by small and medium size farmers. This is to ensure that there is diversity on the farm in the production of food. An integrated farming system basically involves rural development which will minimize the migration of farmers to urban areas, increase farm income and address the issue of poverty reduction. This approach is what we at the Ministry of Agriculture call "**A *Road Map for Agriculture Development. Produce what we consume and export all excess*".** Farm Diversification involves crops and livestock. For example, chickens will be produced using food produced on the farm and the waste use for the production of vegetables as organic fertilizer. In this system, the waste product from one unit is used in another unit on the same farm in the production cycle. Another example is the production of ***bioga***s from pig waste for use on the farm for cooking or producing light. By organizing the use of available resources on the farm in an integrated system, farmers can reduce the costs of production, produce quality food products for revenue generation and create year round employment for the farm family.

The domestic market for agricultural products is small, therefore, efforts are been made to get markets for rice, beans, corn, beef and processed products in Central America, Mexico and CARICOM. The potential for increased production is great, hence, the need to access foreign markets for agriculture products, to create employment and for foreign exchange earnings. Agriculture and Fisheries sectors employ approximately 26% of the total work force in the country. In 2008, both sectors earned a total of BZ $334.6 million in foreign exchange which means that agriculture and fisheries are major players in the economy of Belize. This will continue to be the situation in the future as we move forward in developing this country through rural development using innovative technologies which are sustainable.

Yours in Development,

Hon. Rene Montero
Minister of Agriculture & Fisheries

Acknowledgements

This report was prepared based on the submissions of the heads of department: Mr. Eugene Waight, Chief Agricultural Officer, Mrs Beverly Wade, Fisheries Administrator, and Mr. Alfred Ramirez, Registrar for Cooperatives. Submissions were also received from the heads of the various projects/statutory bodies (Belize Agriculture Health Authority, Belize Livestock Producers Association, Belize Marketing & Development Corporation and the Belize Rural Development Project) and from the respective partner agencies/programs (the United States Department for Agriculture, Republic of China on Taiwan Agriculture Technical Mission, International Regional Organization for Agriculture Health, Inter-American Institute for Cooperation on Agriculture, Caribbean Agriculture & Research Institute, Food & Agriculture Organization, Regional Unit For Technical Assistance).

Mr. Phillip Tate and Mr. Alfonso Bautista were responsible for compiling all the reports submitted while Mr. Horace Jones and Mr. Miguel Balan were responsible for developing the format and designing the cover as well as providing some of the pictures for the 2008 Annual Report.

The 2008 Annual Report represents the input of all the aforementioned stakeholders in agriculture, fisheries and cooperatives. Many thanks to you since without you the report would not have been possible.

Executive Summary

During 2008 agriculture output (including fisheries) decreased by 1% from $417 million in 2007 to $413 million in 2008. Income for farmers was reduced due to reduced income for sugar-cane, citrus, fruits and grains/legumes. Increased income was observed for bananas, fisheries, vegetables and livestock.

Primary Agriculture Income (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Sugar-cane	$65,066,711	$54,102,302	-17%
Banana Products	$42,705,000	$67,074,963	57%
Citrus Products	$82,698,885	$59,283,552	-28%
Marine Products	$43,869,073	$46,055,924	5%
Fruits	$31,069,008	$24,888,833	-20%
Grains/Legumes	$49,908,051	$41,466,165	-17%
Vegetables	$15,645,229	$18,817,955	20%
Livestock	$86,016,084	$101,301,082	18%
Income	**$416,978,041**	**$412,990,778**	-1%

Sugar income decreased by 17% from $65 million to $54.1 million, on account of an 18% reduction in output from 1.3 million tons to 980,000 tons. Price of sugar-cane increased by 2% from $54.22 to $55.20. Banana income increased by 57% due to 26% increase in output and improve prices.

Fisheries income increased by 5% from $43.9 million to $46.1 million. Products responsible for the increased income in fisheries included conch income which increased by 23% in value due to increased output. Tilapia production increased more than 8 times which caused whole production to increase from 260,000 lbs to 2.6 million lbs. Lobster income decreased by 8% since output decreased by 2% and price decreased by 6%. Shrimp income decreased by 6% from $19.7 million to $18.5 million due to an 8% reduction in output while price increased by 1%.

Fisheries (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Lobster	$16,095,747	$14,808,642	-8%
Conch	$5,389,117	$6,640,132	23%
Shrimp	$19,749,080	$18,510,327	-6%
Whole Fish	$400,812	$3,933,762	881%
Fish Fillet	$527,139	$391,680	-26%
Income	**$43,869,073**	**$46,055,924**	5%

Citrus income decreased by 28% from $82.7 million to $59.3 million. Factors responsible for this drastic decline included a 38% reduction in grapefruit income from $8.6 million to $5.3 million, due to a 5% reduction in output and a 35% reduction in price (from $5.50/box to $3.58/box). Orange income decreased by 28% from $69 million to $49.7 million due to a 34% reduction in price (from $12.76/box to $8.48/box).

Citrus (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Grapefruit (80 lb box)	$8,641,578	$5,345,605	-38%
Orange (90 lb box)	$69,044,615	$49,745,927	-28%
Fresh Lime Export	$9,450	$6,804	-28%
Fresh Orange Export	$2,684,562	$1,689,118	-37%
Income	**$82,698,885**	**$59,283,552**	-28%

Fruit income decreased by 20% from $31 million to $24.9 million. Products contributing to this decline included papaya income which decreased by 18% from $26 million to $21.3 million due to reduced output, pineapple income decreased by 58% from $1.6 million to $652,000 due to reduced output.

Fruits (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Papaya (Export)	$26,073,873	$21,259,805	-18%
Mangoes	$670,000	$621,500	-7%
Local papaya	$596,105	$499,605	-16%
Pineapple	$1,555,283	$651,604	-58%
Watermelon	$765,480	$765,335	0%
Coconuts (Nuts)	$597,706	$398,949	-33%
Canteloupe	$255,340	$202,533	-21%
Cashew (raw nuts)	$298,430	$262,250	-12%
Income	**$31,069,008**	**$24,888,833**	-20%

Grains/legume income decreased by 17% from $49.9 million $41.5 million. Products contributing to the decrease included corn income which decreased by 33% from $26.2 million to $17.6 million due to a 23% reduction in output and 13% reduction in price from $0.31/lb to $0.27/lb. Rice paddy income decreased by 25% from $8.6 million to $6.5 million due to 34% reduction in output while price improved by 14% from $0.22/lb of rice paddy to $0.25/lb of rice paddy. Other products which contributed to the decreased included black beans which decreased by 16% and also other beans which decreased by 15%. Products which experienced an increase

included sorghum which increased by 56% from $3 million to $4.7 million and cowpeas which increased by 24% from $2.4 million to $3 million.

Grains/Legume (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Corn	$26,184,649	$17,623,963	-33%
Rice Paddy	$8,621,115	$6,492,706	-25%
Sorghum	$3,022,680	$4,713,420	56%
Cowpeas	$2,446,245	$3,042,765	24%
RK Beans	$5,942,216	$6,639,240	12%
Black Beans	$2,703,847	$2,274,286	-16%
Other Beans	$330,320	$280,800	-15%
Soybean	$282,608	$18,360	-94%
Peanuts	$374,369	$380,625	2%
Income	**$49,908,051**	**$41,466,165**	-17%

Vegetable income increased by 20% from $15.7 million to $18.8 million. Products responsible for the increase included irish potato which increased by 81% from $906,000 to $1.6 million, onions which increased by 120% from $1.2 million to $2.5 million and plantain income which increased by 144% from $736,000 to $1.8 million. Increases were also experienced in the following products: hot peppers, cocoa, cabbage, carrots and coco-yam. Decreased income was experienced for the following commodities: tomatoes, cassava, lettuce, celery, yam, yampi and cotton.

Vegetables (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Hot Peppers	315,511	340,094	8%
Cocoa	109,546	254,184	132%
Cabbage	2,126,298	2,514,301	18%
Sweet Pepper	3,068,076	2,964,971	-3%
Tomatoes	2,417,707	2,173,808	-10%
Irish Potato	906,461	1,639,590	81%
Onions	1,157,827	2,546,067	120%
Carrots	357,830	366,323	2%
Cassava	331,949	308,085	-7%
Lettuce	350,662	246,117	-30%
Celery	249,900	157,700	-37%
Sweet Corn (ears)	254,800	291,200	14%
Coco-yam	278,575	298,566	7%
Yam	160,974	132,033	-18%

Yampi	213,347	131,463	-38%
Plantains (bunches)	736,655	1,794,455	144%

Commodity	**2007**	**2008**	**Change**
Cotton	1,640,000	1,600,000	-2%
Coffee	135,000	NA	
Nutmeg	210,000	NA	
Income	**15,645,229**	**$18,817,955**	**20%**

Livestock income increased by 18% from $86 million to $101.3 million. Products responsible for the increase included a 7% increase in pig income from $7.7 million to $8.2 million due to a 17% improvement in price from $3.00/lb dress-weight to $3.50/lb dress-weight. Poultry income increased by 28% from $52.6 million to $67.3 million due to a 36% increase in price from $1.77/lb dress-weight to $2.41/lb dress-weight. Milk income increased by 65% from $1.9 million to $3.2 million due to an 8% increase in output and a 53% increase in price from $0.32/lb to $0.49/lb. Egg income increased by 14% from $7.9 million to $9.0 million due to a 14% increase in output.

Livestock (Producer Price)			
Commodity	**2007**	**2008**	**Change**
Beef	14,212,250	12,161,893	-14%
Pigs	7,700,208	8,232,840	7%
Sheep	158,085	336,150	113%
Poultry	52,584,424	67,336,438	28%
Turkey	1,098,147	865,293	-21%
Milk (lbs)	1,908,964	3,154,420	65%
Eggs (Dozens)	7,875,263	9,008,272	14%
Honey (lbs)	478,462	205,773	-57%
Income	**86,016,084**	**101,301,082**	18%

Agriculture export earnings remained stagnant in 2008 at $334 million. Factors responsible for the stagnation were a 19% reduction in sugar exports (from $88 million to $71 million) due to a 20% reduction in unit exports, even though, prices improved by 2%, molasses exports declined by 49% (from $5.5 million to $2.8 million) due to a 49% reduction in unit exports, papaya exports declined by 14% (from $26 million to $22.4 million) due to a 13% reduction in unit exports and 1% reduction in price. Citrus exports decreased by 3% (from $123 million to $118.9 million) due mostly to reduced export earnings for citrus and grapefruit concentrate on account of lower prices for both citrus (orange concentrate price decreased from $21.65 to

$17.61/gallon) and grapefruit concentrate (grapefruit concentrate price decreased from $20.70 to $17.49/ gallon) together with lower unit exports of grapefruit concentrate; unit exports of orange concentrate increased by 21% while unit exports of grapefruit concentrate decreased by 8%. Shrimp export decreased by 6% from $19.7 million to $18.5 million) due to an 8% reduction in unit exports.

Positive export performance was observed on banana exports which expanded from $41.5 million to $65.6 million due to a combination of improved prices (price increased by 25% from $674 to $842/ tonne) and increased unit exports which expanded by 25% from 41,464 tonnes to 65,648 tonnes. Other fisheries exports increased by 13% due mostly to increased exports for conch from $5.3 million to $6.6 million on account of a 23% increase in unit exports, and increased exports of whole fish (mostly tilapia) which expanded from just $400,000 to more than $3.9 million. Lobster exports decreased by 8% from $16.1 million to $14.8 million due mostly to a 2% reduction in unit exports and a 6% reduction in price (price decreased from $35.09 to $32.97/ lb).

Agriculture Export Earnings ($'000)			
Commodity	**2007**	**2008**	**Change**
Sugar	$88,142	$71,384	-19%
Molasses	$5,504	$2,821	-49%
Bananas	$41,464	$65,648	58%
Citrus	$123,121	$118,889	-3%
Shrimp	$19,749	$18,510	-6%
Other Fisheries	$22,749	$25,775	13%
Papayas	$26,074	$22,442	-14%
Other Non-Traditional Prods	$8,164	$9,130	12%
Total	**$334,651**	**$334,597**	0%

1.0 AGRICULTURE DEPARTMENT

1.1 Livestock Program

The livestock industry in Belize continued to show positive trends and this year once more it contributed to the livelihood of thousands of Belizeans. The country was basically self-sufficient in beef, mutton, broilers, eggs and pork to a lesser extent. Pork production is getting back on its feet, once again, as demonstrated by the slight increase in the herds this year. With the recent introduction of improved dairy breeds in the GOB dairy stations by the MAF, it is anticipated that dairy production will increase in 2009. The local market was supplied with all of the commodities; however, there is room for expansion in milk and honey. For beef, pork and mutton the regional market in Mexico will definitely help. In this regard, the MAF will continue to work hand in hand with other partners in support in the areas of genetics and nutrition improvement and in the area of marketing.

With regards to animal health the livestock sector remained relatively free of major diseases, except for an outbreak of Newcastle Disease in Spanish Lookout in poultry flocks. This disease later spread to Central and Southern Belize affecting the backyard poultry. Newcastle affected production of broilers slightly but turkey production was hit the most. Two major tropical storms hit the country last year causing severe losses to livestock including cattle, pigs, sheep and backyard poultry due to flooding rivers and streams. In Belize District the grazing areas for the cattle were under water for months causing a scarcity of pastures thereby reducing animal productivity. Hundreds of acres of pastures were lost. Despite these challenges, there was growth in beef, sheep and egg output.

Breeding stock production from Government of Belize Agricultural (GOB) stations including Yo Creek, Toledo and Central Farm increased. In an effort to continue to improve the genetics of the national herds, beef cattle breeding stocks comprised of six (6) Angus heifers, three (3) Angus bulls and 12 Brahman bulls were imported. Seventeen (17) Holstein heifers were purchased from Spanish Lookout for the improvement of the dairy unit for increased milk and breeding stock production.

Livestock Agricultural Stations

In 2008 the Ministry of Agriculture (MAF) continued to encourage the development of the National Livestock Industry through the continuous supply of improved genetics from Yo Creek, Toledo and Central Farm, Government of Belize (GOB) Livestock Stations. A total of 86 quality purebred Brahman cattle (50 young bulls and 36 heifers) were sold for breeding purpose to cattle farmers across the country from a total breeding cow herd of 105 cows. The supply of breeding stock in 2008 increased over last year by 7.5% despite the reduction of the breeding cow herd at GOB stations by 16.0% due to culling of 20 old non-producing cows. Fifty-two (52) heads of cattle were sold from Central Farm, 28 from Yo Creek and six (6) from Toledo. In an effort to increase the GOB cow breeding herd to meet the ever growing demand for breeding stocks a total of 70 heifers have been selected and introduced in the cow herds to bring up the total to 175 cows in the 2009 breeding season.

At the Livestock Section, Central Farm both dairy and beef units were successful mainly as a result of quality pastures and improved supplemental feeding. Milk production increased this year by 12.5%, from 131,403 lbs. to 147,788 lbs. Conception and calving rates for beef increased by 63.5% and 14.3% respectively. Increased performance for the section caused overall revenue to increase by 20.5% from $95,173.65 to $114,698.85.

Livestock Survey

Based on slaughter figures in the country and in consultation with BLPA and other stakeholders, the livestock sector was able to come up with reliable estimates that shows increased production for beef and sheep and to lesser degree pigs. Pig production went up from 12,403 pigs to 13,146 pigs indicating a recovery by 6.0% mainly attributed to increased market prices and reduced feed prices. Dairy cattle on the other hand went further down this year from 3,914 heads to 3,592 heads representing a drop by 8.2%. However, for beef and sheep production it was positive this year with increases of 11.7% and 2.8% respectively over 2007. Based on production trends the estimated national beef herd reached a total of 81,328 heads in 2008 and the sheep count reached 9,911 heads.

Meat and Egg Production

Livestock products from processing plants for all sub-sectors of the livestock industry showed increases in production for beef and mutton and eggs. Pork production saw a slight decrease by 4.5% from 2.4 million to 2.3 million pounds due to a decrease in numbers slaughtered as a result of the retention of pigs for breeding stock. The negative impact of Newcastle on broilers and turkeys caused a reduction in dress weight production by 5.8% and 82.8% from 29.5 million to 27.8 million pounds and from 0.4 million to 0.06 million pounds respectively. Egg production on the other hand was not affected and recorded a significant increase by 14.4% from 2.9 to 3.4 million dozens. Beef and mutton production increased significantly from 3.6 million pounds to 3.9 million pounds beef and from 52,695 pounds to 67,230 pounds mutton representing 6.1% and 27.6% increase respectively in 2008.

Breeding and Genetic Improvement Program

In 2008 the MAF continued to facilitate the supply of quality-breeding stocks to farmers at affordable prices aimed at increasing production and productivity. Countrywide, a total of 65 cattle farmers purchased 50 bulls and 36 heifers of the Brahman breed from GOB Stations for a value of close to $90,000.00. Of this group of breeding stock 18.6% was sold to cattle farmers in Toledo; this is an indication of the Toledo farmers seriousness in the cattle business.

Twenty (20) old non-productive Brahman cows were culled from the GOB livestock stations to give room for young replacement heifers. As part of the ongoing program for genetic improvement, a total of 70 breeding size heifers have been retained for the upcoming breeding programs. Quality Brahman bulls were selected and placed in their respective cow herds at the stations to improve the genetics of the Brahman breeding stocks for farmers. In addition, through the recent imports of improved genetics from Yucatan, for GOB stations, a set of Angus heifers were introduced to produce breeding stocks of the Angus breed at Central Farm for sale to farmers.

A national bull rental scheme was introduced late in 2008 with the support of the Agriculture Enterprise Development Project sponsored by the European Union. For this purpose 14 quality Brahman and Angus bulls were distributed to their respective stations at Yo Creek, Toledo and Central Farm. So far 10 farmers have benefited from the program with 12 of the bulls providing the service in Orange Walk, Toledo and Cayo Districts. Corozal, Belize and Stann Creek are yet to make use of this important opportunity which is so affordable at a rate of $2.00 per day. The MAF interventions with genetic improvement for beef and dairy cattle are aimed at improving cattle breeds making them more suitable for commercial production to improve product quality.

Livestock Feeds and Feeding

Pasture continues as the most important feed resource for cattle and small ruminants. Pasture improvement and establishment of protein banks formed part of the technological package to improve livestock performance levels. The MAF was instrumental in the establishment of 20 acres of improved grass varieties in 10 small livestock farms in the districts of Cayo, Stann Creek, Toledo, Orange Walk and Corozal. These same 10 farmers established 6 x ½ acre protein banks composed of Mulberry and Nacedero with materials supplied from MAF. Some 1,000 acres were established to improve pastures countrywide which represents a reduction from last year by 33.3%.

At GOB Stations, 40 acres of improved pasture was established and protein banks renovated and improved. In addition, 200 acres of existing improved pastures were fertilized at these stations. At Central Farm 1000 x 50 lb bales of hay were produced from 5 acres of Mombassa grass and two (2) tons of silage were produced to supplement dairy cows and show animals. In addition, 100 molasses-urea blocks were produced and used for beef cattle supplement.

Beef Production

In 2008, both the local and regional beef market demonstrated tremendous improvements over last year. While exports of beef cattle to Guatemala decreased by 9.6%, from 4,670 heads to 4,224 heads, local slaughtering of cattle increased by 6.1% from 7,926 heads to 8,410 heads. However, beef cattle stocks increased by 11.7% from 72,826 heads in 2007 to 81,328 heads for 2008.

Although the majority of beef operations are under the extensive production systems, intensive feeding systems using the semi-feedlot operations are starting to gain more popularity because of the increasing demand for quality beef by the growing tourist industry. However, the use of improved pasture finished beef continues to be the key for developing a more competitive cattle industry for Belize.

Dairy Production

Milk production once again went down but this time by only 1.6% from 6.5 million to 6.4 million pounds. This is an indication that there is an improvement in productivity since the dairy cattle herd experienced another decline in its stocks from 3,914 heads to 3,592 heads representing 8.2% drop in the numbers of dairy herd. Deliveries to Western Dairies Processing Plant also suffered a slight decline by 1.1% from 4.5 million pounds in 2007 to 4.4 million pounds in 2008. At the same time, processing of milk by small scale producers decreased from 2.0 million pounds to 1.9 million pounds which represents a decrease by 4.7%. This shortness in

supply of milk helped to maintain the price for milk delivered at the various processing plants at around $0.50 per pound. The reduction in the price of feed will definitely help to reduce the cost of production.

Poultry Production

Total number of broilers slaughtered in the country decreased from 2007 by 2.0% from 8.5 million to 8.3 million birds although the amount slaughtered by small holdings increased drastically by 136.5% from 6,189 to 14,635 birds. Although there was a drastic increase of slaughtering by smallholders the total amount slaughtered still remained less than last year by 1.9%. This is reflected by the decline in dressed weight which dropped from 29.5 million pounds to 27.8 million pounds which represents a 5.8% drop. The Cayo District maintained the lead in production with 4.6 million birds followed by Orange Walk district with 3.5 million birds. Corozal district slaughtered 209,293 this year compared to 248,306 birds last year. Turkey meat production decreased drastically from a total of 366,049 lbs. in 2007 to 62,762 lbs in 2008 representing a drop by 82.9%. Egg production on the other hand increased this year from 2,949,537 dozens to 3,373,885 dozen eggs, an increment of 14.40%.

Swine Production

Pig prices remained stable at $1.75 per pound live-weight throughout 2008. The national pig population grew by 6.0% from 12,403 heads in 2007 to 13,146 heads this year. However, the total number of pigs processed at the various processing facilities fell slightly from 20,536 heads to 19,603 heads representing a 4.5 % decrease. Total pork output (carcass weight) decreased by 4.5%. There were no exports of pigs this year due to the limited supply and the desire to hold back replacements to expand production. Estimated return per pig (fattener) not including labor and utility and housing costs at the end of approximately 112 days of the growing period is $100.00.

Small Ruminants

As indicated by the 2008 livestock survey results, the national sheep population increased by 2.8% from 9,645 heads to 9,911 heads. This small increase in the sheep herd is the result of the drastic increase in the slaughter of sheep for mutton which increased by 27.6% from 1,171 heads to 1,494 heads. Mutton production, as reported by official processing plants (see section 4) went up likewise. This is indicative of the increased demand for the product at the various eating-houses where mutton is now offered on the menu for locals and tourists. Mutton is also available at the various meat shops countrywide. An additional estimated 25.0% of sheep were slaughtered unofficially for family, friends and for local parties and celebrations.

The Ministry of Agriculture continued to produce quality genetic sheep and goats stock as part of the national effort to improve genetics in this sub-sector. Early in the year a few breeding stocks, five Dorper ewes, one Dorper ram, 5 Boar goat does and one boar goat bucks were procured to introduce in a nucleus herds at Central Farm. Mature rams and bucks were also maintained at Central Farm for rental services to producers in Cayo, Belize and Stann Creek.

Honey Production

The Ministry of Agriculture continued to foster good working relationship with Honey producers and Cooperatives in order to reorganize production and to increase productivity. However, this

year honey production decreased considerable as shown by agriculture statistics by 40.0% from 106,325 pounds in 2007 to 65,945 pounds. According to reports production was affected by the two (2) main tropical storms that hit the country during the year. Orange Walk and Corozal were hit the most causing production to drop by 50.0%. Pollen production was also affected badly as production fell by 48.0% from 625 pounds to 325 pounds. Immediately after the effects of the storm honey beekeepers in Corozal, Orange Walk and Belize were assisted with materials and supplies with support from the BRDP. Due to this intervention beekeepers were put back on their feet as number of hives increased by 4.9% from 1,752 hives in 2007 to 1,837 hives. The process to revitalize the National Beekeeping Council continued but little was achieved.

Training and Capacity Building

Livestock Extension Officers (LEOs) were trained this year in beef cattle production herd management and genetics, health and animal nutrition with support by the Agriculture Enterprise Development Project funded by the European Union. This training to LEOs is expected to strengthen national institutional capacity to provide improved extension services and animal production inputs. In addition, 300 small to medium cattle farmers are expected to be trained under this project; the aim of the Project is to increase beef and dairy production and productivity. The Project is expected to hold at least 10 training sessions for small cattle farmers/producers in the six districts of the Country over a period of 180 days. Through the Belize-Mexico Mixed Commission six (6) LEOs - one per district were trained in vampire bat education and control methods and in sheep management.

Belize Livestock Producers Association

The Belize Livestock Producers Association (BLPA) continued to work hand in hand with the MAF. Workshop and training activities and meetings for farmers were coordinated more effectively this year with the assistance of DACs and LEOs. Dr. Errol Vanzi was re-elected as the Chairman of the BLPA. This makes his second sitting as Chairman. The Coordinator of Livestock Development attended monthly board meetings representing the MAF. BLPA's main target was to seek full autonomy to run the affairs of the association; this year this goal was almost achieved.

Belize Poultry Association (BPA)

The MAF was fully represented in the Belize Poultry Association (BPA) by the Coordinator of Livestock Development. The association worked hard to promote the continued development of the poultry industry. In conjunction with BAHA, the association addressed the issue of poultry health in most meetings, to maintain the industry free from diseases of economical importance.

Pig Council

In 2008, the Pig Council continued to face numerous challenges. The main challenge being to get the council properly organized. So far only a few pig farmers are involved with the decision making and this leads to slow development of the pig industry. However, with the MAF on its side the pig council still chaired by Mr. Ernie Thiessen managed to stay alive. Marketing of pigs including exports were the main areas that the council was involved. Despite the difficulties, the half energized council ensured that farmers are updated and protected especially as it pertains to prices and imports. Thus, the council will need to be strengthened as an organized body in 2009 in order to function effectively for the benefit of pig farmers, as the industry develops.

Belize Agriculture Health Authority
With the MAF assistance, BAHA carried out surveillance for Classical Swine Fever and Avian Influenza. To date Belize maintains free status for Classical Swine Fever. In related information, BAHA announced free status of Foot and Mouth Disease (FMD) as was approved by the OIE in 2008. With the recent outbreak of Newcastle in poultry in the Spanish Lookout area, BAHA moved quickly to stamp out the disease in commercial flocks. However, it spread to backyard poultry and together with the MAF this disease is being addressed.

1.2 CROP PROGRAM

The general performance of the various components of the crops sub-sectors was encouraging despite the challenges. In 2008, the two subsectors that increased in output were bananas and vegetables. The subsectors that decreased in output were sugarcane, citrus, fruits, grains and legumes.

Growth in the crop sub-sector was negatively impacted by Tropical Storm Arthur and Tropical Depression #16. The floods of these two adverse tropical weather systems caused extensive crop damages and losses. This situation was further compounded by a drought that affected the northern part of the country. Another factor that was unfavorable to the crops sub-sector was the high prices of fuel. The high fuel prices increased the cost of production of basic commodities resulting in higher prices to consumers and cost of exports. The gradual removal of preferential prices of sugar and banana also affected these sectors. Pests such as the rice spinki mite, *Thrips palmi* in vegetables and the Monilia disease in cacao continue to pose a threat and needs to be closely monitored and controlled.

The outstanding initiatives of the Ministry in 2008 were the development of an organic programme, introduction of covered structure technology for vegetable production, stock and commercial seed production of rice, sourcing and evaluation of improved lines of rice for spinki mite tolerance and resistance, sourcing and multiplication of bean seed, forage seed production, field trials in onions and head lettuce, establishment of demonstration plots in vegetables and organic production, training of farmers and technical personnel in areas such as Biometry, Integrated Pest Management (IPM), Good Agriculture Practices (GAP), and weed control in rice.

The current challenges that are necessary to address the crop sub-sectors are rehabilitation of roads for greater accessibility to the farms, continued training of technical staff and farmers to keep abreast of technology, foster stronger linkages with the private sector, strengthening R&D to improve crop efficiency, productivity and profitability, greater market access particularly of the non-traditional commodities and further development of grades, standards and certification of crop commodities.

Cereals and grain legumes – Corn, Sorghum, Rice, Beans, Cowpea, Soybean, Peanuts

<u>Status of Cereal and Grain Production</u>

The output of corn decreased 33% from $26.2 million to $17.6 million. The major factors that contributed to decreased output were Tropical Storm Arthur, drought and high fuel prices. As a result, corn production fell 19% from 100 million lbs in 2007 lbs to 82 million lbs in 2008. There was a 9% shortfall in the area harvested from 42,661 acres to 38,874 acres. The yield of milpa corn, however, increased 4% from 1,671 lbs/acre to 1,738 lbs/acre and mechanized 21% drop from 2,352 lbs/acre to 1,860 lbs/acre. In terms of production system, milpa accounted for 25% and mechanized 75%. An estimated 20.1% was white corn and 79.9% yellow corn. Yellow corn was produced in greater amounts to meet the demand of the livestock sector. The wholesale price ranged from $0.20/lb to $0.30/lb.

Sorghum output increased 56% from $3 million to $4.7 million as a result of a favorable market for the crop. The production leaped 56% from 15 million lbs to 24 million lbs due to an 87% increase in acreage harvested, from 7,116 acres in 2007 to 13,325 acres in 2008. Yield fell 16.7% from 2,124 lbs/acre to 1,769 lbs/acre as a result of drought condition experienced in northern Belize. The wholesale price on the market was $0.24/lb.

Paddy output decreased 25% from $8.6 million in 2007 to $6.5 million in 2008. Production dropped 34% from 39 million lbs to 26 million lbs. The negative performance was attributed to losses caused by Tropical Storm Arthur. There was a 9% decrease in the area of rice harvested from 9172 acres in 2007 to 8373 acres in 2008. The main varieties planted were CARDI 70 (milpa and upland mechanized) and Cypress (mechanized irrigated).

R.K. beans exports expanded 20% from $2.8 million in 2007 to $3.5 million in 2008 due to a 2% increase in unit exports and a 17% improvement in export price. Bean output was impacted negatively by adverse weather conditions and as a result production dropped 10% from 10.1 million lbs in 2007 to 9.1 million lbs in 2008. Yields declined 15% from 758 lbs/acre to 639 lbs/acre. The acreage harvested increased 3% from 13,343 acres in 2007 to 13,706 acres in 2008. Black bean is informally exported to Guatemala via Toledo. The main varieties of beans produced were the Light California Red (R.K. bean) and ICTA Ligero (black beans). The wholesale price for R.K. beans ranged from $1.25-$2.00/lb.

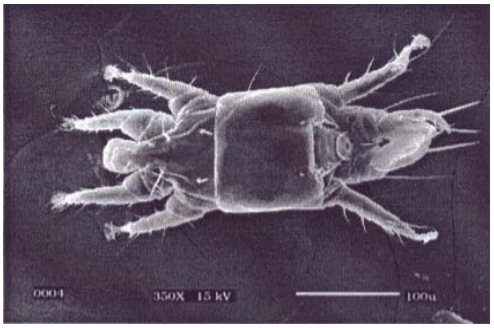
Black eye pea exports expanded from $3.5 million to $4.0 million (12% increase) due to 16% improvement in export price. Production leaped 24% from 5.4 million lbs in 2007 to 6.8 million lbs in 2008. Yields increased 5% from 939 lbs/acre to 988 lbs/acre due to unfavorable weather conditions. The acreage harvested rose 18% from 5,790 acres to 6,842 acres. The main variety planted was California #46.

The production of soybean was affected by drought and as a result production fell 93.5% from 831,200 lbs to 54,000 lbs. The yield declined 29.8% from 1,710 lbs/acre in 2007 to 1,200 lbs/acre in 2008. The acreage harvested dropped 90.7% from 486 acres in 2007 to 45 acres in 2008.

Peanut output increased 1.6% from $374,370 to $380,625. Production increased by 2% from 0.215 million lbs to 0.219 million lbs. The yield fell 2.6% from 1,225 lbs/acre in 2007 to 906 lbs/acre in 2008. The acreage harvested expanded by a remarkable 37% from 176 acres in 2007 to 242 acres in 2008.

Achievements in Cereals and Grains in 2008

Rice Spinki mite



The Spinki mite is a pest of economic importance that poses a serious threat to rice production in the country. The mite was first detected in the rice fields in the Orange Walk District in 2007 and, thereafter, in the Toledo District in 2008. The Ministry in collaboration with the BAHA and the rice producers embarked on a series of measures to control the pest. In the first instance, BAHA conducted an annual survey to monitor the movement of the spinki mite in other areas of the country. Apart from this initiative, MAF evaluated 63 lines of rice for tolerance/resistance to the mite (in Blue Creek, Orange Walk). Moreover, 60 rice producers were trained in proper techniques to detect, identify, and control the mite. As a result of all these measures, rice producers are now better prepared to control the mite, thus minimizing crop losses.

Rice Seed Production

This year the Ministry produced a total of 15,020 lbs of rice stock seed at Central Farm. Of the overall amount, 64% or 9,620 lbs was CARDI 70 variety, 18.6% Taichung-Sen 10 variety and 17.4% Cypress. The Taiwan Technical Mission (TTM) was provided with 2,000 lbs of stock seed of CARDI 70 variety for commercial seed production. At Poppy Show, Toledo the Ministry in collaboration with the TTM reactivated the production of commercial seed. The plan is to produce 80,000 lbs of commercial seed of CARDI 70 to partially meet the demands of farmers in the Toledo Districts.

Rice and Bean Germplasm

Sixty lines of rice were sourced from the International Rice Research Institute (IRRI) in the Philippines. These introductions are being evaluated for drought tolerance. The aim is to find a complementary variety to CARDI 70 for milpa and upland mechanized system. In regards to beans germplasm, 97 lines of small red and black beans were sourced from Honduras (20), Colombia, (66), Mexico (2), Guatemala (1) and locally (8). Samples were provided to CARDI for field evaluation. Central Farm multiplied the seeds

germplasm sourced from Zamorano in an effort to accelerate the production of promising varieties.

VEGETABLE CROPS

Cabbage, Tomato, Sweet Pepper, Lettuce, Celery, Broccoli, Cauliflower, Squash, Pumpkin
The production of most vegetables increased as a result of a strong demand on the local market. Cabbage production grew 23% from an estimated 3.2 million lbs in 2007 to 4 million lbs in 2008 as a result of a 3% increase in yields (from 24,978 lbs/acre in 2007 to 25,779 lbs/acre in 2008). Sweet pepper production had a 3% decrease from 1.1 million lbs in 2007 to 1.0 million lbs in 2008. The production decrease was due to a drop in acreage (3% drop from 86.8 acres to 83.8 acres). Tomato production decrease 11% from 1.6 million lbs to 1.4 million lbs. The decrease in tomato production was due to drop in acreage. The yield fell slightly by 1% from 17,993 lbs/acre to 17,766 lbs/acre.

The production of the non-traditional commodities experienced mixed performance. Lettuce production decreased 30% from an estimated 0.5 million lbs in 2007 to 0.3 million lbs in 2008. Yield of this commodity fell by 0.4% from 26,267 lbs/acre to 26,148 lbs/acre. The production was negatively impacted by adverse weather conditions due to Tropical Depression #16. The production of broccoli increased 41% from 22,900 lbs to 32,354 lbs. The yield rose 14% from 9,589 lbs/acre to 10,930 lbs/acre. Cauliflower production decreased by 19% from 32,700 lbs to 26,545 lbs and the yield increased 17% from 11,301 lbs/acre to 13,273 lbs/acre. Celery production fell 37% from 124,950 lbs to 78,850 lbs and the yields increased by 3% (from 34,139 lbs/acre to 35,044 lbs/acre).

Squash production increased from 122,500 lbs in 2007 to 302,023 lbs in 2008 as a result of a greater demand on the market. The average yield per acre soared by 13% from 4,537 lbs/acre to 5,119 lbs/acre. The increase was attributed to better field management. The acreage harvested increased from 27 acres to 59 acres. In terms of pumpkin, the production increased from 114,000 lbs to 246,264 lbs. The yield of this commodity fell by 27% from 6,333 lbs/acre to 4,625 lbs/acre as a result of fungal diseases (mildew).

Achievements on Vegetables Production

<u>Seedling Production</u>
A total of $11,300 was generated from the sale of 25,300 vegetable seedlings to farmers from Central Farm. In respect to the ISFP FAO Project, the Research & Development Center signed a contract of BZ $13,166 with the Food and Agriculture Organization (FAO) to produce 71,500 assorted vegetable seedlings. The seedlings were provided to small poor farmers to mitigate the effects of soaring food prices.

Demonstration Plots

Ten demonstration plots of vegetables were established at Central Farm with the purpose of showcasing improved technology to farmers (varieties, irrigation, agribon and plastic trellis). Some 500 clients (students and farmers) visited the demo plots throughout the year.

Research

Seventeen varieties of onion and nine varieties of head lettuce were evaluated at Central Farm. The aim is to find suitable varieties with the desirable characteristics (i.e. high yielding, high degree of tolerance or resistance to pests and diseases and the culinary quality demanded by the market). The results of the findings will be presented to stakeholders upon completion of the trials.

Support to Districts

The Ministry provided materials and technical assistance for the construction of nine covered structures for the production of vegetables. The beneficiaries were Escuela Secundaria Mexico, The Santa Familia Grain and Legume Cooperative, the San Antonio Women Group (Cayo) and the San Jose Farmers Group (Orange Walk). In addition, MAF supplied 206 harvesting crates to 20 low income farmers. As a result of these interventions, the beneficiaries are producing a better quality product for the market and generating valuable income.

SPICES - Hot Pepper, Onion, Ginger, Annatto

Hot Pepper

Hot Pepper is one of the priority commodities that the Ministry and private sector has great interest in further developing due to its export market status. This year, the Ministry supported the production of seed through CARDI. As a result 10 lbs of seeds of the varieties CARDI Green, CARDI Red and Yellow Scotch Bonnet were produced. Central Farm was actively involved in this venture and through an agreement delivered 83 lbs of fresh fruit to CARDI for seed extraction. The Ministry also trained 40 existing and new producers to improve field management to produce better fruit quality. Furthermore, the database of hot pepper producers was updated. The Ministry also continued to lead the way by chairing the Hot Pepper Steering Committee. This Committee met three times last year namely to address issues such as production, market, research, seed production and training. At the end of 2008 there were four buyers in the country namely Marie Sharp, Circle C, Hot Mama and Chilly Willy.

Onion

Onion is one of the commodities of great economic importance to farmers from the northern part of the country. The production of this commodity generates employment and valuable income to some 100 farm families in rural communities. As a result of its economic importance, the Ministry supported farmers from Corozal district by providing a tractor to assist in land preparation during the planting season. Fifty farmers were trained in insect pest and disease management. Moreover, the database of onion farmers was updated. In regards to the performance of onion, output leaped $1.2 million to $2.6 million due to an increase in production of 129% from 0.9 million lbs in 2007 to 2 million lbs in 2008. Yields grew 43% from 12,541 lbs/acre to 17,976 lbs/acre. The production of this commodity increased as a result of attractive prices in 2007. The yields rose due to good field management (good weed, pest and disease control). The average wholesale price per lb was $0.55. The main varieties produced were Ada, Mercedes and Basic.

Ginger

The production of ginger is centered in the Southern districts. The main types grown are the white and yellow ginger. The main buyers of this commodity are Bel-Cuisine and Traveler's Ltd. Central Farm collected planting materials of the two types of ginger for seed multiplication. Ginger production increased 171% from 34,000 lbs to 92,263 lbs as a result of a strong demand on the market. Yields rose 20% from 4,847 lbs/acre in 2007 to 5,839 lbs/acre. The increase in yield was due to good field management. The wholesale price was $0.75/lb.

Other Spices

Annatto production increased by 29.7% from 83,400 lbs to 108,200 lbs. Yields increased 19.2% from 1,334 lbs/acre to 1,591 lbs/acre. The wholesale price was $0.75/lb. The increase in production of annatto was due to a favorable market. The yields were higher as a result of better field management. The main variety grown is the hybrid. The primary buyer of annatto is Bel-Cuisine.

ROOTS & TUBER CROPS - Cocoyam, Cassava, Sweet Potato, Yams, Irish Potato & Carrots

Cocoyam

The production of cocoyam grew 7% from 343,920 lbs in 2007 to 368,600 lbs in 2008. In terms of accomplishment in 2008, Central Farm along with the Extension Service trained 30 farmers from the Corozal District in proper field management of cocoyam. As a result of this training, farmers are now properly managing the fields thus producing higher yields and a better quality crop.

Cassava

Cassava is one of the main root crop commodities of great economic importance to small farmers from the Stann Creek and Toledo Districts. Cassava production fell 7% from 721,630 lbs to 669,750 lbs and the yield of cassava dropped sharply 22% from 15,354 lbs in 2007 to 11,960 in 2008. The decrease in production was due to unfavorable weather conditions. This year Central Farm established a small germplasm bank of cassava from material collected in the Stann Creek District. The five varieties of cassava collected were Rasta, Bitter Panama, Blue Bird and White.

Sweet Potato

Sweet potato is grown by small farmers for home consumption. This year the production of sweet potato increased steeply from 50,750 lbs in 2007 to 138,650 lbs in 2008 and the average yield rose 7.6% from 7,808 lbs/acre to 8,403 lbs/acre. The increase in production was attributed to a favorable demand on the local market.

Irish Potato

Irish potato production rose 77% from 1 million lb to 1.9 million lbs. The yields increased 71% from 6,796 lbs/acre to 11,655 lbs/acre. This was primarily to low incidence of disease, good quality seeds planted and weather conditions were favorable for the crop. The main accomplishment in 2008 was the construction of a potato storage unit at San Antonio, Cayo District. The purpose is to demonstrate proper storage technology to farmers to reduce post harvest losses. The construction of the structure was funded by the FAO – Telefood Project. The main variety of potato produced was the Red Lasoda.

Carrots

Carrot is one of the non-traditional commodities that are produced mostly by small farmers from the Cayo District. This year carrot production increased 2% from 452,952 lbs to 463,700 lbs; however, yield dropped 4% from 8,530 lbs/acre in 2007 to 8,207 lbs/acre in 2008. The wholesale price per lb on the local market was $0.50. The main varieties produced were Royal Cross, Koruda and Brazilia.

Other Yams

The production of other yams such as yampi, water yam, negro yams and Chinese yams drop from 263,392 lbs to 162,300 lbs. The yields however, decreased 27% from 10,329 lbs/acre to 7,514 lbs/acre. Yams are produced by small farmers for food security purposes. The wholesale price of these yams on the market was $0.75/lb.

FRUIT CROPS – Pineapple, Plantain, Banana, Pitahaya, Watermelon, Canteloupe

Pineapple

The Citrus Products of Belize Company Ltd (CPBL) is demanding 8 million lbs annually of the Smooth Cayenne variety. This year farmers received 17 cents per pound for Smooth Cayenne and 15 cents per pound for Sugar Loaf from CPBL. Sugar Loaf variety is not desirable for processing into concentrate. To cope with this situation, MAF will import 120,000 Smooth Cayenne seeds from Mexico. The seeds will be multiplied at the Stann Creek and Central Farm Agricultural Stations and provided to farmers. MAF maintained a 1-acre plot of MD2 pineapple; the planting material was imported from Honduras in 2007 for field testing and eventual seed multiplication; the pineapple fruits are bearing and culinary testing is being conducted to determine the acceptability of this variety for the fresh market.

Plantains

MAF provided 8,000 plantain seedlings of the d
Dwarf Curare variety to the Sarteneja Farmers Group and has ordered 28,000 seedlings from Honduras to supply the Chunox Plantain Group for seed multiplication. The plan is to establish at least 50 acres to achieve production consistency of one shipment per week for the export market. The Ministry also established a seed multiplication plot of dwarf curare at Central Farm to supply other farmers with planting material. In the course of the year 50 farmers from the Corozal District were trained in plantain production. As a result of these initiatives, farmers are in a better stance in developing plantain for export.

Banana

The Banana sector has been receiving assistance from the EU to improve the competitiveness of this commodity on the export market. Assistance is being provided in areas such as drainage, irrigation, agro-inputs, planting materials and training. Banana exports grew by 58% from $41.4 million to $65.6 million. Growth in the banana sector came from a 26% growth in output and a 24% price improvement.

Pitahaya

The Pitahaya Growers Association continues to expand production from 7 acres to 12 acres to supply local demands. The present yields are about 10,000 lbs per acre on young 4-year old plants. The average price at the market is $2.00 per pound for the fresh fruit. The plan is to export; however, the amount of acreage is insufficient as yet but preparations are underway to

expand. The pest risk analysis is being worked out with the Belize Agriculture Health Authority (BAHA) to prepare for possible export to United States.

Watermelons & Cantaloupe

The production of watermelon remained constant at 2.5 million lbs in 2007 and 2008. The yield per acre slightly decreased 9% from 14,564 lbs to 13,218 lbs. The main variety planted was Top Yield. The wholesale price was $0.30/lb. The value of this commodity in 2008 was $0.8 million. The Cayo and Corozal districts produced 84% of the crop. The production of cantaloupe decreased 20% from 638,350 lbs to 508,833 lbs. The crop was affected by Downy Mildew resulting in decreased production. A total of 43 acres were harvested and the yield per acre was 11,833 lbs. The main variety produced was the Oro Duro.

TREE CROPS – Citrus, Papaya, Coconuts, Avocado, Soursop, Cashew

Citrus

Citrus exports decreased by 3% due to a 19% reduction in price for orange concentrate (from $22 to $18 per gallon), an 8% reduction in unit exports of grapefruit concentrate and 16% reduction in price for grapefruit concentrate (from $21 to $17 per gallon). Production soared 7.7% from 5.2 million boxes in 2007 to 5.6 million boxes in 2008. The total export earning of citrus in 2008 was $118.9 million. The main threat to the sector is citrus greening.

Papaya

Papaya exports decreased from $26 million to $22 million (14% reduction) due to a 13% reduction in unit exports. Production of papaya fell 16% from an estimated 71 million lbs in 2007 to 59.5 million lbs in 2008. Production decreased as a result of damages caused by Hurricane Dean in 2007 and Tropical Depression #16 in 2008. The industry was also negatively impacted by high fuel prices which resulted in higher cost of production. The main producers of papaya are Fruta Bomba, Little Belize Exporters Ltd., Triple J and Maya Papaya. The main varieties produced for export is Tainong and Maradol.

Coconut

The coconut industry is slowly recovering after the devastating loss of most of the trees during the early 80's due to lethal yellowing and red ring disease. The main pest is the palm hopper (*Myndus crudus van duzee*) that transmits the plasmodium disease called lethal yellowing. The coconut hybridization program produced 6,000 Maypan hybrids and another 3,000 Yellow Malayan Dwarf seedlings. The Ministry of Agriculture program in Central Farm provided farmers with training in improved management of their fields, disease and insect identification and methods of control. The importation of pheromone lures to attract the

coconut weevil into traps and baiting the traps has great success in controlling the weevil hence reducing incidences of red ring disease in the coconuts. A total of $42,109 was generated from sales in 2008.

Avocado

Avocado is a crop with high market value. The effort of the Ministry of Agriculture to extend the time of production has been very successful as over 1200 seedlings of avocado of the early and late local varieties were propagated in three of the four major nurseries. These plants were sold to farmers throughout the country. The demand for avocado seedlings has been rising as more people become aware of the program initiatives.

Sour sop

Sour sop production has been a steady decline due to poor management of the pests and diseases in this crop. The selection of new varieties has proven successful in the Cayo District and established as an expansion effort to meet the high demand for this crop. The wholesale price was $2.00 per pound.

Cashew

The local demand of cashew is about 60,000 lbs. This demand is not being met by local producers and as a result some of the commodity is imported from Guatemala. The retail price of locally grown roasted cashew was $15.00 per lb. The Cashew Producers Association continues to be dormant although great efforts have been made by some members to revive it.

INDUSTRIAL CROPS – Sugarcane, Cotton, Cacao

Sugar

Sugar export accounted for $74.2 million. Sugarcane production fell by 18.6% from 1.2 million long tons (LT) in 2007 to 1 million LT in 2008. The decline in sugar production was due to crop damage caused by floods from Tropical Storm Arthur and drought conditions. The main achievements this year was the evaluation of 30 lines of sugarcane that were sourced from Cuba by the Sugar Industry Control Board (SICB). Moreover, SICB was involved in a programme to control the froghopper biologically. The roads on the sugar belt are being rehabilitated by funds provided by the European Union.

Cotton

The main producer of cotton is a Japanese businessman from the Orange Walk District. The type of cotton produced is the Sea Island. The production in 2008 was 200,000 lbs and the yield was 1,000 lbs/acre. The production and yield remained unchanged to the 2007 figures. Cotton is exported to Japan at BZ$10/lb.

Cacao

Organic cocoa production increased 102% from 54,773 lbs in 2007 to 110,515 lbs in 2008. Yields dropped from 721 lbs/acre to 427 lbs/acre during the same period. The decrease in yield is due to damage caused by the Monilia disease. The Toledo Cacao Grain Association (TCGA) trained farmers in proper field management in an effort to control the Monilia disease. This commodity is exported to Europe by the Green & Black Co. under the Fair Trade Brand.

Organic Production

In 2008 MAF consolidated the development of the organic programme at Central Farm. A total of 100 lbs of California earthworms were produced. Of this amount, 66 lbs were donated to schools and organic producers and 34 lbs were sold to generate revenue to sustain the programme. In addition, 21,000 lbs each of humus and compost, respectively, were produced and used for the production of organic vegetables. MAF also established seven organic vegetable demonstration plots throughout the country. In terms of training, over five hundred persons were trained in organic vegetable and fruit crop production. Most of the participants were youth and women groups from the rural areas. As a result of these initiatives, there are now sixty new producers involved in organic farming in the country. Furthermore, information was developed on vermiculture, composting, bio-fertilizers and bio-pesticides. This information is readily available at Central Farm and at the Agriculture Department in the districts.

1.3 Agro-processing

For the year 2008, the Agro-processing program focused on product research/ development, production of dried fruits for the school feeding program, and the construction of a multi-service incubator facility in Central Farm, provided technical assistance for the construction of a cohune oil processing facility in the Belize District together with the construction of a pineapple processing center for the Stann Creek District. These investments are in the respective districts.

In 2008, the National Agro-processing Development Program, provided trainings in the districts for farmers, producers, agro-processors, and extension officers, to develop and increase locally produced products. More than forty women in different groups, received training in product development with a market lead approach on quality control and packaging/labeling in order to improve shelf life and to increase marketing of products. It has been identified that most of our

locally produced products need improvement in packaging and labeling providing nutritional information on the product. Therefore, the Ministry of Agriculture invested more than one thousand, five hundred dollars in graphics, label designs and on a first stock of three thousand labels for each product, to improve marketing of locally produced products in the districts. The labels provided were used on plantain chips processed by Mr. Pot in Chunox Village in the Corozal District and on local wines processed by Mrs. Molina in Hidden Spring Valley in the Cayo District.

Specific agro-processing trainings were facilitated on manufacturing of jams and jellies, Belizean Salsa Casera, Cacao Chocolate bar, wines, vinegars, soybean milk, pickles and baked products in the different districts. Technical assistance was provided along with packaging materials such as plastic bags, plastic bottles and jars as an incentive for future investments. Trainings were facilitated by the Ministry of Agriculture Agro-processing Coordinator and Technicians in collaboration with the ROC, Taiwanese Technical Mission, Central Farm, BAHA, and other partners in development.

All workers involved in the production of dried fruits from ITVETs in Corozal and Toledo District and workers from the packaging lab in Central Farm received training on all aspects concerning food safety standards, record keeping and quality control. Training was facilitated by Ministry of Agriculture staff (Coordinator, F.O. A.O), BAHA, ROC and the health inspector from the Cayo district.

As part of the support to other Agro-processing projects, the Agro-processing Program of Central Farm, has participated in the design and planning for the construction and set up of a processing facility for cohune oil and pineapple products and bi-products in the Belize district. It is expected that these facility will reduce surplus raw materials, wastes or bi-products and will contribute towards increase incomes.

Research and Development

Research and Development in Agro-processing is a very important component in the Food Processing Industry. Belize imports a wide variety of processed products which can be manufactured here in the country. Furthermore, most, if not all, of the products imported, contain high quantities of preservatives and many harmful chemicals. Belize lack food processing factories, therefore, there is great opportunities for the development of the Food processing Industry in the country. To cut down on importation does not only mean saving in foreign exchange but also growing a healthier population for the country as a result of consuming more fresh, and locally produced products.

Research on Cacao Chocolate Powder commenced in 2007. The product was formulated and mixed with other ingredients to make the instant cacao chocolate powder. It was presented to several persons who suggested it needed adjustments in the taste and texture. The Cacao Chocolate Powder test needs to be repeated and modified along with a market test survey. The market test survey will show acceptability and shelf life of final product which will aid to establish cost of production.

Another product under research and development is the formulation and manufacturing of peanut butter which was done for the San Antonio women's group in the Cayo district. After the research and development was completed the San Antonio Women's Group was trained on the methodology and formulation of peanut butter. The ROC, Taiwan Mission from Central Farm has facilitated two trainings in San Antonio Village. Since the women's group in San Antonio Village in the Cayo district has shown high interest on the manufacturing of peanut butter, the Ministry of Agriculture has assisted them with a set of basic tools such as one whole industrial stove, one blanching pot, a stainless steel dipper, a stainless steel paddle, a pulse sealer and a stock of four boxes of jars for packaging of final products. It is expected that the materials provided to the San Antonio women's group will allow them to continue the manufacturing of peanut butter. The funds gathered from the jars should help as a revolving fund to continue purchasing packaging materials for their products.

The ROC, Taiwan Technical Mission has developed different types of baked products. The exercise has served also for training Central Farm food processing technician and workers. All this research has been documented by the agro-processing program which will lead to the development of a Processing Manual. The Manual is expected have thirteen (13) recipes along with manufacturing directions and should be edited and published by the beginning of 2009/2010 fiscal year to be displayed at the National Agriculture and Trade Show 2009.

National School Feeding Program

The production of dried fruits for the school feeding sub program is one of the main activities in the Agro-processing program. The production of dried fruits takes place in two stations. One station is at ITVET, Corozal District, and the other station is at ITVET, Toledo District. The final products are then transported to Central Farm for its final packaging in packet bags. Each pocket contains an Average of 45 grams of mixed dried fruits (papayas, pineapples and bananas). A new stock of four hundred and fifty thousand pieces of new PPE printed plastic bags has been purchased from Taiwan for the packaging of the dried fruits for the School Feeding Program. The size of the printed bags was reduced, compared to the original size of the bags, since content was reduced from sixty grams to forty five grams.

For the year 2008, a total of two hundred and sixty nine thousand (269,000) packets of dried fruits were produced by the two processing stations which were then packed at Central Farm. There is a reduction of about ten percent compared to the production of dried fruits in 2007. The reduction in production of dried fruits for the period 2008 is largely due to high labour turnover.
At Central Farm the Agro-processing team managed to prepare a total of three hundred and fifty thousand (350,000) packets of dried fruits. Besides packaging of dried fruits, Agro-processing workers and few technicians are also involved in Product Research/ Development and also in providing training.

1.4 National Extension Service

Overall the year 2008 was a tough one for the Extension Service as well as producers. The adverse weather condition was overwhelming. In Stann Creek, the agriculture station was devastated by flood waters. Other districts were also affected to a lesser extent. This stretched

personnel and resources very thin, resulting in many planned extension activities being left incomplete, delayed or deferred to a later date.

The Extension Service continued working diligently with farmers and farming communities throughout the country. The main focus was capacity building, information dissemination, assisting with the implementation of projects and facilitating producers. During 2008 the Extension Service accomplished the following in the respective areas:

Capacity building and trainings:

1. A training seminar in trade and trade related issues was carried out for thirty-four participants including Extension officers with the technical assistance of the Ministry of Foreign Trade.
2. The District Agriculture Coordinators underwent a four-day training course in strategic planning, log-frame and development of workplans.
3. Extension officers also received training in the use of Microsoft office and statistical field data collection with the assistance of MAF statistical unit and through a TCPF Statistic project.
4. Extension officers throughout the country carried out or organized numerous trainings for more than 400 farmers viz. pasture management, vegetable production, swine management, grafting, basic soil management techniques, drip irrigation technology, nursery management, protective covered structures, organic fertilizers, control of coconut palm weevil, livestock/apiary management.

Figure 1 Training with farmers

5. Five Extension officers attended short courses in soil analysis interpretation, leadership skills, economic performance benchmarking, post-harvesting, bee-keeping and organic agriculture. These trainings were made possible through support from OIRSA, PACT, RUTA, IICA and BELTRAIDE.

Figure 2: Nursery mgnt training

Public awareness, communication and information

1. In this area, three district field days in Cayo, Belize, Orange Walk were conducted to promote agricultural activities of the respective districts.
2. Extension organized and supported promotion and visibility of agriculture viz. through twenty-four radio talks "Growing Belize", ten television talk shows and participated actively in Public Service Day, Chan Pine Ridge Fair and the National Agriculture and Trade Show 2008. The latter included organizing the farmer of year competition and the crop display competition at the Show.
3. Extension collaborated with the Agriculture Enterprise Development Project, to publish an agriculture calendar 2009.

Fig. 3 Exhibits at NATS

Fig. 4 Cayo field day

4. Through the Information Unit of MAF, the Extension Service compiled brochures and factsheets for important commodities and disseminated them.
5. All districts carried out extensive livestock surveys for cattle, pigs, small stocks and pasture.

Institutional strengthening/technical support to producers

1. The Extension Service through the Drainage and Irrigation Unit provided technical support for building protective covered structures – viz. four agribon structures, two "greenhouses", provided guidance in setting 10 small scale irrigation systems to grow sweet pepper, tomato and other vegetables in four districts.

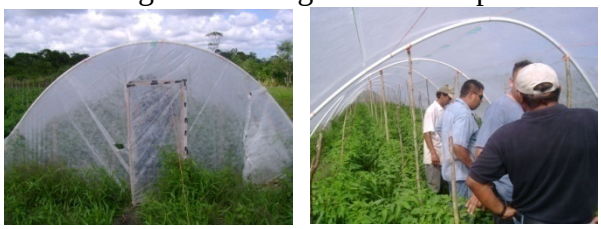


Fig 5: Agribon protected structures to grow vegetables

2. The Extension Service was recipient of three pedestrian rotortiller tractors received through the Agriculture Enterprise Development Project. With these tractors, at least twenty small farmers were assisted with secondary tillage. In Toledo, the Extension Service with the assistance of the ROC Taiwanese Mission has used these tractors to prepare ten acres of land for irrigated rice seed production. Extension organized and coordinated among farmers land preparation for eight hundred acres of land for production and harvesting of over one million pounds of paddy rice.

Fig. 6: Land prep. with rotortillers

3. Extension implemented the FAO Telefood Beekeeping project for the Santa Martha Women's group in the Cayo District. Through this project, tools and other inputs were provided to the women's group. Similarly, through the GEF/SGP project, Extension coordinated the acquiring of materials to build fruit tree nursery in the Belize River Valley and train farmers.

Networking, linkages and developmental activities

1. As a result of the rising prices in food/agriculture inputs, the FAO Initiative for Soaring Food Prices project provided US$ 250,000 in agriculture inputs to bona fide, needy farmers. The Extension played a leading role in identifying beneficiaries and in the distribution of inputs that included seeds, seedlings, agro-chemicals, organic materials, small stock, and equipment to over 1000 farmers in all six districts.
2. As a result of Tropical Storm Arthur and Tropical Depression #16, many farming communities suffered serious agricultural losses due to flooding and strong winds. Extension carried out agricultural damage/ needs assessments. Then it distributed agro-inputs and other assistance to affected farmers.

3. Through the FAO TCPF project for Extension, a TCP project was developed for funding through FAO. This project aimed to modernize and strengthen the National Extension Service to better address the needs of the farming community. Approval is still pending.
4. The Extension Service in collaboration with District Development Committees assisted with numerous field monitoring and evaluations of small grant projects and micro-grant projects funded through the BRDP project.
5. Extension also provided representation on various committees and projects viz. Caribbean Climate Change Committee, National Food Security Commission, NEMO/DEMO, Agriculture Enterprise Development for Rural Belize, National Water Sector Adaptation Strategy, Sustainable Land Management Project, Disaster Risk Mitigation Project, NATS, World Food Day, and Conscious Youth Development Programme (CYDP) among others.

1.5 Projects

As part of the ministry's strategy for increased efficiency, economic and environmental sustainability in agricultural systems, seventeen projects were implemented or initiated with assistance from MAF's partners in development during 2008. With support from the European Union MAF continued the implementation of the Belize Rural Development Programme, under which it secured funding in partnership with UNDP for a $3m Agriculture Enterprise Development (AED) project. With the establishment of its project management unit in June, implementation of the AED's crop and livestock value chains got under way with the procurement and deployment of breeding bulls for small farmer rental service, establishment of complementary livestock support services, and the strengthening of MAF's irrigation unit and extension service with equipment and training. Other activities included the preparations for, or conduct of irrigation and other agronomic technology services, micro-propagation, agro-processing and slaughter facilities, a market intelligence system, a quality policy/plan, an agriculture information calendar and capacity building for farmers.

The EU funded Banana Support Programme (BSP) continued with the preparation of the final SFA 2008 which complemented SFA 2007 with its focus on improving educational facilities in the banana belt communities. The competitiveness component of the BSP was supported with irrigation equipment, fungicides, new vehicles, technical assistance to the banana industry for improved nutrition, nematode control and environmental monitoring practices, and the preparation of contracts for the supply of fertilizers and more meristem plants. The rural development component was supported through micro-credit assistance and the construction of water systems, health clinics and primary schools.

The other major EU funded project, the Accompanying Measures for Sugar Protocol Countries (AMS) continued with the preparation of another financing agreement, AMS 2008, and execution of activities under AMS 2007. These included upgrading of sugar roads infrastructure, continuation of strategic studies to inform program interventions, plans for institutional strengthening of the farmers' associations, and awarding of a grant for economic diversification of farmers within the sugar belt.

The following describes FAO projects. In response to the sudden escalation of food and agriculture input prices in early 2008, FAO requested submission for a TCP called the Initiative on Soaring Food Prices (ISPF), which was immediately funded. The ISFP, a one year project for US$250,000, gave agriculture input support for crop and small livestock production for farmers throughout the country. Another TCP, Improved National and Local Capacities for Hurricane and Related Disaster Mitigation, Preparedness and Response in the Agriculture Sector was approved and signed by mid-year. This project had been submitted in the wake of hurricane Dean in late 2007. MAF's organic development programme was assisted by a Cuban expert in organic production recruited under the on-going South-South TCP. Four projects under the special TCP facility (TCPF), for improvement of agricultural statistics, strengthening of the cooperative department, strengthening of the agricultural extension service, preparedness for citrus diseases and market assessment for tilapia were approved and implemented. One of three Telefood proposals submitted in late 2007, Beekeeping for income generation for women and youth, was approved and implemented, whilst the other two in sheep rearing and vegetable gardening remained pending. Three other Telefood projects, crop and small animal production at Escuela Mexico, organic vegetable production and farm level potato storage, both in the Cayo district, were started in 2007and continued throughout 2008.

To expand the organic vegetable production activities originally funded through Telefood, another proposal entitled "Development of Belize's Organic Vegetable Industry for Income Generation" was approved by IDB to the tune of US$15,000. MAF's national organic coordinator was assigned as the project coordinator to work closely with BOPA for the execution of this project.

In response to a request from the Conscious Youth Development Programme, a project proposal was prepared for one of it's at risk groups, Youth Uprising, to engage in agriculture production at a designated site in Rhaburn Ridge, Belize district. By year end project activities to involve bee-keeping, tilapia and vegetable production were initiated with funding received from GoB along with support approved from the AED project.

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1.6 Accompanying Measures for Sugar (AMS) Programme in Belize

- Financing agreement AMS 2007 for an amount of Euro 6.0 M (approximately16.8 M BZD) approximately was signed by the Government of Belize and the European Union.
- Distribution of one thousand one hundred and thirty (1,130) metric tons of 18-5-20 fertilizer valued at Euro 0.41 or BZ$ 1.02 million to the cane farmers of the Belize Sugar Cane Farmers Association to assist with damage caused by hurricane Dean in 2007. The amount distributed was equivalent to twenty two thousand six hundred bags of fertilizer.
- Signed a contract valued at Euro 230,000 (approximately 644,000 BZD) with the La Inmaculada Credit Union for the implementation of a diversification project in the sugar belt which will benefit small and medium sized businesses in agriculture and non-agricultural business ventures. Funds will be disbursed as grants to income generating and potentially sustainable projects.
- A diversification study was conducted to determine potential products and services which can be supplied to export markets in order to generate foreign exchange earnings. A second

component of the study was to analyse the preparedness of local governing bodies to determine their needs and implement programmes to address needs.

- Support was provided to the Belize Sugar Cane Farmers Association (BSCFA) in (1) assessing its institutional strengthening and capacity building needs and in (2) developing a strategic plan to address critical reforms resulting from the erosion of sugar prices in the EU market. These reforms are necessary for the survival of the sugar industry in Belize and to maintain a good standard of living for citizens who depend on the sugar industry.
- Rehabilitation of sugar roads: (1) entrance to Guinea Grass on the Northern highway to Camp 1 in Shipyard, (2) from the entrance to San Pedro on the Northern highway and exiting in Chan Chen on the Northern Highway (also known as Remate), (3) from Tower Hill on the Northern highway to a junction of the Yo Creek to Orange Walk road and (4) from Mameyal on the Northern highway to San Roman. Two more roads which have been contracted and will be completed in March are San Pablo on the Northern highway to Douglas and Yo Creek to San Antonio.
- Consultations were held with sugar and non sugar stakeholders in both Orange Walk and Corozal districts to determine which roads in the sugar belt should be given priority for rehabilitation and surface dressing taking into consideration agricultural, commerce, education, health, natural disaster emergency and tourism needs. On this basis Cabinet made a decision on roads that would be surface dressed and rehabilitated with the EU sugar programme. The approximate investment for roads and infrastructure for the AMS programme during the period 2006 to 2013 is Euro 27 million.

2.0 BELIZE FISHERIES DEPARTMENT

The Fisheries Department continues to be successful in achieving its overall mandate. Critical assessments necessary for the sustainable management were carried out successfully to ensure the efficient management of its fisheries resources. The Department did see an increase in its budgetary allocations; however, insufficient monies were allocated to support new development initiatives such as the diversification of the fisheries sector into new commodities and the development of an inland tilapia sector. The majority of the funds allocated for the 2008-2009 fiscal year were for personal emoluments. The Department had to depend on alternate sources of funds from its partners in order to execute most of the activities for the fiscal year. However, inland aquaculture and the enforcement program were two areas that were impacted negatively since these areas are not traditionally funded by the international donor community.

The mission of the Belize Fisheries Department is "*to provide the country and the people of Belize with the best possible management of its aquatic and fisheries resources, with a view to optimize the present and future benefits through efficient and sustainable management*". Through this mission, the Department continues to provide the stewardship for the steady development of the sector to contribute significantly to the Belizean economy and at the same time ensuring that the integrity, productivity and sustainability of our ecosystems is not compromised. The mandate of the Department is executed through its three main programs which are the Capture Fisheries Program, the Aquaculture and Inland Fisheries Program and the Ecosystems Management Program.

2.1 PERFORMANCE OF THE FISHERIES AND AQUACULTURE SECTOR

In 2007, the Fisheries Sector's contribution to the country's GDP was 1.5% and ranked 4th in export earnings to the country in 2008. This Sector continued to play a significant role in the National Economy with export earnings valued at approximately $45,567,650 in 2008 (SIB 2009). The Capture Fisheries sector earned approximately $20.5 million in 2008 primarily from the exportation of Conch and lobster products ($13.8 Million and $6.49 Million respectively). Aquaculture export earnings were estimated at $22.84 Million with Shrimp and Finfish (Tilapia and Cobia) contributing $18.5 Million and $4.32 Million respectively. This sector continued to play an important role in the employment sector by providing direct employment to 2,346 fishers and over 123 processing plant personnel.

(i) Capture Fisheries

The Capture Fisheries Sector continues to contribute significantly to the national economy. The value of the Sector is roughly $20.5 million. The overall capture fisheries production volume increased by 2.2 % from 1.18 million pounds in 2007 to 1.20 million pounds in 2008. Capture Fisheries export earnings decreased by 9.6% from $22.7 million in 2007 to $20.5 million in 2008. The Spiny lobster and Queen conch remained as Belize's principal fishery resources in 2008 and these two commodities are thus responsible for the larger portion of foreign exchange earnings of the Capture Fisheries Sector. In 2008, the Capture Fisheries Sector employed 2246

fishermen and 643 fishing vessels. It is estimated that 15,000 Belizeans benefited directly from fishing activities.

During the last two years lobster production declined consecutively and with the huge ecological damages caused by Hurricane Dean in August of 2007 lobster recruitment to the fishery was expected to have declined even further and therefore an increase for 2008 was really not expected. However, against all odds lobster tail production volume increased by 1.8% from 462,152 lbs in 2007 to 470,485 lbs in 2008 but the price for lobster tail in the US market declined sharply in the latter half of 2008. This was primarily as a result of the meltdown of the US economy and thus causing a significant decline of almost 19% in lobster export earnings. In 2008, lobster tail export earnings decreased to $13.8millions from $17millions in 2007. In 2009 lobster tail prices are not expected to increase but can worsen when the US market is flooded with Central American lobster tails currently held in cold storage.

Conch market clean meat production volume increased by 6.8% from 574,756 lbs in 2007 to 614,050 lbs in 2008. Conch meat prices remained fairly strong showing an increase of 25% resulting in export earnings of $6.49 Millions in 2008.

An interesting pattern in the levels of fishing effort (expressed as the number of licensed fishermen) is that it has steadily increased over the last 5 years (see Table 2). The number of licensed fishermen rose from 1,731 in 2004 to 2,246 in 2008, representing an overall increase of 30% and an increase of over 7% in comparison to 2007 when 2,110 fishermen received licenses. The number of boats also increased from 621 to 643 during the same period showing an overall increase of over 8% and an increase of over 8% in comparison to 2007 when 593 boats were licensed. Despite this significant increase in fishing effort, total fisheries production volume in 2008 increased by only 2.42% when compared to 2007

Table 1: Capture Fisheries Production for 2007 & 2008.

Commodity	Production in Pounds		Increase %	Decrease %
	2007	**2008**		
Lobster Tails	462,152.3	470,485	1.80	-
Conch Meat	574,756.1	614,050.6	6.84	
Marine Shrimp	26,351	35,618	35.17	-
Fish Fillet	59,586.8	35,469	-	**40.48**
Whole Fish	9,534	6,880	-	**27.84**
Stone Crab Claws	2,359.5	2,200	-	**6.76**
Lobster Head Meat	41,294	40,903.5	-	**0.95**
Squid	0	7	100	-
TOTAL	1,176,033.7	1,204,538.1	2.42	-

(ii) Shrimp Farming

There was no expansion in production area for the shrimp farms in 2008 and the production area remains at 1129 hectares of ponds in operation. Production remained constant with 2,280 MT exported in 2008 valued at approximately $22.84 million. In 2008 a total of 7 shrimp farms were operational; the industry has seen the closure of 7 shrimp farms since 2006. Three shrimp processing plants with a capacity of 60 Metric tons/r day are responsible for all shrimp processing. Three hatchery facilities are also currently operational with a monthly production of 120 million PL's.

(iii) Finfish Aquaculture Operations

In 2008, Fresh Catch Belize Limited was the only commercial-oriented tilapia farming operation. There are currently 121 hectares under tilapia production and production for 2008 was 1,865 MT.

Marine Farms produced 384.4 MT of Cobia in 2008. There are currently 18 grow-out cages ranging from 40, 60 and 100 meter. The company has also embarked on an expansion project to almost double their current production capacity of 500MT annually. The company is currently finishing the construction of a hatchery near Dangriga which should have an estimated production capacity of 1 million fingerlings / year. Tilapia and Cobia exports amounted to 551 Mt with an estimated earnings of $ 4.32 Million in 2008.

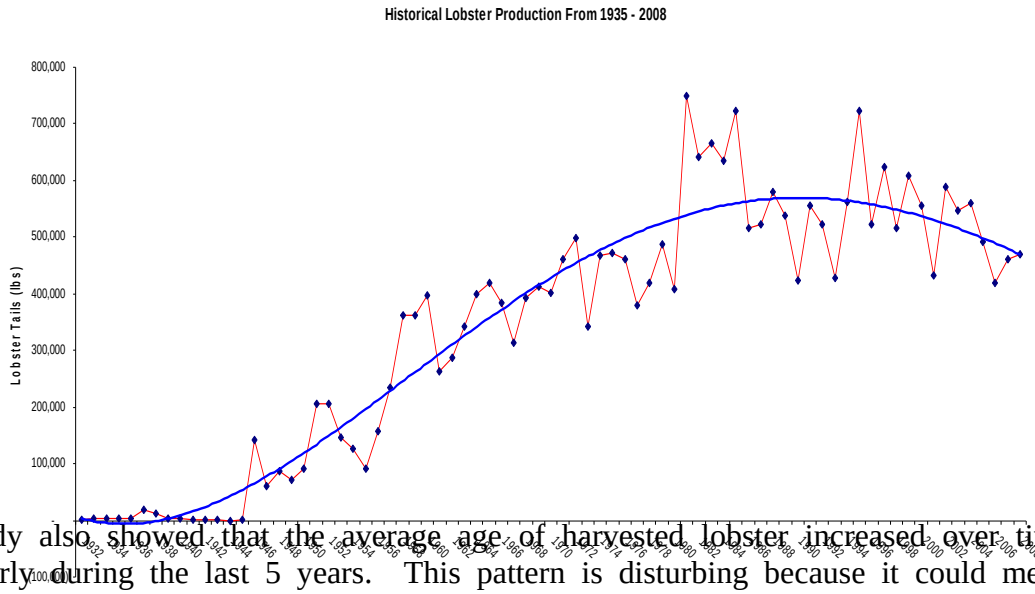
2.2 CAPTURE FISHERIES PROGRAM

The Capture Fisheries Unit (CFU) is the arm of the Belize Fisheries Department responsible for providing the necessary legislative and management interventions to facilitate the continued development and proper management of Belize's marine fisheries resources.

Status of Major Fisheries

(i) Status of the Lobster Fishery

The Spiny lobster remained Belize's most important capture fishery commodity in2008. Several key assessments on the Spiny Lobster Fishery were carried out during the course of the year. The most recent and comprehensive study of the lobster stock was done by Mr. Renato Guevera Carrasco, a fishery biology expert attached to the FIINPESCA Project of OSPESCA and Mr. Ramon Carcamo of the Fisheries Department. The results of the study showed that lobster production volume stabilized during the period 1985 to 1995 and since then production volume is in a general declining phase.



The study also showed that the average age of harvested lobster increased over time and particularly during the last 5 years. This pattern is disturbing because it could mean that fishermen may be diving in deeper areas and harvesting more of the adult spawning stock. The higher average age could mean poor recruitment over time because older and larger individuals are being harvested at a higher Fishing mortality rate at a given time. It can also mean that fishermen may be venturing in much deeper waters due to scarcity of lobsters in shallower areas such as the barrier reef. The steep decline in the average age of harvested lobsters in 1999 is difficult to explain and one interpretation is that there was a very high fishing effort of young cohorts in that year.

The analysis of the age structure of lobsters shows a significant decrease in the abundance of 2nd and 3rd year old lobsters, particularly during the period 2002 to 2008. The results also show steady recruitment, though small, of 4 year old lobsters. This means that in the last few years there has been a consistent application of high fishing pressure on young lobster cohorts. While this level of fishing effort is not threatening, at this time, a viable and sustainable plan for the lobster fishery needs to be introduced in order to avoid overfishing in the medium-to-long-term.

The fishing mortality rate for 2nd year lobsters is about half the rate for 3rd year lobsters. The Fishing mortality rate for 2-year old lobsters was 0.76 in 1998 and increased to 0.87 in 2008 while fishing mortality for 3-year old lobsters was 1.4 in 1998 and increased to 1.44 in 2008. In both cases the fishing mortality during the 11-year time period increase just slightly and is possibly a reflection of the slow but gradual increase in fishing effort overtime, both in terms of the number of fishermen and boats used in the lobster fishery. This observation serves to caution against a continuation of the "open system" in the issuing of fishermen and boat licenses.

(ii) Status of Conch Fishery

The Queen conch continues as Belize's second most important fishery commodity. Conch production volume in 2008 reached 614,050 lbs (an increase of 6.8% compared to 2007). In September 2008, the Fisheries Department carried out the national conch survey. The objective of the survey was to conduct a stock assessment of the Queen Conch population of Belize and to estimate the Potential Yield of the resource. During the survey 6,612 conchs were measured by trained divers. The largest conch measured had a shell length of 302 mm (11.88 inches) and the smallest was 35 mm (1.37 inches). The mean shell length was estimated at 133.5 mm (5. 25 inches). The results of the conch survey showed that conch densities in the marine reserves were very high while the open fishing areas had lower densities. The open fishing areas had much lower conch densities but the overall average density for the entire population was estimated at 88.3 conchs per hectare. The survey results also showed that 79.6% of the conch measured were considered sub-legal size and 20.4 % were considered legal size animals (7 inches or greater).

The computation of all conch abundances produced an overall legal-size conch population available to the fishery of 9.7 million conch. Considering that the estimated population of legal-size conch in Belize is 9,741,446 (95% C.I. = 5,933,403 – 13,549,488) individuals and each conch has a mean weight of 170 g (6 oz) per individual, then the estimated average exploitable biomass is 1,660, 473 kg (3,653,042 lbs). Taking into consideration the precautionary principle, the Fisheries Department decided that the 2009 conch catch quota for Belize will be 720,000 lbs, which is near the MEY using the Schaefer Model.

(iii) Fin Fish Fishery

The most important finfish production volume is sold in the domestic market. The Vernon Street fish market continues as the principal landing site in Belize City where fishermen sell their products directly to consumers. The finfish fishery is economically, culturally and socially important for many coastal communities in Belize. In the last few years, the fishing cooperatives have not actively encouraged fishermen to produce finfish simply because it is not economically feasible due to low prices in the US market for both whole fish and fish fillet. The cooperatives report that finfish exports produce low profits and high volume of fish needs to be produced and require large storage areas. At present there is not sufficient storage capacity and what is available is generally reserved for storage of lobster and conch that fetch much higher profits.

The harvesting of finfish is done as a secondary activity to lobster and conch fishing by artisanal fishermen who fish with hand-lines, spear guns, gillnets and fish pots (traps). However, there is a small group of fishermen who dedicate themselves entirely to fishing for snappers, groupers, mackerels and jacks. The snappers belonging to the Lutjanidae family are the most important finfish species in Belize. Very few pelagic fish species are used as food in Belize. The most important species include the jacks, common snook, mackerels, kingfish, cobia, small tunas, bonito, pompano and permit. Sardines are used mostly as bait fish in the sport fishing sector and not directly as food. Most bill fishes such as marlins are frequently hooked and released back into the sea by sport fishermen and tour guides.

Most of the finfish landed by independent fishermen and fishing cooperative members is sold locally to individual consumers at the fish markets. Some fishermen also sell finfish to the fishing cooperatives, hotels and restaurants.

A study carried out in 2008 by the CFU to determine the Total Domestic Consumption for finfish in Belize showed that some 649,065 kg of finfish was consumed in Belize City and in the principal district towns. Of this total, the pelagic species contributed only 6,302 kg or 0.97%. Belize City is the largest fish market amounting to 422,462 kg (65%). Table 3 shows fish consumption by landing site.

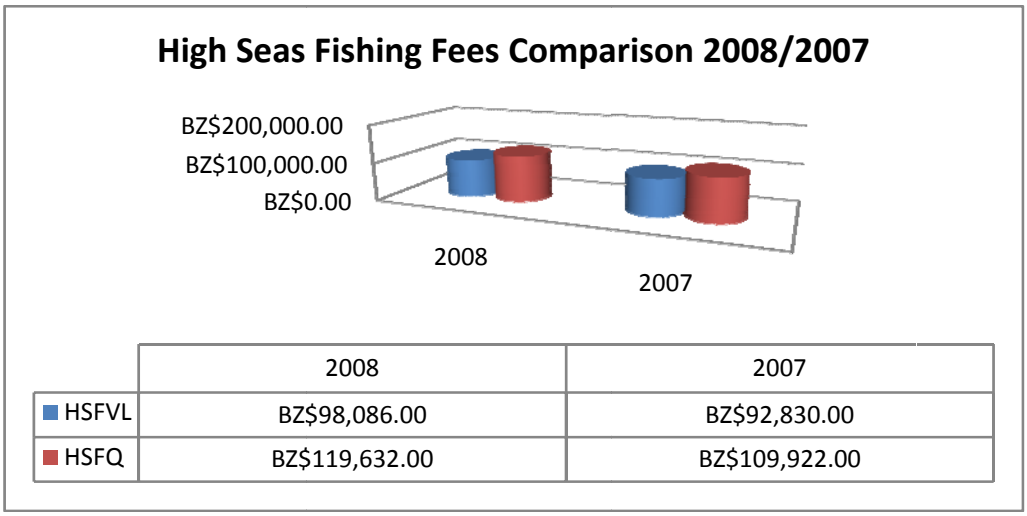
Table 3: Finfish consumption by landing site in Belize

Landing site	**Consumption (Kg)**	**Consumption (%)**
Corozal Town	9,474.84	1%
Dangriga Town	11,485.82	2%
Punta Gorda Town	205,643.10	32%
Belize City	422,461.96	65%
Total	**649,065.71**	**100%**

Management of the High Seas Fishery

A grand total of BZ$ 217,718.00 **was generated in 2008 between the HSFVLF and HSFVQF.** BZ $98,086.000 was generated from HSFVLF and $BZ $119,632.00 was generated from the High Seas Fishing Vessels Quota Fees. The Fees remained the same mainly due to the inability of Belize to issue Sanitary Certification to the Fishing Vessels.

Belize secured quotas from the International Convention for the Conservation of the Atlantic Tuna (ICCAT) in 2008 and as a result was in a better position to offer more catch quotas for various commercial species to its fishing fleet.



	2008	2007
HSFVL	BZ$98,086.00	BZ$92,830.00
HSFQ	BZ$119,632.00	BZ$109,922.00

2.3 ECOSYSTEMS MANAGEMENT PROGRAM

The Ecosystems Management Unit (EMU) of the Fisheries Department is directly in charge of the management of the marine reserves which forms the basis for the ecosystems approach to the management of our fisheries resources currently adopted by the Department. 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.

In 2008 the Fisheries Department had 60 convictions out of 85 arrests at the marine reserves. There were 35 first time offenders with small quantities of illegal products. Ninety-two percent of the offences were caused by Belizeans and 8% by Guatemalans. There were no arrests for the Hol Chan and Bacalar Chico Marine Reserves. The most prominent offense was the capturing of undersize conchs and lobsters. This was followed by fishing within a no-take area, using illegal gill net and fishing without a valid boat license. Aiding and abetting and fishing without a valid fishing license were not significant offenses.

Monitoring

(i) Synoptic Monitoring Program (SMP) and Commercial Species Monitoring

The monitoring of the abundance of the main commercial species continued at the various reserves. In general the results demonstrated the effectiveness of the closed areas within the reserves in providing critical habitat for these species during the different stages of their life cycles. It was noted that even the general use areas of the reserves had very healthy numbers of the main commercial species which is an indication of the "spill over" effect that the close areas are having within the reserves and surrounding areas. The Synoptic Monitoring Program (SMP) continued to look at fish populations, sea grass and mangrove productivity as well as coral reef health. The data for 2007 was analyzed and made available in 2008.

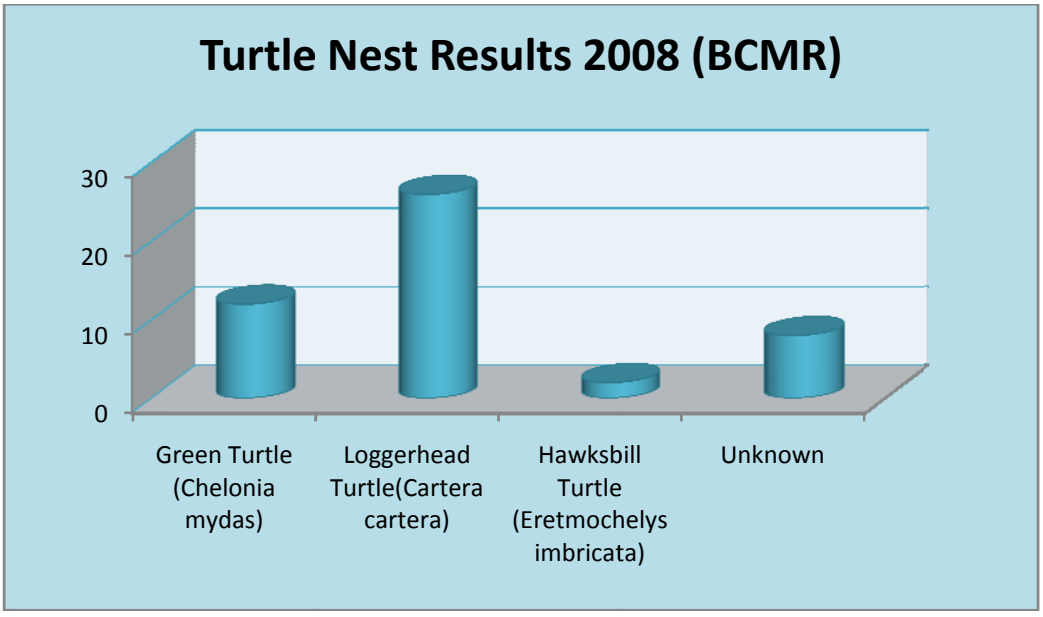
(ii) Spawning Aggregation Monitoring

Spawning Aggregations monitoring occurred through joint efforts by the Grouper Spawning Aggregation Monitoring Working Group and funded by the Nature Conservancy. The SPAGS monitoring results for 2008 are compared to the previous years in the table below. Glover's Reef appears to have a marked increase in numbers over 2007 results.

Site	*# fish 2008*	*# fish 2007*	*# fish 2006*	*# fish 2005*	*# fish 2004*
Rocky Point	-	0	0	200	200
Dog Flea Caye, Turneffe	-	-	2	-	100
Sandbore, Lighthouse	4	-	1,205	1,800	2,500
Caye Glory	-	69	7	350	1,000
NE Pt., Glover's	3,717	2,280	3,000	2,240	1,700
Gladden Spit	-	-	700	360	450
Nicholas Caye	-	107	48	80	~50

Turtle

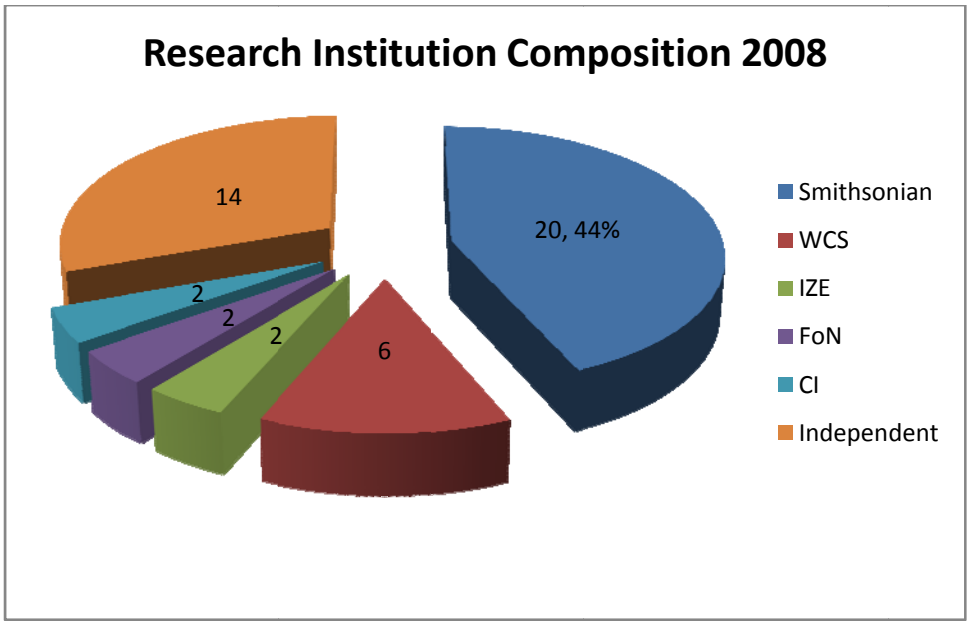
The most important turtle nesting area is the Bacalar Chico Marine Reserve. The reserve is important because the Hawksbill, Loggerhead and Green Turtles nest on the beaches. The most abundant species of turtles found nesting in BCMR was the Loggerhead Turtle.



Research Licenses

A total of 60 research licenses were granted in 2008. The research conducted varied from corals, fish, invertebrates, turtles, crustaceans, algae, socio-economic and ecosystems. The research was conducted by researchers affiliated to the Smithsonian Institute, Earth Watch Institute, Wildlife Conservation Society, Conservation International and various other independent universities from abroad.

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 an important report to note. The 2008 report found a vibrant population in the Payne's Creek Lagoon and central and northern Belize. Anecdotal information shows that this grouper is in steady decline. Serious considerations should be given to the Nassau and Goliath Grouper fisheries. Special population studies need to be addressed for the coastal sports fishing species such as the bony fish, tarpon, snook and permit.

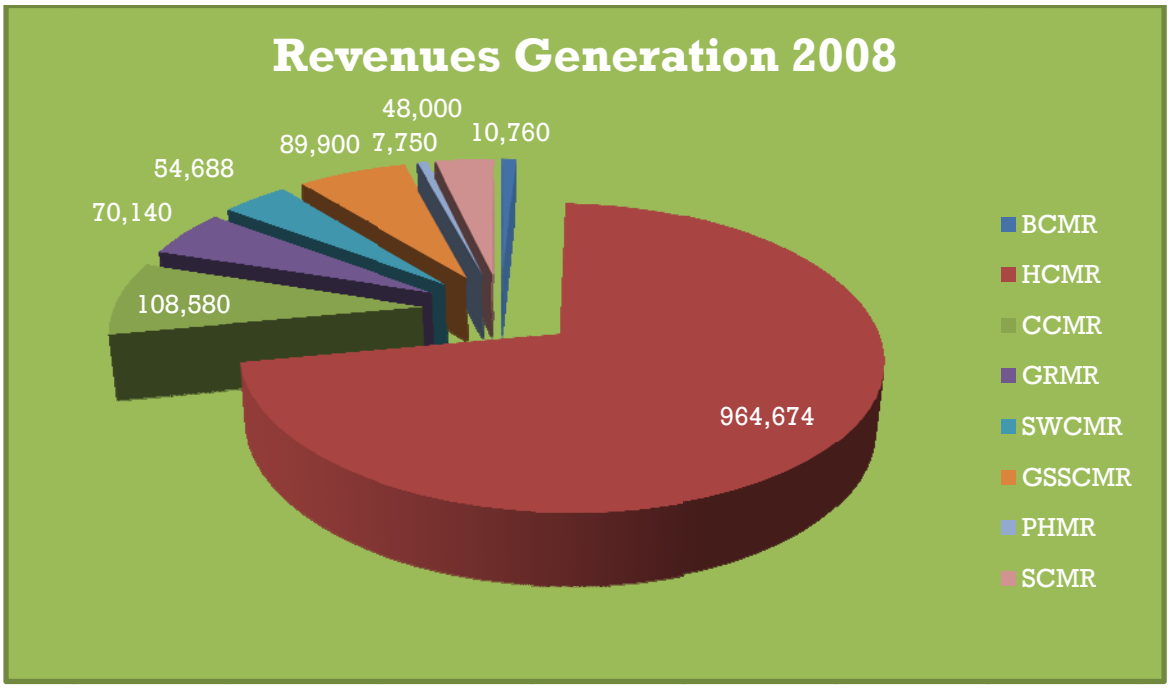


Marine Reserve Visitation

A total of $1,354,492 dollars were collected as revenue by the marine reserves. This total includes entrance fees generated via the ticket system, licenses for vessels using the marine reserves and licenses for conducting research in the marine reserves. A total of $15,000 was received from grants. This figure does not include funds received by the different co-management partners. Funds received by the co-management partners amounted to about $1,800,000 dollars. A total of $350,000 dollars from the revenue collected by the Fisheries Department was reinvested through the CAP II Account 933 into operations and overhead costs for the management of the marine reserves.

A total of 94,893 persons visited eight marine reserves in 2008. The visitation includes local and foreign tourists. HCMR had the largest number of visitors, similar to previous years, while BCMR and PHMR both had the least number. Since not all the marine reserves will be able to

be financially self sustainable through revenue collection from entrance fees, there will is the need for cross subsidization by the large revenue earners.



2.4 AQUACULTURE AND INLAND FISHERIES (AQUIF) PROGRAM

The Aquaculture and Inland Fisheries (AQUIF) Unit has been dedicated to the development of the aquaculture sector and the adequate stewardship of the inland fisheries resources of Belize.

Finfish Farming Operations

In 2008, personnel from the AQUIF Unit conducted a total of 37 field visits to farmers currently engaged in fish farming activities primarily in the Belize River Valley Area. These field visits provided very valuable technical assistance on the various considerations for small scale farmers who showed interest in establishing fish farms. This year the Unit also provided technical assistance to 56 small scale fish farmers and prospective farmers who visited the office or were met on the field. In 2008 the AQUIF Unit continued to provide technical support to the Belriv Tilapia Growers group which was funded by a GEF grant through the Baboon Sanctuary in Bermudian Landing. Fish farming orientation meetings and field visits were conducted with groups of farmers in Cayo District, Punta Gorda, Dangriga, Belize Rural North, Yo Creek, San Jose, Chan Chen, Sarteneja.

Biscayne Related Activities - Hybrid Tilapia Brood Stock Enhancement

The Biscayne hatchery produces red hybrid tilapia fingerlings year around for the supply to fish farmers. For the year 2008 a total of 77,469 fingerlings were sold or donated to several farmers throughout the country. Some of the most prominent sales were 5,000 fingerlings to Albert Rosado of Corozal, 5000 to Carol Dujon of Sand Hill, 8000 to Nelson Tyler of Flowers Bank, 5000 to Carlos Bull of Dangriga and 6000 to Melinda Mariculture of Dangriga. Another 12,000 fingerlings was facilitated to Minister Edmund Castro for distribution in his constituency and 13,800 were provided to Mr. Normando Perez, aquaculture extension officer working in Minister Montero's constituency.

Policy & Legislation

(i) Aquaculture Bill

The Fisheries Department once again took the initiative to rectify the situation of the Aquaculture industry being outside of the Ministry of Agriculture and Fisheries. A cabinet paper was prepared and submitted narrating the history of how the aquaculture industry ended in the Ministry of Foreign Trade and the merits for the management of this sector returning to the Fisheries Department.

Draft Sport Fishing Regulations

The AQUIF Unit took the lead in attending to the sport fishing sector in their request for a regulatory intervention into the management of that very important economic activity. The Unit was active in the consultation process and in the subsequent development of a Cabinet paper as well as the drafting of the Sports Fishing Regulations which was submitted to the Ministry of Agriculture and Fisheries for further action.

(ii) Inter-Institutional Activities

Community Baboon Wildlife Sanctuary Project

The AQUIF Unit continued to provide support to the Community Baboon Wildlife Sanctuary with the implementation of the fish farming pilot project which obtained financial assistance through the UNDP/GEF Program. AQUIF monitored the grow-out cycle and provided assistance in the evaluation of the results obtained by the farmers at the end of the production cycle. Recommendations were given on actions to enhance productivity.

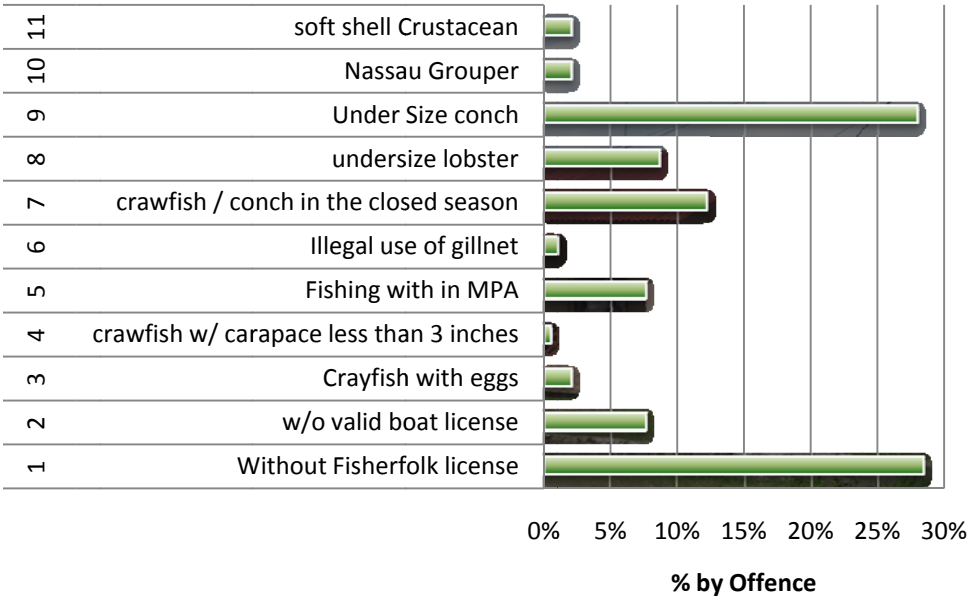
2.5 CONSERVATION COMPLIANCE UNIT – ENFORCEMENT

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.

From January to December 2009 a total of 80 patrols were conducted by CCU Belize and 144 by the CCU P.G. The general areas of patrol include Port Honduras, Monkey River, Sarstoon, Placencia, Laughing bird, Hunting Caye, Ranguana Range, Gladden Split Bacalar Chico, San Pedro, Light House Reef, Turneffe and areas in the Belize City Harbor.

The CCU unit made a total of 205 arrests for 2008. The arrests were mainly for the possession of undersize conch or lobster and the possession of product out of season. There has been an increase in arrest of illegal immigrants in the southern region. Out of 205 arrests there were 160 successful convictions, 34 withdrawn cases and 11 cases struck out on the basis of technicalities.

Composition of Arrest 2008



2.6 INTERNATIONAL COMMITMENTS and COORDINATION

Convention for the Regulation of International Trade of Endangered Species (CITES)

The Fisheries Department along with the Forest Department has finalized the draft CITES National Legislation. The proposed legislation will further empower the application of CITES matters and will also produce much needed revenue for the strengthening of the Belize CITES Management Authority. Belize will be working in 2009 to ensure its attendance at the upcoming COP 13 in 2010.

Caribbean Large Marine Ecosystems Project (CLME)

The Caribbean Large Marine Ecosystems Project again encountered delays in starting. The projected starting date will be May 2009. The project will have a reef fishery, pelagic, fly fish and lobster components. The lobster pilot project will still be managed by OSPESCA and will be implemented in Belize, Honduras, Nicaragua and Guatemala. Belize is expected to lead the pilot project because of its excellent regulations and data collection.

OSPESCA

OSPESCA activities focused on the following initiatives in 2008:

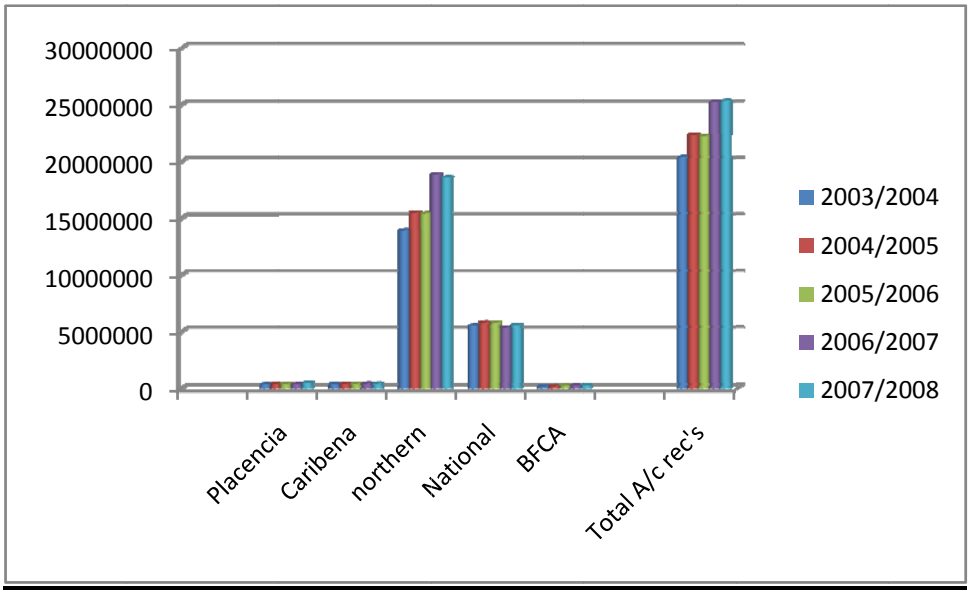
1. The PRIPESCA, funded by Taiwan, has commenced and will focus on the implementation of the water bodies management plans developed under PREPAC I. This project will also assist the Fisheries Government Agencies with capacity building especially in the aquaculture extension services. The Fisheries Department will be receiving capital equipment and personnel to implement this project nationally.
2. FIINPESCA, financed by the Swedish Government and FAO, has various subcomponents such as the socio-economic studies of the Spiny Lobster, marine shrimp and Queen Conch. This project will also institutionally strengthen data collection, analysis and database creation and will end in December 2009.
3. Sports Fishing, financed by IDB, looked at the economic value of large pelagic fishes such as the sailfish, blue marlin and dolphin fish. The sports fishing economic contribution to the Central American countries runs in the hundreds of millions of dollars (US).
4. Institutional capacity building, funded by the Spanish Government, will continue to strengthen the Fisheries Agencies of Central America in the form of much needed equipment acquisition, staff training and technical assistance.

3.0 Cooperatives Department

At the ending of December 2008, the National Cooperative Register showed no increase or decrease in the number of cooperatives registered. Therefore, the cooperative status remains the same when compared to the 2007 period. The total number of registered cooperatives to date is 198 and is further broken into the following categories; 69.2% or 137 are Agriculture Cooperatives, of which 18.9% are active, 2.56% or 5 are Fishing Cooperatives, 10.3% or 20 are Transport Cooperatives, 2.56% or 5 are Tourism Cooperatives, 9.2% or 18 are Housing Cooperatives, 0.5% or 1 is a Consumer Cooperative, 1.5% or 3 are Industrial (handicraft) Cooperatives. One hundred fifteen (58.5%) cooperatives have been recommended to be liquidated.

Cooperatives contribution to Belize's economy is approximately $25.4 million. This figure decreased by $3.85 million when compared to the previous years' operations. Agricultural cooperatives contributed approximately $1 million to the Belizean economy.

FISHING COOPERATIVES
SALES/Account Receivable
2007/2008



The Cooperative Development's Micro Enterprise Development Grants portfolio assisted groups by funding several micro projects in Corozal, Orange Walk, Belize and Cayo Districts. The purpose of these small grants program was to improve the immediate image of cooperatives societies' product or services. Under this program the investments were made in the area of Beekeeping with the majority being funded by BRDP and GEF/SGP. These investments will show increases in colonies and increases in honey production during the 2009 honey flow season The Regulatory Unit's major challenge was the Northern Fishermen Cooperative with the accusations of mismanagement and misuse of funds.

In early October Mr. Alfred M. Ramirez took over the mandate of the Department and with the support of cooperative officers set out a new policy direction, mission and vision. A strategic plan was developed and the four policies areas for the Department were identified for immediate reviewed. It is hoped that this shift will change the ***modus operandi*** of the Department from a ***"FROM A WAIT AND SEE WHAT HAPPENS TO BEING PROACTIVE."*** District cooperative extension officers are being more visible in the field at cooperative workplaces, advising, regulating and promoting cooperative businesses or commodities produced or services offered by these organizations. Additionally each and every cooperative at the district level would is developing critical policies and business plans for the improvement and advancement of cooperatives to improve the current negative image of cooperatives.

The Education and Promotion Unit refocused its training programs to include developing of policies, effective minute taking, following the cooperative philosophy. The objective was to improve the day to day operations of those societies that did not have policies and in cases where there was none, to develop and adopt one.

3.1 Micro-Enterprise Development Grants

The Business and Entrepreneurial Development Unit played an integral role in the implementation and execution of the Micro Enterprise Development Grants (MEDG) for developing cooperatives in the country of Belize.

The major projects financed in the country under this program are the following:

Bahia Quality Poultry Products Pre Cooperatives

In 2007, the department provided materials and poultry breeding stock for the implementation of this project in Corozal Town. The recipients comprised of two families, namely the Catzim family and the Solis family with a compliment of ten persons. It was expected that the pre-cooperative would take advantage of the value adding component during the slaughtering, processing and marketing of the poultry commodity they were producing. During the implementation process mentioned was made for the inclusion of a third family, the Munoz's to increase the membership as well as to make the pre-cooperative operations more lucrative and efficient. As of the ending of 2008, the project was working although it had several organizational challenges but which will be dealt with in early 2009 with the development of policies to ensure that its goal/objectives are achieved.

Xiabe Cybernet Women's Pre-Cooperative

The Xiabe Cybernet Women's Pre-Cooperative (XCWPC) was also a recipient of the Small Micro-Entrepreneurial Development Grant. The Pre-cooperative comprises of eight women and planned to increase membership as they progressed. The project was as a result of students from Xiabe and surrounding areas who demanded computer/internet access. This was seen as an opportunity for the women to generate additional income thru the provision of internet services while students benefited from doing research and meeting other educational needs during their

studies at their respective schools. The package included contributions towards the purchasing of computers and accessories with complementing funds contributed by United National Development Fund. The pre Cooperative is also expanding its operations into a stationery retail store. The year under review brought many benefits to this women's pre-cooperative and includes:

a) A seed capital program that is addressing the financial needs of its members.
b) An increase in assets as of the end of 2008 which include an additional computer.

A Labeling Initiative

An investment on a label initiative was made during the course of 2008. The objective was to improve the marketability of cooperatives and pre cooperatives product (s). The beneficiaries of this program were: Yo Creek Agro Producers Cooperative, New River Farmers Cooperative, Belize Rainforest Pre Cooperative and Nutri-Soya Pre-Cooperative.

It is expected that the initiative will create a "buy a cooperative produce" where these labels are found. Below are copies of labels created and promoted:

Other Programs:

The Unit contributed and served in several technical capacities for many cooperatives and pre cooperatives during the course of the year, particularly those devoted to initiating the development of business plans for their cooperatives. Cooperatives that were assisted by this Unit were the following:

1. Northern Fishermen Cooperative
2. Sandy Beach Women Cooperative
3. Maya Mopan Beekeepers Cooperative
4. Belize Bus Owners Cooperative
5. Northern Teachers Housing Cooperative
6. Georgetown Farmers Cooperative.

A logo was developed by the department for Belize Bus Owners Cooperative Society Limited. The logo is expected to enhance the way the cooperative conducts business. The logo can be seen on each letter head and bus owned by the cooperative.

Four hundred and forty-four thousand dollars was channeled to cooperative projects during the period under review. The largest investment was for beekeeping expansion programs. It is expected that in 2009 a significant increase in honey production will take place as a result of the investments. These investments included equipment, internet facilities, processing facilities and organic vegetable production. The objectives of these projects were to introduce good agricultural practices from production to consumption including a food safety component, which emphasized the safe use of agricultural production systems. Value adding and the creation of active revolving fund formed part of the projects to ensure sustainability.

Name	Donor	Amount	Purpose	Comments
Cayo Quality Honey Producers Cooperative	PACT	$ 60,000.00	Beekeeping Project	Completed
	SGP/GEF	$ 76,500.00	Beekeeping Expansion	Completed
Maya Mopan Beekeepers Cooperative	SGP/GEF	$ 76,500.00	Beekeeping Project	Ongoing
Santa Familia Grains, Vegetables	SGP/GEF	$ 100,000.00	Flood Relief Project	On going
Norbee Beekeepers Cooperative	BRDP	$ 25,000.00	Beekeeping	Completed
Rainforest Beekeeping Cooperative	BRDP	$ 25,000.00	Beekeeping Expansion	Completed
Cooperativa El Progresso de Vale De Paz	BRDP	$ 25,000.00	Internet Cafe	Completed
Belize District Beekeeping Pre-Cooperative	BRDP	$ 25,000.00	Beekeeping Project	Completed
Nutri Soya Pre-Cooperative	BRDP	$ 25,000.00	Building and Equipment	Completed
Northern Fishermen Cooperative	Coop Dept Capital 11	$ 2,000.00	Audit	Completed
National Fishermen Cooperative	Coop Dept Capital 11	$ 2,000.00	Audit	Completed
San Marcus Integrated Project	Capital 11 Coop Dept	$ 2,000.00	Integrated Farming System	On going
Grand Total		**$ 444,000.00**		

All projects had formal or informal training program that introduced appropriate technologies, good agricultural practices and business development program to ensure that the projects met their objectives. In the case of the fishing cooperatives, project support subsidized the costs of auditing services which provided the department with the opportunity to be part of the entire auditing process. All projects had a monitoring and evaluation tool that measured the immediate

impacts of the projects; however the main impacts will be measured during the 2009 production periods or in the case of Nutri-soya in early 2010. The evaluations were executed by personnel of the Belize Rural Development Project, United Nation, Global Environment Fund and the Department of Cooperatives.

3.2 Institutional Development & Capacity Building

The department during the year under review completed a diagnostic study of the department with the objective to improve and strengthen the current services provided to the cooperative sector. The report highlighted areas in which significant time and investments would be committed:

1. Revision of the cooperative legislation, Chapter 313 of the Laws of Belize.
2. The redefinition of government policy as it refers to cooperatives in Belize and the support in the national development policy.
3. Strengthening of the Department of Cooperatives in critical areas, primarily as it pertains to Human, Financial and Technological resources.

As a result of the diagnostic, a proposal was developed and submitted to FAO to support the above listed areas with the aim to increase the department's effectiveness and efficiency in the delivery of an improved regulatory service to the cooperative sector. Other papers developed with the same objective of strengthening the department or in the quest of improving the delivery of services to the sector were submitted to RUTA and MAF for funding from the Venezuelan Grant/Loan Investments.

In the last quarter of 2008, a Registrar of Cooperatives was contracted to manage the Department of Cooperatives. This move was also accompanied with the hiring of four additional officers to fully complement the staff in Cayo, Orange Walk, Corozal and the Belize Districts. Staff members completed a special certificate program at Galen University with the objective of strengthening the technical capacities in the department. The program consisted of five courses mainly: Cooperatives, Micro Financing, Small Business Venture, International Marketing, Consultancy & Project Management.

Mr. Ben Bol and Mr. Hector Castellanos attended a Bench Marking Training program with BELTRAIDE with the objective to assist the department with opening and managing a data base on cooperative organizations to ensure that data is available in a timely manner to facilitate updated and accurate statistical information on cooperative organizations.

Staff attended other training programs during the course of the year. They include the following:

1. How to use Microsoft Access as a tool for collecting and analyzing data
2. How to develop marketing and business plans
3. Programs on Integrated Pest Management and Good Agricultural Practices geared for famers and agricultural and cooperative extension personnel
4. Training programs financed by BRDP in Enterprise Development and the new approach to agriculture.

In 2008, training was concentrated in subject areas which will guarantee that cooperatives improve their managerial capacities, increase leadership skills, and enhance the production and processing of quality products or services provided by cooperative societies. Other training included the development of stringent operating policies and laws to better manage cooperative operations and administrations. Some of the subject areas dealt with included:

1. Introduction to cooperatives (concept and philosophy)
2. Formulation and development of internal policies
3. How to effectively write minutes
4. How to develop business plans
5. Introduction to basic accounting systems
6. Requirements for cooperative registration as a promotional tool
7. Benefits of cooperatives vs. other organizations

A number of exchange programs and field visits complemented the training offered by the department. These included exchange between El Progresso in Valley of Peace with Cuax-lin Ha Cooperative in Toledo and several agricultural cooperative field visits executed within the district by cooperatives from different localities. Beneficiaries of these programs included cooperatives throughout the length and breadth of this country. During this period the department also provided training packages to more than 20 pre cooperatives who might qualify for registration by mid 2009.

3.3 Enabling Environment

The fishing industry in 2008 saw a sharp decline in the prices of marine products. Consequently, they were obliged to seek alternative ways to address the deteriorating situation. In the latter quarter of 2008 a Memorandum of Understanding was signed between the two largest cooperatives to standardize first payment price for lobsters and conch fishery products. The results of the MOU were not positive since the National Fishermen Cooperative was the first to breach the agreement. This rendered the MOU null and void for 2008.

Other activities under this portfolio included the following:

1. Assigning a new auditor for Northern Fishermen Cooperative
2. Preparing a Status Report on Northern' Fishermen Cooperative's finances
3. Conducting Annual General Meetings for Cooperative Societies
4. Attending special general meetings on advisory capacities with cooperatives country-wide
5. Holding consultation meetings with the fishing cooperative sector in Mango Creek, Caye Caulker and Sarteneja with the objective to amend Northern Fishermen Cooperative's By-Laws.

Annual audits were partly subsidized by the department for a few cooperatives in Belize, primarily for Valley of Peace Consumers Cooperative, Placencia Fishermen Cooperative and the Belize Fishermen Cooperative Association. This was also complemented with the establishment of books of accounts for the Belize Bus Owners Cooperative and the Down Town Taxi Cooperative Society Limited.

Inquiries as stipulated by section 37 (1) of the Laws of Belize governing Cooperatives were conducted for five cooperatives in the country and included disputes in membership, management and cooperative finances. The inquiries completed under this unit for the year ended included: Belize Bus Owners Cooperative, Northern Fishermen Cooperative, Valley of Peace Transport, Chuta Mill Cooperative, San Antonio Peanuts and Grains Cooperative, Santa Familia GVL Cooperative and National Fishermen Cooperatives.

In the latter part of 2008, the department worked on an amendment to the existing cooperative Legislation with the objective of strengthening the regulatory capacities of the department of cooperatives. This document has been submitted to the Ministry of Agriculture and Fisheries for further submission to the Solicitor General's Office for their legal and technical inputs. The department also worked in the development of an action plan, revamping the strategic direction and the development of a four prong program policy document.

Other Activities under this unit included:

1. The day to day monitoring and evaluation of cooperatives countrywide
2. Cooperative Extension personnel facilitating regulatory and technical advice on cooperative operations, management and business development.
3. Assisting cooperatives to develop internal policies where they were nonexistent.
4. Strengthening check and balances for improved managerial and decision making at the cooperative level.

3.4 Regional Cooperative Integration

Three officers in the department traveled to Havana Cuba for a regional cooperative tour. The program was designed to look at Cuban Cooperative experiences both from a field and a legislative point of view. The one week tour was very educational as the participants looked at three types of cooperatives in terms of how they function, produce, process and assist people to improve their economic standard. The tour looked at services, credit and agricultural cooperatives, the level of technological advances in production and their contribution to society. The tour was facilitated by the 10th Cuba/Belize mixed commission.

During the 11th Cuba/Belize Mixed Commission, held in Belize, the department requested support in the following areas:

1. A Cuban Cooperatives consultant to come and assist the staff in developing a national cooperative strategy for the strengthening of existing cooperatives in Belize
2. An Artisan Development Expert to come to Belize and provide expert advice to improve the current finished art and craft products and to assist in developing a policy for the production and marketing of handicraft for both the local and international markets.
3. Requesting two scholarship at the first and second degree levels in Cooperative Management/Development
4. Short term courses on cooperative leaders in management. They could be provided in the Cuban Cooperative incubator facilities in Havana, Cuba.
5. An Exchange program for cooperative leaders in Cuban cooperative experiences.

A concept paper was prepared and submitted to the RUTA requesting technical assistance for the revision of the existing cooperative ACT, as well as, for assistance in developing internal policies for pilot cooperatives in Belize. Another component of the paper involves Central American exchange programs in specific areas of agriculture and business development.

Another program involves the informal agreement between the University of San Carlos, Peten Division and the beekeeping cooperatives in Belize. Mr. Antonio Castellanos, a well known beekeeper with improved beekeeping practices and a veterinarian by profession has been providing training in areas of improved management in beekeeping apiaries in Belize; specifically: Cayo Quality Honey Producers Cooperative and Maya Mopan Beekeepers Cooperative Societies. In these two programs, beekeepers have seen that the technology imparted by this lecturer has improved efficiencies and productivity in 4.0 Projects/Statutory Bodies

4.0 Projects/Statutory Bodies

4.1 Belize Agriculture Health Authority

The Belize Agricultural Health Authority (BAHA) is a statutory body that falls under the portfolio of the Ministry of Agriculture and Fisheries. BAHA was established in 1999 through BAHA Act No. 47 of 1999, (now Chapter 211 of the substantive laws of Belize, 2000-2003 Revised Edition) to take over and manage the former functions of Plant Protection and Animal Health of the Ministry of Agriculture in order to improve the management and administration of Agricultural Health and Quarantine services in Belize. The Minister of Agriculture and Fisheries appoints the Board of Directors which is the policy making organ of the Authority. The Board employs a Managing Director who is responsible for managing the day to day affairs of the Authority.

Since its establishment BAHA has made adjustments in its administration and technical programs to address changes in the global and national environment, in order to provide relevant and high quality technical services to its clients. Today BAHA provides services in five technical areas: Plant Health; Animal Health; Quarantine; Food Safety; and Sanitary and Phytosanitary Issues. The technical programs receive support from the Human Resources and Finance and Accounts Divisions which are part of the administration and management of the Authority. At end of December 2008 BAHA operated with a staff of 87 employees. The Authority is headquartered in Belmopan with offices and laboratories in Belize City, Central Farm and Orange Walk Town.

In 2008 BAHA, with the continued support of the Ministry of Agriculture & Fisheries and key development partners such USDA, OIRSA, IICA, PAHO/WHO and UNDP, expanded and improved on the quality of services provided to ensure that Belizeans and visitors enjoy safe, wholesome and nutritious food on their tables. Membership in international bodies such as the IPPC, OIE, Codex and WTO allowed BAHA to receive regular and timely updates on relevant global issues that impacted trade and decision making on policy issues. In addition BAHA continued strengthening its regulatory functions to ensure that agricultural exports meet the

standards required for international trade. This was made possible by the hard work, commitment and dedication of a highly skilled and professional staff. The notable accomplishments of BAHA in 2008 are detailed below:

Department	Summary of Results	Statistics
Food Safety	• Regulatory sanitary oversight was provided for 19 food processing establishments countrywide for the following commodities: fish and fish products, meats, poultry, milk and dairy products and hot pepper sauces. • The food safety department took lead role in BAHA's component of the Agricultural Enterprise for Rural Development Project for implementation of a quality management program designed to improve quality and safety of agricultural products. • Two food safety advisories were issued to consumers. These were for the presence of melamine in milk and dairy products imported from China and for salmonella in tomatoes imported from the United States.	• 3,067 permits for importation of food products were issued • 308 individual samples were received for a variety of microbial and water quality testing
Quarantine	• The quarantine department is BAHA's number one revenue earner. It operates at six ports of entry: Santa Elena Northern Border, Belize Ports Limited, Phillip Goldson International Airport, Benque Viejo Western Border, Big Creek and Punta Gorda.	• 5,843 landing permits issued • 56 interceptions • 681 phyto. Permits issued • 2,222 sea vessels and 3,860 air planes boarded

Department	Summary of Results	Statistics
Animal Health	• Blackleg vaccination was conducted for farmers affected by flooding from tropical depression # 16 • Virulent Newcastle was confirmed in broilers, layers and turkeys in Cayo, Stann Creek & Belize Districts. A nationwide vaccination program is ongoing. • Meat inspection nationwide was taken over by the Animal Health Department in April 2008 • Pigs and pets intercepted by quarantine were destroyed	• Feed: 12 applications • Drugs: 19 applications 53 registrations 10 renewals • Risk assessment conducted for 11 commodities in 6 countries
Plant Health	• There were four med fly outbreaks, all were eradicated without the need for internal quarantine • Low pest prevalence status for pink hibiscus mealy bug was maintained through efficient laboratory services and surveillance programs • Surveillance confirmed the absence of the following pests of quarantine importance: citrus canker, greening and leprosis and the red palm mite	• Certification was provided for: - 40.7 mil lbs papayas - 4.9 mil lbs black eye peas - 2.7 mil lbs RK beans

	of bananas and coconuts • Certification was provided for major food export industries	- 0.3 mil lbs fresh Persian limes
SPS Inquiry Point	• The SPS Inquiry Point represented Belize in all three scheduled meetings of the WTO SPS Committee for 2008 which were all held in Geneva. Specific outputs included: - Negotiation of a provision on the guidelines for recognition of pest and disease free areas, which was accepted by the committee - Updating of WTO members of Belize's maintenance of disease free status for foot and mouth disease and classical swine fever - Belize joined a group of 30 countries working on the development of a strategy to assist the committee on making a decision on private SPS standards	• 1,376 SPS notifications were received • Three of nine requests for site visits were conducted • Finalized three import risk assessments

4.2 The Belize Livestock Producers' Association (BLPA)

Since 1994, the National Herd for cattle was at 50,000 heads. Today the national herd is estimated at around 81,000 heads. Over the past 14 years, growth in the national herd averaged 4.4% per year. Records at the Belize Livestock Producers' Association shows, by the number of brands registered, that there are about 3,500 producers in Belize. Of these, 92 % own less than 50 heads (35% of the national herd) and 85% own less than 20 heads.

National Stock

Category	2005	2006	2007	2008
Beef Cattle	63,038	67,611	72,826	81,328
Pigs	15,387	14,533	12,403	13,146
Sheep	5,842	7,770	9,645	9,911

Land used for cattle production is estimated at 125,000 acres. Most of this is natural pasture; about 40% is planted with improved pasture species. Improved grasses are mostly Brizantha, Tanzania, Mombasa, Improved African Star grass and Humidicola. Stocking rate is estimated at almost two acres per head of cows. With improved pasture and proper utilization and management practices, this stocking rate could, at least, be doubled. Seventy five percent (75%) of the farmers involved in producing livestock operate on 20 acres or less.

Pigs

In 2005, the pig population was estimated at 15,387 heads. Pig population in 2006, was 14,533; in 2007 it was 12,403 and in 2008, it was 13,146. There was a large drop in 2007 by about 2,130 heads. This drop coincided with the hike in the cost of corn and feed. Many producers, especially the smaller producers, had to get out of business. The hike in feed cost reduced the

margin of profit to a negligible level therefore, making it not worth the while to remain in the business. However there appeared to be some recovery in 2008.

Sheep and Goats

Currently, the Sheep population is estimated at about 9,911 heads, which are owned by about 200 farmers with 2 to 120 heads per farm. The national sheep herd grew from 3,257 in 2002 to more than 9,911 in 2008. This indicates a 34% growth annually.

In 2002, the record showed that Belize had 1,600 heads of Goat owned by a few farmers. This scenario has not changed significantly since then.

Stock Improvement

Over the past year, two producers from the Orange Walk District and the MAF continued in their efforts to improve their beef cattle herds. The following table gives the amount of each breed that was imported.

Breeding Stock Imported in 2008:

Category	Nelore	Brahman	Brangus
Bull	36	17	14
Cow/Heifer	-	-	6

Slaughter:
Accurate figures of total slaughter are hard to obtain at this time because quite a lot is slaughtered in "under the tree" operations. The slaughter figures reported in the following tables are based solely on BLPA's CESS collection records.

Beef Cattle:
The CESS payment records at the BLPA showed that 6,095 beef animals were slaughtered domestically this year. The figures indicate that since 2005 there is a continuous increase in the number of slaughtered animals to the level of what it was in 2004. In 2008, the slaughter figure reported a 4% increase over 2007.

Beef Cattle Slaughtered

District	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Corozal	376	456	76	472	482	500
Orange Walk	3774	2746	2477	2542	2906	2,789
Belize	NA	188	261	128	63	47
Cayo	2580	2622	2577	2555	2447	2,687
Stann Creek	29	26	30	15	51	84
Toledo	69	76	75	146	146	79
Local Slaughter	**6828**	**6114**	**5496**	**5858**	**6095**	**6,186**
Export	**593**	**2804**	**3210**	**1609**	**4670**	**4,224**

Pigs:
The number of pigs Slaughtered locally in 2007 was 16,893; in 2008 the figure was 16,635. There represents a decrease of 7%.

Pigs Slaughtered

Pigs						
District	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***
Corozal	388	572	114	707	773	840
Orange Walk	7801	7373	5592	8315	9397	9,398
Belize	NA	667	727	487	254	221
Cayo	4809	5535	5536	6570	5977	5,002
Stann Creek	113	56	58	51	99	52
Toledo	643	731	757	505	393	188
Local Slaughter	**13754**	**14934**	**12784**	**16635**	**16893**	**15701**
Export	NA	**41**	**2083**	**1058**	**1038**	**0**

Sheep:
Local slaughter of sheep this year was 964. Even though there was a slight drop in 2007, the general trend is an upward growth over the past six years. It is believed that the consumption of sheep meat is still increasing. Producers reported that they cannot meet the local demand for sheep.

Sheep Slaughtered						
District	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***
Corozal	NA	26	12	48	NA	NA
Orange Walk	455	631	710	788	683	782
Belize	NA	33	40	17	13	23
Cayo	59	91	78	44	95	155
Stann Creek	NA	NA	NA	NA	NA	NA
Toledo	21	4	2	3	13	4
Local Slaughter	**535**	**785**	**842**	**900**	**804**	**964**
Export	NA	**4**	NA	**230**	**NA**	**NA**

Export

This year's export of beef cattle decreased from 4670 heads in 2007 to 4,224 in 2008. The price paid for steers ranged from $1.05 to $1.20 depending on the condition of the animal. Culled cows fetched prices ranging from $0.90 to $1.10. No pig was reported for export this year. This year no sheep was reported for export.

Livestock Prices

The prices for beef cattle (live weight) are as follows: for feeders, $1.05/lb; young bulls and steers, $1.05 to $1.20 depending on the quality of the animal; heifer $1.15; cows $0.90 to $1.00. Pigs were purchased at prices ranging from $1.50 to $1.90 per pound live weight. Sheep were selling at $1.50 to $2.00 per pound live weight.

4.3 Belize Marketing & Development Corporation

The Belize Marketing and Development Corporation mandate is to promote, develop and deliver high quality goods and services to our clients in a cost effective and competitive manner using a business/investment approach thereby contributing to the economic development of Belize and providing sustainable food supply for the population.

Our business activities continue to be dominated by agricultural products, particularly rice. For 2008/2009 we purchased approximately 3,437,281lbs of rice paddy at a cost of $1,178,089.30 paid to both milpa and mechanized rice producers. The price paid to farmers for rice paddy also went up by approximately 10 to 15 cents per lb depending on quality. Farmers were extremely happy with the price increase.

During the offseason for local rice, BMDC met with the owners of Hillbank and an agreement was made between both parties, that the BMDC would market all their rice. In excess of 3.8 million pounds of white milled rice were purchased and sold locally. This gave BMDC the opportunity to gain back the market share that it had lost since 2005.

BMDC imported over 1.6 million pounds of onions which was sold on the local market, this product generated huge profits for the Corporation and as a result BMDC were able to offset a huge portion of BMDCs outstanding debts, as facilitated the purchase of 6 vehicles for the Corporation.

The Corporation continues with the marketing of packaged and value added products. BMDC sold over 520,800 lbs of plantation white and brown sugar including the repackaging in 5 and 10 lb presentations. The Bebe Agua Flour also became a fast selling product with over 318,150 lbs sold over a period of 2 months.

BMDC ventured off into new products such as Sunny's Powdered Milk and Fish Feed. BMDC is at an introductory stage with these two products and hopes to see them emerging to meet the demands of the population.

The BMDC managed to reopen the depots at Santa Elena in August of 2008 and Orange Walk Town on October 1, 2008, after consultation with various business houses.

The BMDC's main objective is to continue assisting in the economic developments of Belize. BMDC worked in a friendly environment making sure that we provide efficient services and at the same time ensuring food security for the welfare of all our consumers. We continue to ensure that goods are fairly priced in order to maintain low prices on the local market. The following describes the goals for 2009:

- Get all outstanding loans repaid by the end of 2009, making more resources available for BMDC and the farmers on a whole.
- Opening a depot in Dangriga to serve the people of Dangriga and the surrounding communities. e.g Independence, San Juan, Bella Vista etc.
- To construct a multi-purpose building, preferable in Belize City, that will include (warehouse, Office, Parking and especially geared towards a cold storage facility)
- Create an identity for all BMDC workers, vehicles and outlets, making it much easier when doing business with the public at large.
- Modernized the computers at BMDC.

4.4 Belize Rural Development Programme (BRDP)[1]

The Belize Rural Development Program (BRDP) is funded by the 9th European Development Fund (Euro 7.2 million), the Government of Belize (estimated at 25%) and the beneficiaries (estimated at another 25%). BRDP commenced operations in March 2006, and is working in all 6 districts of Belize, investing through micro grants for poor families, small group grants, small grants to rural development institutions, and large grants mainly to NGOs. In the 2009-2010 financial year, the last and 4th year of the programme, BRDP will invest approximately Euro 3.3 million or an estimated Bz$ 9.2 million.

Background

The most serious threat to Belize's ambition of achieving a higher standard of living for its people continues to be the incidence of poverty, exacerbated by major resource adjustments in the export agricultural sector. The National Poverty Elimination Strategy indicated that incidence of poverty was more prevalent in rural (44%) than in urban (23.7%) areas of the country. For this reason, the GOB has committed itself to a broad-based approach to rural development with specific resource allocation to address poverty reduction and to support the efforts of the marginalized populations to enter the mainstream of economic activity. The BRDP is expected to reduce rural poverty by 5% by 2010.

Objectives and Expected Results

The overall objective of the BRDP is to support sustainable economic growth of Belizean rural areas. The project aims at reducing poverty in Belize and improving the standard of living of the rural population by supporting the rural productive sector, bearing in mind the agriculture base of the Belizean rural economy. This will be done through the participation of rural communities in

[1] For more information, please contact the Program Management Unit at **brdpbelmopan@gmail.com** or visit the website **BRDP.org.** BRDP's address is **P.O. Box 107, Agricultural Show Grounds, Belmopan City, Belize**.

the planning, implementation and evaluation of income and employment generation projects. The BRDP is expected to generate three main results:

1. More efficient and competitive rural enterprises (both farming and non-farming ones established),
2. Improved basic services for the rural population, and
3. Strengthened policies and institutional environment within which rural enterprises, traders, processors, local organizations and communities operate.

To produce these results, the BRDP is intended to: (i) strengthen policies, institutions and communities to ensure the sustainability of "integrated rural development" in the long-term without donor support, (ii) promote an efficient rural sector and facilitate the development of farming and non-farming activities by stimulating the **s**mall, medium and micro enterprises (SMEs), and (iii) support the development of rural infrastructure in the most disadvantaged areas in Belize.

Institutional Strategy

The overall responsibility for the implementation of BRDP lies with the National Authorizing Officer (NAO) for the European Development Fund (EDF), and the Ministry of Economic Development is the Contracting Authority. A Project Steering Committee (PSC) has been set up to provide guidance and policy direction to the program and is chaired by the MED. BRDP is implemented by an independent Project Coordination & Management Unit (PMU), which assumes an administrative and financial role and co-ordinates the implementation of the program at community, district and national levels with the various line Ministries, private and NGO sectors and donor agencies. The PMU also coordinates all the activities carried out by the partner organizations, especially the District Development Committees (DDCs) and service providers.

The DDC is an institutional innovation for applying a participatory, community-driven and coordinated approach for planning, implementing and evaluating BRDP supported projects, either for small groups, micro grants and to address national level priorities. The DDC comprises from 8 to 12 core members representing the key stakeholders such as producer organizations, DAVCOs and Village councils, NGO/CBOs, as well as credit and marketing agencies, government departments and educational or technical colleges. The DDC is chaired by the District Agricultural Coordinator, and the vice-chair is the Rural Community Development Officer

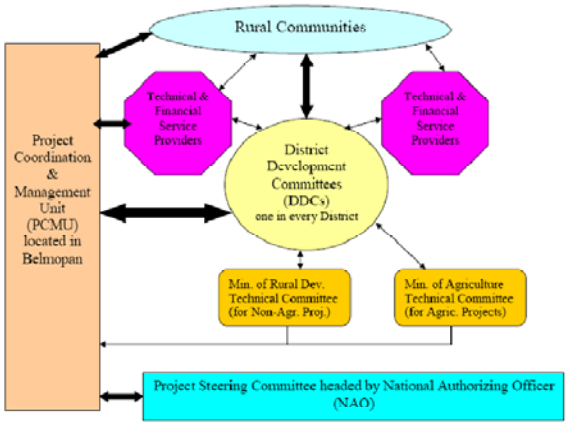


Fig. 1: The organizational structure of BRDP

Project Development Process

The basic steps of the project development process followed by BRDP with the assistance of the DDCs and service providers follow the EU guidelines and procedures under the 9th EDF. These are:

1. Village/ group/ project identification: involves visiting villages and groups explaining BRDP and how they can access its support,
2. Proposal development: filling out the application form with the participation of all interested members of the group.
3. Project evaluation: the DDC evaluates the proposal to ensure it meets the basic requirements for support such as marketing arrangements, project objectives and activities, realistic costing and budget (25% local contribution), and sustainability of the effort. .
4. Field assessment: a core group of the DDC visits the group in the field to assess whether it is a bona fide project, group understands it, is cohesive and truly owns the project, and whether they can manage it.
5. Contractual agreement: the PMU and DDC meet with the group to finalize an agreement in which all members of the group must sign of on their commitments.
6. Obtaining quotations: since no one receives cash, the groups should obtain quotations for all investment to be made, following EU procedures.
7. Purchase of equipment, materials, etc: the PMU purchases from all suppliers.
8. Implementation, training, etc: all groups need skills development, e.g. group/ conflict management, technical/ technological practices, marketing and promotion, financial management.
9. Report & certification of donation: the project concludes when all BRDP disbursements are concluded, a report is submitted by the beneficiary, and they certify what equipment they have received from BRDP.
10. Monitoring and evaluation: all beneficiaries agree formally to provide information and data to assess the performance of BRDP in terms of relevance, efficiency, effectiveness, impact potential and sustainability.

Results and Follow-up

By the time BRDP ends in February 2010: over 2,500 poor families in some 110 villages will have received investments in terms of infrastructure, machines, equipment or tools, and training; 30 village groups will have a functioning internet cafe; 3 training centers will be refurbished or built; 4 districts will have irrigation, processing or storage infrastructure in place; a national marketing information system will be in place for small farmers; Cayo District already has a very successful farmers market in San Ignacio Town; Crooked Tree Village will have a water system; 44 families will have new homes, another 20 families with repaired homes, and 10 hurricane shelters will be improved in the sugar belt; the Middlesex Bridge in Stann Creek district will be rebuilt; and the Valley of Peace residents will have an upgraded access road (9 miles) to the Western Highway. In the process, some 19 institutions of the state or non-state sectors will be in a better position to work with EU resources and procedures. Please see the table below with the list of all the major financial commitments and implementers of BRDP funded activities.

According to recent external evaluation and financial audits carried out by the EU, BRDP and partners have done very well in terms of its organization and management, the operation of field projects, the disbursement of EU resources, and most importantly in terms of creating the desirable results with an impact on the rural poor of Belize. As a result the EU has agreed with GoB that the 10th EDF will have a bigger budget (about a 40% increase) and will be similar to BRDP with the improvements that are recommended by the external evaluators and key stakeholders of Belize who are being consulted presently. If all goes according to schedule, the 10th EDF or BRDP II will commence operations in mid 2010.

Table 1: Financial status of BRDP commitments to July 2009

Commitment	Contract period	Expected results and targets	Budget (Euros)	% Spent
Prog Estimate 3 Being implemented by PMU	Sept 08 – Feb 10	Complete invent in 15 small group projects; build capacity of large grantees & others; M&E performance &impact of BRDP; and promote EU/GoB visibility	$126,771	50
Cayo District Farmers Market, San Ignacio Town Council	Oct 07-May 08	Construct market with 19 permanent stalls, 100 + temporary stalls & 5-star toilet	$200,000	100
Micro grants BEST & Plenty Bze	Mar 08–Feb 10	Implement 200 MGs & trained in Belize, Cayo & Toledo	$172,364	68
Rural ITs UB & ITSB	Jun 08–Feb 10	Establish 22 IT & upgrade 8 ITs in villages, train in IT & business management	$300,000	88
St Creek Rural Dev, Citrus Growers Assoc	June 08–Dec 09	Implement 10 small groups & 80 MG projects in agro-rural tourism	$250,000	26
Toledo Rural Dev Toledo Teachers CU & Plenty	Mar 08–Feb 10	Implement 10 small group projects in production to marketing; small business resource center	$198,610	49
Women & Youth YWCA	Mar 08–Feb 10	Build enterprise capacity of 200 young women in 6 districts; start-up investment for 150 MGs	$299,999	57
Crooked Tree Water System SIF	Jun 08-Dec 09	Constructed water system & trained local stakeholders to manage it sustainably	$301,000	42
Agric Enterprise Dev, UNDP & MAF	May 08–Apr 10	At least 350 small farmers with irrigation, livestock, processing & marketing innovations At least 850 farmers trained on GAP	$1,299,976	57
Hurricane Dean SIF	Dec 07–Nov 08	Constructed 44/ repaired 20 homes with poor families, repaired 10 shelters & 12 agric projects implemented	$600,000	97
Valley of Peace Road A & N Constr. Co.	Sep 08–Sept 09	Upgraded 9 mile rural road joining village with main highway	$526,850	0
Middlesex Bridge Cisco Const Ltd	Sep 08–Sept 09	Rehabilitated/improved key bridge to 2 southern districts	$906,593	0

5.0 Partner Agencies/Programs

5.1 United States Department of Agriculture (USDA)

The USDA's mission in Belize is mainly to maintain free of the Meditaranean fruit fly. USDA assisted in plant and animal health programs by providing training in disease diagnoses and simulations.

Medfly:
Maintaining Belize free of the Meditaranean Fruit Fly is one of the major objectives of USDA in Belize. For this reason USDA has upgraded its surveillance system using the GIS and GPS technology in the medfly surveillance system. Using this technology USDA has included Belize's medfly surveillance data into the regional system which includes Guatemala and Mexico.

All USDA medfly traps in Belize have a unique name which indicates the name of the country in which the trap is located, the District and the day of the week on which this trap is serviced. GPS readings indicating the position of the trap is also included in the reporting system. Medfly technicians were provided with a GPS unit and trained on how to use them.

In Belize we have also adopted the protocols for delimitation surveys conducted after a medfly has been detected. This is also carried out using the GIS technology to delimit a 25 square km grid and installing 250 traps inside this grid to ensure that every detection is properly eradicated before declaring the area as eradicated. USDA donated 3 used vehicles for the medfly surveillance program in 2008.

Table 1: Number and location of medflies captured in Beize in 2008

Date	District	Location	Host	Status	Sex	Flies
07/04/08	Toledo	Bladen	Orange	Fertile	F	1
25/06/08	Stann Creek	Dangriga	Sour Orange	Fertile	M	1
07/07/08	Stann Creek	Placencia	Craboo	Fertile	M	1
30/07/08	Toledo	Punta Gorda	Almond	Fertile	M	2
08/09/08	Stann Creek	Riversdale	Craboo	Fertile	M	1
12/09/08	Stann Creek	Riversdale	Craboo	Fertile	M	1
15/09/08	Stann	Riversdale	Cocoplum	Fertile	M	1

	Creek					
22/10/08	Stann Creek	Dangriga	Mango	Fertile	M	1

BAHA responded very quickly to establish the delimitation survey and to carry out eradication activities in the areas where medfly outbreaks occurred. An outbreak is whenever you catch more than one male medfly in one trap or when you catch a gravid female in a trap. In the cases where only a single male medfly is caught in a trap, BAHA does the delimitation survey and if BAHA does not pick up another fly within the 25 square kilometer then BAHA considers the incident as a medfly detection but not an outbreak.

2008 USDA Medfly trapping supplies/Equipment provided to BAHA:

Description	US Dollar Value
Medfly Trapping Supplies	$23,400.00
GR120 (Spraying chemical)	$3,300.00
Eradication Activities Expenses	$9,024.00
One Hilux Toyota Vehicle	$9,000.00
Two Hilux Toyota Vehicles from Guatemala	$15,000.00
Total	**59,724.00**

Animal Health:
For Animal Health USDA has provided referential laboratory diagnoses for Vesicular Stomititis and Equine encephalomyelitis, two diseases of economic importance. USDA also provided the laboratory diagnoses of velogenic Newcastle disease that affected the country in 2008.

5.2 Taiwan Technical Mission (Agriculture) in Belize

2008 main achievement

A. Horticulture crop project:

Central Farm demonstration field

1. 14,000 m^2 of vegetables field was cultivated
2. 10,250gm of vegetables seeds was produced.
3. Training farmers on how to make organic fertilizer.
4. Tropical fruit tree demonstration area:
   a. Pineapple demo area, selecting the best seedlings for tissue culture propagation.
   b. 82 plants of wax apple have been propagated by air layering.
   c. 120 guava plants have been propagated by air layering and grafts.
   d. A new variety of Taiwan jujube has been grafted.
   e. 3,000 papaya seedlings were prepared for distribution by the extension unit.

Extension Section
1. Training on cultural technique was held 24 times, 107 people were trained.

2. Extension has counseled 196 farmers, has cultivated an of area 112 acres, and has produced 145,750 pounds of vegetables at a value of BZ$ 419,470.00.

Teaching farmers technology of vegetable seedling production.

Taiwanese delegation visiting papaya farmers in Orange Walk.

Taiwanese delegation visiting papaya farmers in Orange Walk.

Construction of a green house for acclimatization

B. Tissue Culture project:

1. Assisted the University of Belize in remodelling its Central Farm laboratory.
2. Completed the purchase of equipment & materials.
3. Completed tissue culture on pineapple material with 300 bottles; orchid material 200 bottles; mahogany material 80 bottles; and banana material 80 bottles.
4. Taught 5 students of the University of Belize about tissue culture research on orchids, papaya, beans, mahogany, pineapple and banana.
5. Parent plant collection Banana: 40 plants; pineapple: 50 plants; pineapple seedling: 1000 plants.
6. The construction of a greenhouse for acclimatization of tissue culture material is almost completed.

Tissue culture material of pineapple.

Construction of a green house for acclimatization

Leveling the field for rice cultivation.

Rice field in Central Farm

C. Rice Seed Production project:

1. Rice seed production in Central Farm (Cypress, Cardi-70, Tai Sen-10) with 2.5 acres.
2. Assisted and advised 18 farmers about rice cultivation management.
3. Central Farm rice seed production harvested Taichung Sen-10 2,790lbs, Cypress 3,750lbs, Cardi-70: 10,820 lbs.

D. Agro-processing project:

1. A new food processing plant has been completed.
2. The production of dry fruit processing in Punta Gorda and Corozal reached 220,231 packs.
3. Numerous training and extension programs was carried out jointly with the Ministry of Agriculture & Fisheries, the Belize Rural Development Project, the Belize Chamber of Commerce & Industry, the University of Belize, Chunix High School, House of Latin Community, and ITVET Orange Walk.

Construction of agro-processing factory.

Agro-processing course for a group of women.

Agro-processing course for students.

Exhibition at Agricultural Fair.

Processing of pumpkin jam.

Product of pumpkin jam.

2009 programs

A. Rice seed production Project

1. To produce 20,000 pounds of high quality rice seeds in Central Farm.
2. To produce 80,000 pounds of commercial rice seed in Poppy Show.
3. Train 4 seed collecting technicians.
4. To assist in extending rice cultivation to 600 acres.
5. To assist MAF to develop 50 acres of rice in Blue Creek.
6. To hold training on rice cultivation/weed control, and to have two rice seed production field days.

B. Horticulture Crop Project

1. To continue collaborating with MAF technical assistance in the production of vegetables. To set up 5 simply equipped infrastructures for the cultivation vegetables in order to improve its quality and its price.
2. To extend and establish 2 nurseries of original species for the farmers to learn and emulate.
3. To produce 5,000 tropic fruit seedlings for the farmers.
4. To assist 5 farmers to produce 10 tons of compost.
5. To have 6 training courses for 150 people.
6. To have 3 field days.
7. To manage the demonstration farm at Central Farm.
8. To compile a cultivation manual for 3 crops in both English & Spanish.

C. Agro-processing project

1. Social benefit plan: To cooperate with MAF to develop a new product along with "the schoolchild nutrition lunch dessert plan".
2. Along with the cooperation of International organizations (such as BRDP, or UNDP), have 2 food processing training courses for 40 people.
3. To select 4 regular technicians for training in food processing
4. Assist vocational training in food processing.
5. To develop 1 to 2 new processed products and promote small food processing enterprise.
6. To have 3 food exhibition on new products and carry out market trial.

5.3 OIRSA

OIRSA had a big challenged in conducting its daily activities in its technical areas of Quarantine, Plant Health, Animal Health and Food Safety since the restructured Organization change focus from technical programs to Agri-food Chains. This meant that OIRSA would accompany the sanitary aspects of the Agri-food chains of its member countries, instead of just implementing sanitary and phytosanitary programs in the four main areas. Belize was an exception to this changes due the limited financial and human resources.

In the area of Quarantine OIRSA conducted training in court proceeding for its staff. Institutional strengthening was also part of OIRSA's contribution to the quarantine department.

In the plant health department the main area of assistance was through phytosanitary surveillance for exotic citrus diseases, rice mite, red mite and other pests of quarantine importance for Belize, so as to detect their early introduction for implementing a better control program. OIRSA partially funded a public awareness workshop on Standard and Regulations in reference to Sanitary and Phytosanitary Measures and it's applications with BAHA's mandate.

In Food Safety department the principal assistance was laboratory strengthening through the purchasing of reagents for residue testing in food products and the participation of the Director in a CODEX meeting in Geneva for Harmonization processes.

The animal health department of BAHA was assisted by funding training in vampire bat trapping techniques because of the frequent rabies outbreaks. This training was coordinating along with some Mexicans experts who also supplied BAHA with the netting equipments.

In response to the natural disasters OIRSA donated a variety of vegetables seeds for small farmers to reestablish their agricultural production that was lost due to the heavy rainfall; this was made possible through OIRSA's emergency funds available within the Organization. OIRSA responded, to the Newcastle outbreak in poultry in Spanish Lookout, by providing training and vaccines in order to bring the outbreak under control; furthermore, a consultant was brought in to assist in the implementation of the control program. Through our Regional poultry project OIRSA/PREA OIRSA purchased the vaccines from a laboratory in Guatemala; additionally, OIRSA also funded 50% of the protective gears acquired for the vaccination campaign.

5.4 IICA' Contribution to Agriculture and Rural Development

The IICA Office in Belize continued to support the development of the agriculture sector through timely responses to demands for technical assistance from both the public and private sectors. The demands in 2008 continue to reflect the priorities that the agriculture sector has agreed to, which are to ensure competitiveness and sustainability both nationally and internationally, strategies to off-set continued reduction in preferential markets, the expansion of our products into new markets, and a national platform to encourage dialogue and an integrated approach to foster economic growth.

IICA continues to be recognized as a major partner in the delivery of technical assistance to the private and public sectors. IICA express sincere gratitude to our collaborating partners for the support, commitment and confidence expressed towards IICA. IICA has demonstrated our ability to continuously consult and redefine its role to suit the objectives of its national, regional and hemispheric agendas in an effort to effectively serve the agricultural sector and contribute towards the development of rural communities in Belize.

A. IICA's Contribution to the Repositioning of Agriculture and Rural Life

The 2003-2015 Plan of Action continues to be implemented in the country and the IICA Office fully supports and facilitates this process through participation on technical committees, policy and strategy exercises, institutional capacity building and monitoring and evaluation of the Agricultural sector and its impact on rural communities.

B. Promoting Trade and the Competitiveness of Agribusiness

IICA continues to provide technical cooperation to improve agribusiness competitiveness through BELTRAIDE. A technical committee is functional and charged with the responsibility of identifying, training and promoting exports of potential products into the US market place. This export platform is in collaboration with the Inter-American Program for the Promotion of Trade, Agribusiness and Food Safety. The IICA Miami office was instrumental with this effort, and will continue to provide support us in 2009.

C. Strengthening Agricultural Health and Food Safety Systems

IICA continued to coordinate and provide logistical support for Belize's participation at the WTO/SPS committee meetings held in Geneva in 2008. The national SPS Committee is fully functional and with IICA's support, once again, held an accountability workshop to present and update stakeholder on its activities carried throughout the year and to receive feed back to improve for the new year. IICA and BAHA conducted a series of trainings for stakeholders to ensure compliance with production and export requirements. These trainings included workshop in Traceability, HACCP, SPS, Avian Influenza and virulent New Castle disease.

D. Promoting the Sustainable Management of Natural Resources and the Environment

Through IICA's participation at the National Cacao Task Force, IICA provided support to CATIE for the presentation of Cacao History and Future in Belize at a workshop. This is in support of the Central American Cacao Improvement Project, and the National Cacao Industry Evaluation. IICA also provided technical assistance to the Belize Organic Producers Association in the preparation of the Belize Organic Policy and legislation for submission to the Government authorities. IICA also continued to support BOPA in the execution of an organic vegetable production and marketing project supported financially by IDB.

E. Strengthening of Rural Communities Based on the Territorial Approach

IICA signed a contract with the Sugar Industry Control Board (SICB) and is executing a consultancy for the preparation of a "Strategy for the Belize Sugar Cane Farmers Association"; this includes the role and functions of the association. This work is being executed by a team of national staff with support from an IICA technician from headquarters.

F. 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 continues to draft legislation for bio-safety and bio-security. Belize has signed on to a Caribbean Regional Biosafety Project to assist countries with the implementation phase of the National Biosafety Framework.

G. Other Technical Programs

IICA Belize supported the Ministry in Agriculture in hosting the SICTA Board of Directors meeting held in Belize, and as a result the board agreed to support Belize in a bean evaluation project to ensure technology adoption and transfer, food security and increase our competitive edge in the export markets.

Other technical committees on which IICA is represented includes the National Research and Development Committee, the Citrus Research and Education Committee, Belize Organic Producers Association and the Persistent Organic Pollutants Project which is designed to develop a National Implementation Plan to develop national technical capacity and strategies to better use and reduce the use of these pollutants.

5.5 Caribbean Agriculture & Research Institute

The CARDI (Belize Unit) Annual Technical Report 2008 covers two cropping seasons, the November/December 2007 planted crop which was harvested in March/April 2008, and the June/July 2008 planted crop and harvested in September/October 2008.

Characterize and evaluate varieties and landraces for productivity and value added products.
Five sets of corn germplasm were acquired from CIMMYT, Mexico for evaluation in Belize. Four sets of trials were planted in July 2008 at Central Farm due to space limitation. Elite Tropical Late Yellow Normal & QPM Hybrid Trial was comprised of 30 entries. White corn Varietal Trial (08EVT12-25) was comprised of 16 entries. Advance Tropical Three - Way crosses White Normal and QPM Late (08TTWCL-22) was comprised of 18 entries and Elite Tropical Late White Normal and QPM Hybrid Trial (08CHTTW-25) had 36 entries. A local supplier, Prosser Fertilizer and Agrochemical provided 17 entries of Yellow/White corn hybrids for evaluation and were planted in a hybrid evaluation trial in July 2008 at Central Farm. The supplier had also supported with the provision of fertilizers and agro-chemicals. These trials were affected by prolonged floods at the maturity of corn crop. However, corn was harvested from those plants which were still standing after the flood. Data were collected and analyzed with adjustments for the number of plants harvested. There were a few entries that have shown some promising results for further evaluation.

Fourteen (14) varieties of mung bean were planted in December 2007 in preliminary evaluation of mung bean. Agronomic data were collected. Three varieties, *VC-6173-B10, VC-6173A* and *KPS-2* had larger seed size (100 grain wt. <6 g). The size is an important characteristic for the consumer. Harvested seeds were stored in cold storage for further evaluation.

Seeds of Red kidney beans (RKB), black beans, small red beans and pinto beans were obtained from the San Ignacio local market and other two varieties of RKB obtained from Spanish Lookout and were planted on 4 January 2008 in an observational trial. CARDI has initiated the evaluation of beans and RKB for the first time due to their importance for local and export market. The Ministry of Agriculture and Fisheries has requested CARDI to initiate this work in Belize. The variety Small red bean was harvested on 17 March 2008, while the others were harvested on 25 March 2008, together with the cowpea. The harvested seeds were stored in plastic bottle and stored in cold storage for further evaluation.

Develop and transfer production technology packages
Three seed treatments were evaluated for protection of seeds and foliar insect pests. There were significant differences in the number of plants/ ears harvested and weight of cobs and grain harvested.

Of all the foliar diseases that may appear on soybean in Belize, Asian Soybean Rust (ASR) is potentially the most destructive. Foliar fungicides applications offer the only practical control. Initial fungicides application must be made before rust is well established in a field, no later than when there are 1 or 2 pustules on no more than 5% of the plants. In general soybean planted in December 2007 had low rust severity score (less than 5 in the scale of 1 to 9) with Asian Soybean Rust as compared to 2006/2007 plantings. All fungicides, (Silvacur-Combi, Duett, Tilt and Amistar) treatments had significantly lower disease severity (less than 1.5) as compared to the untreated plot, which had severity score of 5. There were no differences between the means of 1-application and 2-applications for rust. Based on the results

of two years (2007 and 2008) trials any of these fungicides could be applied between 55 to 60 days after planting. The disease seems to affect soybean after its flowering, which is about 55 days after planting. The disease normally affect soybean which are planted during November to March planting season.

The trial to assess the efficacy of three insecticides - azadirachtin, permethrin and imidacloprid - against pepper weevil was conducted in CARDI's field station at Central Farm, Cayo District. Two applications of the insecticides were carried out. There was no significant difference in the number of live larvae found in fallen peppers or in the weights of harvestable pepper fruits, before, and seven days after, insecticide treatment. However, there was a significant difference ($P < 0.001$) in the number of fallen fruits (indicating weevil infestation) among the different treatments. The data suggest that Neem-X® and Helmethrin® can be used in the chemical management of the pepper weevil.

Hot pepper seed which had been soaked in EM (Effective Microorganisms ^{TM}) 1 + EM-treated germination mix produced insignificantly ($P = 0.298$) taller seedlings than either those which had been soaked in EM1 but sown in untreated germination mix or the control treatment.

Produce breeder, nucleus, stock and commercial seeds of improved varieties and landraces

Ninety-six (96) entries of soybean were planted on 18 December 2007 for the maintenance of germplasm. Harvested seeds were stored in gallon plastic bottles and placed in the cold seed store room.

Nucleus (41 entries) and stock (three entries) seed of peanut were planted in July 2008 but these crops were completely destroyed due to prolonged flood when the crop was almost mature to harvest.

Ten selected soybean varieties, *var. CARDI S-15, CARDI S-89, CB-1099, 3296, Huasteca 200, D-082-2740, TGX 293-63E, TGX 1025-8E, TGX 297-10F, UFV-1 and H-9000* were planted in December 2007 for stock seed multiplication. Harvesting was carried out in the first week of April 2008. A total of 2,031 kg of seeds were harvested, dried, cleaned and stored for further use.

Cowpea var. *California # 46* was planted in January 2008 for stock seed multiplication. A total of 393.3 kg of seeds were harvested. After drying and cleaning it was stored as stock seed for further multiplication.

Seeds of Mung bean, var *Laxmi and CARDI Green* were planted on 13 January 2008. The crop was harvested on the 08 April 2008. The yield obtained was 24.2 kg and 67 kg of seed, respectively for two varieties. Seeds were cleaned and stored.

Seeds of Urid were planted on 14 January 2008 for stock seed multiplication. The yield obtained was a total of 25 kg. Seeds were cleaned and stored.

A selected variety of sweet corn was planted in January 2008 for seed multiplication. The yield obtained after shelling was a total of 43 kg out of which 17.7 kg was stored for seed purpose.

Soybean varieties, var. *CARDI S-15 and CARDI S-89* were planted in December 2007 for commercial seed multiplication. About 2,119 kg seed of *CARDI S-15* and 6,000 kg seed of *CARDI S-89* were harvested, dried, cleaned stored for sale as commercial seed.

Open pollinated yellow Corn var. *CARDI YC-001* was planted between June 2008 for stock and commercial seed production. The crop was harvested by hand in October/November 2008. Total yield obtained was 13,636 kg. A total of 5,000 kg of seed was sold to FAO and the Ministry of Agriculture distribution to farmers who were affected by flood during October 2008. This amount of seed could plant about 200 ha. A total of 2,000 kg of stock seed has been stored for planting in 2009.

Hot pepper, *var. West Indies Red* has been multiplied for seed extraction. About 264 kg of fruits were harvested for seed extraction and 2 kg of seeds were extracted, dried, cleaned and then stored for sale.

Support for National and Regional Research and Development

CARDI provided support to the National Coordinating Committee for Agricultural Research and Development (NCCARD) by serving actively as the CORE Committee of NCCARD. CARDI has also actively participated in the Grain Task Force and other commodity committees and other boards in support of agricultural research and development.

Consultancy Services and Technical Assistance:

Fifty-three pest interception samples collected by BAHA Quarantine Officers were examined and identified as far as possible. The majority (71.7%) of samples were taken from fresh vegetables (mainly broccoli and cauliflower). The insects found on the vegetables were mainly field pests, such as diamondback moth (DBM), *Plutella xylostella* L., while those taken from rice shipments were all storage pests. None were exotic to Belize. Some non-pest insects (including insect-parasitic wasps, ladybird beetles, ground beetles and springtails) were also identified from samples collected.

As part of the work programme, technical assistance was also provided to BAHA in areas deemed necessary. One area was with respect to the prospective export of pitahaya (Hylocereus spp.) fruits to the USA. One of the pests of concern to US authorities is *Geraeus* sp., a weevil reported to attack pitahaya. Sampling of fruits from pitahaya farms in the Cayo District was conducted. However, no signs of weevil infestation were found in fruits from any of the farms visited.

A task force – with members from MAF (Ministry of Agriculture and Fisheries), BAHA and CARDI – was formed late last year after the first report of the presence of the rice mite, *Steneotarsonemus spinki* Smiley, in Belize. The task force was responsible for research, management and education on the rice mite. A varietal trial, consisting of 43 varieties, was planted in June. Seventeen of these varieties are currently being planted in Belize, while the rest were from Nicaragua and Honduras. Unfortunately, the mite population did not reach levels in which an assessment could be made to compare the tolerance of the different varieties.

There were several requests to BAHA from farmers requiring assistance with pest problems on crops. Field visits were made to the Mennonite farming communities in Little Belize and Shipyard in connection with the decline of corn plants in their fields. It was concluded that *Oligonychus pratensis* (Banks), commonly known as Banks grass mite (BGM), was most probably responsible for the observed decline of the corn plants. The high levels and incidence of BGM observed in the corn fields was most probably due to a combination of factors, including elevated temperatures, low rainfall, low humidity, insecticide use (particularly broad-spectrum

ones applied against other corn pests such as *S. frugiperda*) and lack of natural enemies. Several recommendations were made on the management of the BGM, including regular monitoring of fields once conditions become favourable for the increase of BGM populations, conservation of the natural enemy complex of the mites, application of a suitable miticide in hot spot areas only when chemical control was warranted and avoidance of treatment with broad-spectrum insecticides against other corn pests.

Assistance to the Citrus Research and Education Institute (CREI)

With respect to Technical Assistance for CREI, activities continued on the identification of the trunk girdling lava (TGL). Three adults emerged from trunk girdling larvae kept in pots of soil in emergence cages, one of which appeared to be a female with eggs. The decline in TGL infestation observed in March at Sagitun and Maya Centre continued in April and May, but began to increase again in June.

Citrus branches with psyllid nymphs collected from Seine Bight and Placencia in May 2008 were placed in emergence cages and, after about three weeks, were examined. Twenty-one parasitic wasps (Hymenoptera: Eulophidae) and four psyllid nymph casts with exit holes - indicative of parasitism - were observed. These results are very encouraging as they indicate that natural enemies – parasitoids and predators – are already present in the country, which means that biological control can play a significant role in the management of this pest.

CARDI Commercial Production

Cowpea var. *California # 46* was planted on 16 January 2008 for commercial grain production. The area of this field was 16.2 ha. The crop was harvested on 09 April 2008. Total yield obtained from this field was 13,636 kg and was sold to an exporter. Total revenue generated from the sale was EC$ 15,530 (BZ$ 11,604).

Yellow hybrid *Pioneer 30F73* was planted on June 2008 for commercial grain production. The area of this field was 16.2 ha. The growth of corn crop was very good and fairly clean of weeds. Unfortunately this area was completely submerged in water due to flood in October 2008 and, therefore, only 10 percent of the area was suitable for harvesting. Total amount harvested from this field was 25,727 kg which was sold for feed.

The open pollinated yellow corn variety, *CARDI YC-001* and hybrid white corn, *DK353* were planted for grain production. Total amount of grain harvested reached 10,274 kg.

5.6 Food and Agriculture Organization

The Ministry of Agriculture and Fisheries pursued several key areas in its strategic plan with technical assistance and support from FAO. These areas included food security, technical cooperation in agriculture extension, disaster risk mitigation and other strategic areas in agriculture and forestry.

Programme on Food Security

The Food Security Project GTFS/RLA/141/ITA which officially ended in December 2007 provided agro-inputs, seedling nurseries, irrigation units and small machinery for small plot land preparation, planting and forage harvesting. A second phase focusing on commodity development started in 2008 and Belize was one of recipient countries.

In August 2008, FAO signed with GOB the Initiative on Soaring Food Prices project TCP/Bze/3201(E) for a total of $250,000 US to supply inputs to vulnerable and needy farmers affected by rising cost of agricultural inputs and fuel prices. By the end of 2008, this one-year project had procured and distributed agro-chemicals, vegetable seeds and seedlings, corn and bean seeds to over 500 needy farmers throughout the country. This intervention was targeted to increase agricultural produce in the local markets and contribute to a decrease in prices of vegetables, grains and pulses.

One Telefood proposal "Bee-keeping for income generation for women and youth" was approved in July 2008 which provided starter colonies, protective gears and honey extractors, among other materials, to women producers at Santa Martha. Through another Telefood project for Irish potato, three storage units were completed at San Antonio and tested. The implementation of the Telefood crop and small animal production at Escuela Secundaria Mexico was finalized with the installation of bee hives and the construction of one seedling production nursery unit.

In December 2008, an additional three Telefood proposals for recipients in Toledo, Stann Creek and Orange Walk were submitted. All three projects focused on cultivation of vegetables, fruit trees and rearing of small stocks.

The technician through the South-South Cooperation carried out numerous training in organic composting and vermiculture throughout the country. The organic project at Santa Familia, in particular, attracted significant attention and interest of producers and vegetable vendors from surrounding villages.

Technical Cooperation Programme

Among the technical assistance received was the extension TCPF project that assessed the effectiveness and impact of the National Agricultural Extension Service. Dr. Wayne Ganpat, an Extension specialist, conducted the assessment of several local extension services. A report on his findings was submitted to MAF and a Technical Cooperation Project (TCP) proposal was prepared for funding, but FAO recommended a further assessment with an emphasis on the demand side of extension before final consideration and approval.

MAF Statistical Unit also received technical support through the project TCP/Bze/3101(D). The international consultant, Dr. Frederick Baker and a local consultant carried out training of the Policy Unit and extension personnel in the use of software, conducting appropriate surveys and statistical methodologies for field data collection.

FAO provided technical assistance to the department of Cooperatives. A series of consultations were carried from which a plan of action was developed. This provided the basis for the

development of a national strategy and addressed the developmental needs of the cooperative movement.

Through the technical cooperation facility, Dr. Ralph Phelps also made an assessment of the vulnerability of the citrus industry to exotic diseases such as Citrus greening, Citrus canker, Citrus Leprossis Virus and other exotic diseases.

The Fisheries Department also received approval for a needs assessment of freshwater aquaculture. The project would focus on local infrastructure, institutional and technological capacities of the public and private sector to sustain the expansion of tilapia farming for the local and export market.

A Disaster Risk Mitigation TCP project for a total of $443,000US was approved and signed October 16, 2008. The project focused on building national and local capacities for hurricane related disaster mitigation, preparedness and response in the agricultural sector. Full implementation would occur in 2009, with an emphasis on collaboration and synergy with EU projects and Caribbean Community Climate Change Centre.

The National Forest Programme Facility was launched in October 2007 and continued throughout 2008 with an emphasis on assisting stakeholders in forestry to contribute more meaningfully to the implementation of Belize's National Forest Programme.

Assistance was also received with *CODEX ALIMENTARIUS* and with laboratory equipment and materials for the Belize Agriculture Health Authority.

Finally, the State of Food and Agriculture (SOFA) was presented to key stakeholders. The FAOR in collaboration with Climate Change Centre presented the current status of bio-fuels and its impact on world agriculture, and bio-energy initiatives in Latin America and the Caribbean. World Food Day under theme "World Food Security: the challenges of climate change and bio-energy" was commemorated with a football marathon, but the main event on the 16 October 2009 was thwarted by extreme inclement weather.

5.7 Regional Unit for Technical Assistance

During its 4th phase Ruta (2008-2011) together with the Ministry of Agriculture & Fisheries and its international partners has decided to focus on the following areas:

- Agricultural Policies
- Family Agriculture
- Trade Liberalization
- Institutional Modernization
- Agro-environmental Business
- Social Development
- Value chains and Market Access

For 2008 RUTA focused on the following two areas:

To assist in providing training on the use of Rural Invest Software to the Public, Private Sector and Academia to be used for Project Appraisal. The rural population is, now, being demanded more and more to actively participate in the identification, preparation, execution and evaluation of social development and productive programmes and projects. It is in this view, that RUTA/FAO developed the Rural Invest methodology which is a training tool designed to facilitate the formulation and assessment of small rural investment projects. With this module of Rural Invest, it is hoped to improve the capacity of a wide range of (public/private sector/Academia) institutions to prepare/evaluate small and medium investments. Through the training of this methodology, collaborative agreements with several institutions, such as MAF/UB(University of Belize) will be established to provide in-service Rural Invest Training in the future for the rural population.

To assist MAF in the implementation of the Rural Micro- Financing program to be manage by credit unions by providing them training on the RURAL INVEST Software methodology

HUMAN CAPACITY BUILDING: To date RUTA has facilitated human capacity building on four(4) areas: _Trade Negotiations/Policy, Agricultura,Desarrrollo Rural y Seguridad Alimentaria, Diplomado en Agricultura Organica and Seminar on Food Quality linked to Origen and Traditions**.**

For 2009 Ruta will focus on the following areas:

1. To assist (MAF) to develop the Cooperative Department which should include the provision of technical assistance on the following:
    - Area of policy support
    - Legislation
    - Entrepreneurship development
    - Institutional strengthening (Cooperative Education)
2. To assist in creating an' Educational Exchange Programme' to share and gain experience from viable, feasible and sustainable farming cooperatives in the region, specifically, the experience of Nicaragua
3. To assist MAF to draft an action plan for the development of the Cocoa Industry in Belize as a follow up to the previous study made by RUTA/CATIE.
4. To assist Belize Organic Producers Association (BOPA) to finalize draft on Organic Act and provide technical assistance on organic farming for technicians and farmer groups.
5. To assist MAF to conduct impact assessment of projects on rural agricultural communities for the past 10 years (1995 – 2005).

6.0 Senior Management Staff of the Ministry of Agriculture & Fisheries

(31st December 2008)

Ministry:
Hon. Rene Montero, Minister of Agriculture & Fisheries
Mr. Gabino Canto, Chief Executive Officer
Mr Rudolph, Finance Officer
Mr. Errol Gentle, Administrative Officer
Mr. Jose Castellanos, Policy Analyst

Departments:
Mr. Eugene Waight, Chief Agriculture Officer
Ms. Beverly Wade, Fisheries Administrator
Mr. Alfred Ramirez, Registrar of Cooperatives

Statutory Bodies:
Mr. Roque Mai, General Manger, Belize Marketing & Development Corporation
Ms. Neri Sanz, Managing Director, Belize Agriculture Health Authority
Mr. Harry Parham, Managing Director, BLPA
Mr. Vincent Gillet, Managing Director, CZMA

Associated Regional/ International Organizations:
Mr. Anil Sinha, Representative, CARDI
Mr. Salvador Monge, Representative, IICA
Chief Cheng Jin, Head of Technical Mission, ROC Taiwan
Mr. Fermin Blanco, Representative, OIRSA
Mr. Crispin Blanco, Representative, USDA/APHIS

Appendix I: Primary Agriculture Output Value at 2008 producer Price

Economic Value of Agriculture Output 2008							
Commodities	**Quantity (lbs)**		**Price (BZE$)**		**Value (BZE $)**		**% Chg**
	2007	**2008**	2007	2008	2007	2008	
Sugarcane (tons)	**1,200,050**	**980,114**	**$54.22**	**$55.20**	**$65,066,711**	**$54,102,302**	-17%
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)	**136,671,040**	**171,811,092**			**$41,463,786**	**$65,648,166**	58%
Apple Banana (Bunches) (30 lbs/bunch)	3,725	6,775	$3.00	$3.00	$11,175	$20,325	82%
Domestic Consump (40 lbs/Box)	410,013	468,824	$3.00	$3.00	$1,230,039	$1,406,472	14%
Total Value					**$42,705,000**	**$67,074,963**	57%
Citrus							
Grapefruit (80lb box)	1,571,196	1,493,186	$5.50	$3.58	$8,641,578	$5,345,606	-38%
Orange (90 lb box)	5,411,020	5,866,265	$12.76	$8.48	$69,044,615	$49,745,927	-28%
Fresh Lime Export (lbs)	135,000	97,200	$0.07	$0.07	$9,450	$6,804	-28%
Fresh Orange Export (lbs)	5,602,246	3,204,123	$0.48	$0.53	$2,684,562	$1,689,118	-37%
Fresh Grapefruit Export (lbs)							
Domestic Lime Consumpt. (lbs)	120,000	120,000	$0.50	$0.50	$60,000	$60,000	0%
Domestic Grapefruit Consumpt. (80 lbs/bx)	15,712	14,932	$6.00	$6.00	$94,272	$89,591	-5%
Domestic Orange Consumpt. (90 lbs/bx)	270,551	293,313	$8.00	$8.00	$2,164,408	$2,346,506	8%
Citrus Products					**$82,698,885**	**$59,283,552**	-28%
Marine Products (incl 4% for dom. Consump)					**$43,869,073**	**$46,055,925**	5%
Lobster	458,665	449,110	$35.09	$32.97	$16,095,747	$14,808,642	-8%
Conch	526,205	648,450	$10.24	$10.24	$5,389,117	$6,640,132	23%
Shrimp	5,439,206	5,026,700	$3.63	$3.68	$19,749,080	$18,510,327	-6%
Whole Fish	260,785	2,613,397		$1.51	$400,812	$3,933,762	881%
Fish Fillet	102,504	59,504		$6.58	$527,139	$391,680	-26%
Other	2,530		$ 7.87		$19,907		-100%
Domestic Consumption	271,596	351,886			$1,687,272	$1,771,382	5%
Fruits							
Papayas (export)	70,964,944	59,476,829	$0.36	$0.36	$26,073,873	$ 21,259,806	-18%

Mangoes	1,340,000	1,243,000	$0.50	$0.50	$670,000	$621,500	-7%
Local Papaya	1,419,299	1,189,537	$ 0.42	$0.42	$596,106	$499,605	-16%
Pineapple	5,017,044	2,101,950	$0.31	$0.31	$1,555,284	$651,605	-58%
Watermelon	2,551,600	2,551,117	$0.30	$ 0.30	$765,480	$765,335	0%
Coconuts (Nuts)	841,840	561,900	$ 0.71	$0.71	$597,706	$398,949	-33%
Canteloupe	638,350	508,833	$0.40	$0.40	$255,340	$203,533	-20%
Jicama	20,000	276,000	$0.50	$0.50	$10,000	$138,000	1280 %
Cashew (raw nut)	298,430	262,250	$1.00	$1.00	$298,430	$262,250	-12%
Grapes				$ -	$ -	$ -	
Craboo	56,200	16,000	$0.75	$0.75	$42,150	$12,000	-72%
Guava	9,000	10,400	$ 1.50	$ 1.50	$ 13,500	$15,600	16%
Other Fruit (sapodilla,mamey,etc.)					$ 137,500	$ -	- 100%
Soursop	26,820	30,325	$2.00	$2.00	$53,640	$ 60,650	13%
Sub-Total					**$ 31,069,009**	**$24,888,833**	-20%
Grains/Legumes							
Corn	84,466,610	65,273,938	$0.31	$0.27	$26,184,649	$17,623,963	-33%
Rice paddy	39,186,888	25,970,825	$0.22	$0.25	$8,621,115	$6,492,706	-25%
Sorghum	15,113,400	23,567,100	$ 0.20	$0.20	$3,022,680	$4,713,420	56%
Cowpeas	5,436,100	6,761,700	$0.45	$0.45	$2,446,245	$3,042,765	24%
RK beans	6,254,965	5,532,700	$0.95	$1.20	$5,942,217	$6,639,240	12%
Black Beans	2,938,965	2,472,050	$ 0.92	$0.92	$2,703,848	$2,274,286	-16%
Other Beans	412,900	351,000	$0.80	$0.80	$330,320	$280,800	-15%
Soybean	831,200	54,000	$0.34	$0.34	$282,608	$18,360	-94%
Peanuts	215,155	218,750	$1.74	$1.74	$374,370	$380,625	2%
Sub-Total					**$49,908,052**	**$41,466,166**	-17%
Other							
Hot peppers (export)	171,146	219,700	$0.80	$ 0.80	$136,917	$175,760	28%
Hot peppers (local)	144,750	134,700	$1.22	$1.22	$176,595	$164,334	-7%
Cocoa	54,773	110,515	$2.00	$2.30	$109,546	$254,185	132%
Cabbage	3,221,665	3,809,547	$0.66	$0.66	$2,126,299	$2,514,301	18%
Cucumber	167,675	344,839	$0.50	$0.50	$83,838	$172,420	106%
String Beans	3,700	4,650	$0.80	$0.80	$2,960	$3,720	26%
Okra	49,450	65,415	$0.95	$0.95	$46,978	$62,144	32%
Squash	122,500	302,023	$0.45	$0.45	$55,125	$135,910	147%
Pumpkin	114,000	246,264	$0.40	$0.40	$45,600	$98,506	116%
Sweet Pepper	1,107,609	1,070,387	$2.77	$2.77	$3,068,077	$2,964,972	-3%
Tomatoes	1,590,597	1,430,137	$1.52	$1.52	$2,417,707	$2,173,808	-10%
Irish Potato	1,054,025	1,906,500	$ 0.86	$0.86	$906,462	$1,639,590	81%
Onion	864,050	1,900,050	$1.34	$1.34	$1,157,827	$2,546,067	120%
Carrots	452,950	463,700	$0.79	$0.79	$357,831	$366,323	2%
Cassava	721,630	669,750	$0.46	$0.46	$331,950	$308,085	-7%
Lettuce	467,550	328,157	$0.75	$0.75	$350,663	$246,118	-30%
Chinese Cabbages	0	36,200		$0.75	$-	$27,150	
Broccoli	22,900	32,354	$1.50	$1.50	$34,350	$48,531	41%
Celery	124,950	78,850	$2.00	$2.00	$249,900	$157,700	-37%

Cho-cho	13,700	39,625	$0.75	$0.75	$10,275	$29,719	189%
Sweet Corn (ears)	364,000	416,000	$0.70	$0.70	$254,800	$291,200	14%
Cauliflower	32,700	26,545	$1.50	$1.50	$49,050	$39,818	-19%
Cocoyam	343,920	368,600	$0.81	$0.81	$278,575	$298,566	7%
Sweet Potato	50,750	138,650	$ 0.71	$ 0.71	$36,033	$98,442	173%
Yam	243,900	200,050	$0.66	$0.66	$160,974	$132,033	-18%
Yampi	263,392	162,300	$0.81	$0.81	$213,348	$131,463	-38%
Pitahaya	1,200	23,280	$2.00	$2.00	$2,400	$46,560	1840 %
Plantain (bunches)*	147,331	358,891	$5.00	$5.00	$736,655	$1,794,455	144%
Cotton	205,000	200,000	$8.00	$8.00	$1,640,000	$1,600,000	-2%
Annato	83,400	108,200	$0.90	$0.90	$75,060	$97,380	30%
Coffee	100,000		$1.35	$1.35	$135,000	$ -	-100%
Avocado	65,250	26,000	$0.75	$0.75	$48,938	$19,500	-60%
Ginger	34,000	92,263	$ 0.75	$0.75	$25,500	$69,197	171%
Nutmeg	14,000		$15.00	$15.00	$210,000	$-	-100%
Other Vegetables (radish, cilantro, etc.)					$110,000	$110,000	0%
Sub-Total					**$15,645,229**	**$18,817,955**	20%
Grand Total					**$ 96,622,290**	**$85,172,954**	-12%
Livestock:							
Dressweight:							
Beef	3,566,700	3,780,450	$2.50	$1.95	$8,916,750	$7,371,878	-17%
Beef Export (on the hoof) (lbs)	4,203,000	3,801,600	$1.26	$1.26	$5,295,780	$4,790,016	-10%
Pigs	2,464,320	2,352,240	$3.00	$3.50	$7,392,960	$ 8,232,840	11%
Pigs Export(on the hoof)(lbs)	207,600	0	$1.48	$1.50	$307,248	$ -	100%
Sheep	52,695	67,230	$3.00	$5.00	$158,085	$336,150	113%
Poultry	29,473,121	27,767,402	$1.77	$2.41	$52,167,424	$66,919,439	28%
Turkey	366,049	288,431	$3.00	$3.00	$1,098,147	$865,293	-21%
Milk (lbs)	5,965,514	6,437,593	$ 0.32	$0.49	$1,908,964	$3,154,421	65%
Spent hens (No. Heads)	139,000	139,000	$3.00	$3.00	$417,000	$417,000	0%
Eggs (Dozen)	2,949,537	3,373,885	$2.67	$2.67	$7,875,264	$9,008,273	14%
Honey (lbs)	106,325	63,315	$4.50	$3.25	$478,463	$205,774	-57%
Livestock					**$86,016,085**	**$101,301,083**	18%
All Non-traditional products					**$182,638,374**	**$186,474,036**	2%
Citrus/Sugarcane/							
Bananas/Fisheries					**$234,339,670**	**$226,516,743**	-3%
Total Agri. Output					**$416,978,044**	**$412,990,779**	-1%
** 1 Bunch = 45 lbs*							
Source: MAFC, District Agriculture Offices Reports							

Appendix II – A Agricultural Exports 2003 – 2008

Agricultural Exports 2003 - 2008						
Value ($'000 Bze)						
Commodities [a]	2003	2004	2005	2006	2007	2008
Sugarcane Sector:						
Sugar (Long Ton)	$ 71,227	$ 81,534	$ 69,899	$ 100,065	$ 88,142	$ 71,384
Molasses (gals)	$ 2,476	$ 1,766	$ 2,821	$ 4,203	$ 5,504	$ 2,821
Sugar/Molasses	*$ 73,703*	*$ 83,300*	*$ 72,720*	*$ 104,268*	*$ 93,646*	*$ 74,204*
Bananas	$ 52,579	$ 52,991	$ 51,081	$ 50,592	$ 41,464	$ 65,648
Citrus Sector:						
Orange Concentrate (gal)	$ 65,538	$ 55,489	$ 87,547	$ 86,176	$ 101,169	$ 99,927
Orange Squash (gal)	$ 1,479	$ 1,996	$ 542	$ 107	$ 93	$ 582
Orange Oil (lbs)	$ 566	$ 2,050	$ 1,919	$ 2,810	$ 2,213	$ 3,005
Oranges (lbs)	$ 2,406	$ 1,973	$ 3,248	$ 2,881	$ 2,685	$ 1,689
Grapefruit Concentrate (gal)	$ 12,516	$ 23,817	$ 19,424	$ 22,810	$ 16,271	$ 12,673
Grapefruit Squash (gal)	381	$ 1,792	$ 298	$ 27	$ 8	$ 258
Grapefruit Oil (lbs)	$ 24	$ 1,573	$ 6,600	$ 2,852	$ 681	$ 755
Citrus	*$ 82,909*	*$ 88,690*	*$ 119,579*	*$ 117,663*	*$ 123,121*	*$ 118,889*
TRADITIONAL EXPORTS						
Marine Products	$ 110,157	$ 107,334	$ 83,871	$ 86,016	$ 42,182	$ 44,285
Lobster	$ 13,598	$ 15,142	$ 14,499	$ 13,927	$ 16,096	$ 14,809
Conch	$ 3,741	$ 5,810	$ 7,156	$ 8,359	$ 5,389	$ 6,640
Shrimp	$ 92,762	$ 85,153	$ 60,535	$ 62,520	$ 19,749	$ 18,510
Whole Fish	$ 30		$ -	$ 277	$ 401	$ 3,934
Fish Fillet	$ -		$ -	$ 933	$ 527	$ 392
Crab	$ 26		$ -	0	$ 20	0
Other Fish		$ 1,228	$ 1,681	0	0	
Traditional Sector	*$ 319,348*	*$ 332,316*	*$ 327,250*	*$ 358,539*	*$ 300,413*	*$ 303,026*
Other						
Pepper Sauce	$ 607	$ 866	$ 1,154	$ 1,607	$ 1,687	$ 1,632
Papayas	$ 16,752	$ 22,818	$ 26,768	$ 31,014	$ 26,074	$ 22,442
Red Kidney Beans	$ 1,659	$ 1,872	$ 5,064	$ 1,912	$ 2,878	$ 3,451
Black Eye Peas	$ 3,410	$ 1,418	$ 3,463	$ 3,372	$ 3,599	$ 4,047
Mangoes	$ 1	$ -	$ -	$ -		
Cocoa Beans	$ 94	$ 69	$ -	$ -		
Honey	$ -	$ -	$ -	$ -		
Peanuts		$ 12	$ -	$ -		
Chicle	$ 22	$ -	$ -	$ -		
Total Other	$ 22,545	$ 27,054	$ 36,449	$ 37,905	$ 34,238	$ 31,571
Other Exc. Papayas	$ 5,793	$ 4,236	$ 9,681	$ 6,891	$ 8,164	$ 9,130
Agriculture Export Earnings	$ 341,893	$ 359,370	$ 363,699	$ 396,444	$ 334,651	$ 334,597
Source: [a] Central Statistics Office						
[b] Marine Product values for 2001 are from Fisheries Department, Belize City						
N/A = Not Available						
p= Preliminary						
r=Revised						

Appendix II –B: Agriculture Exports 2003 - 2008

Agriculture Exports 2003 -2008						
('000 Units)						
Commodities [a]	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Sugarcane Sector:						
Sugar (Long Ton)	**99**	**114**	**90**	**96**	**83**	**66**
Molasses (gals)	**5,610**	**5,037**	**5,129**	**5,098**	**6,426**	**3,295**
Sugar Products						
Bananas (tonne)	**73**	**79**	**76**	**73**	**61**	**78**
Citrus Sector:						
Orange Concentrate (gal)	**4,921**	**6,445**	**8,380**	**6,415**	**4,672**	**5,676**
Orange Squash (gal)	**418**	**570**	**149**	**14**	**15**	**310**
Orange Oil (lbs)	**244**	**1,222**	**2,093**	**3,119**	**1,396**	**1,765**
Oranges (lbs)	**13,636**	**12,636**	**17,782**	**19,309**	**5,602**	**3,204**
Grapefruit Concentrate (gal)	**768**	**1,813**	**1,255**	**1,246**	**786**	**725**
Grapefruit Squash (gal)	**107**	**347**	**38**	**2**	**8**	**49**
Grapefruit Oil (lbs)	**11**	**182**	**652**	**293**	**140**	**120**
Marine Products (lbs)	**17,063**	**18,394**	**19,925**	**17,593**	**6,790**	**8,797**
Lobster	**536**	**538**	**510**	**398**	**459**	**449**
Conch	**450**	**596**	**524**	**732**	**526**	**648**
Shrimp	**16,052**	**16,999**	**18,445**	**15,922**	**5,439**	**5,027**
Whole Fish	**24**			**392**	**261**	**2,613**
Fish Fillet	**-**			**148**	**103**	**60**
Crab	**1**				**3**	**-**
Other Fish		**261**	**445**			**-**
Other						
Pepper Sauce (lbs)	**399**	**513**	**583**	**778**	**812**	**866**
Papayas (lbs)	**36,522**	**55,606**	**63,105**	**76,004**	**72,945**	**63,716**
Red Kidney Beans (lbs)	**3,118**	**3,058**	**7,430**	**2,734**	**3,527**	**3,601**
Black Eye Peas (lbs)	**8,130**	**3,167**	**7,986**	**5,921**	**5,363**	**5,203**
Mangoes (lbs)	**10**	**-**	0	0		
Cocoa Beans (lbs)	**45**	**45**	0	0		
Chicle (lbs)	**19**	**-**	0	0		
Honey (lbs)	**N/A**	**-**	0	0		
Peanuts (lbs)	**N/A**	**21**	0	0		
Source: [a] All export commodities figures are from Central Statistics Office						
N/A = Not Available						
p=Preliminary						
r= Revised						

Appendix III: Agriculture Imports 2003 - 2008

Agriculture Imports 2003 - 2008						
($' 000 bze)						
IMPORTS	2003	2004	2005	2006	2007	2008
Meat	$ 9,524	$ 9,120	$ 8,075	$ 7,744	$ 10,548	$ 11,014
Beef	$ 168	$ 126	$ 250	$ 294	$ 323	$ 155
Pork	$ 2,199	$ 3,502	$ 2,812	$ 1,541	$ 3,469	$ 2,438
Poultry	$ 397	$ 329	$ 319	$ 36	$ 307	$ 244
Other	$ 6,760	$ 5,163	$ 4,694	$ 5,873	$ 6,449	$ 8,177
Dairy	$ 23,053	$ 23,567	$ 24,291	$ 24,085	$ 27,772	$ 28,491
Eggs	$ 1,195	$ 895	$ 853	$ 829	$ 713	$ 84
Rice	$ 297	$ 136	$ 132	$ 175	$ 209	$ 616
Flour	$ 216	$ 210	$ 287	$ 247	$ 298	$ 654
Other cereals*	$ 18,595	$ 18,870	$ 18,612	$ 18,882	$ 18,825	$ 34,215
Fruits and Vegetables	$ 11,168	$ 12,353	$ 9,089	$ 8,827	$ 10,940	$ 12,473
RK.Beans	$ 498	$ 45	$ 129	$ 162	$ 356	$ 25
Other Food*	$ 32,147	$ 26,398	$ 45,117	$ 42,108	$ 47,926	$ 45,116
Total Food	$ 118,730	$ 109,232	$ 120,203	$ 118,241	$ 135,589	$ 158,716
exc Ani. Feed & Seed	$ 96,692	$ 91,594	$ 106,585	$ 103,058	$ 117,588	$ 132,690
Inputs:						
Seeds	$ 1,336	$ 1,273	$ 1,510	$ 1,840	$ 4,254	$ 2,704
Fertilizers	$ 9,423	$ 8,435	$ 6,802	$ 11,560	$ 10,993	$ 15,456
Herbicides	$ 3,903	$ 4,171	$ 3,900	$ 4,650	$ 5,123	$ 7,102
Insecticides	$ 4,829	$ 3,890	$ 5,433	$ 4,134	$ 5,209	$ 5,809
Fungicides	$ 3,043	$ 3,454	$ 3,243	$ 5,348	$ 4,874	$ 4,915
Animal Feed	$ 20,702	$ 16,366	$ 12,108	$ 13,343	$ 13,747	$ 23,323
Total Inputs	$ 43,236	$ 37,588	$ 32,996	$ 40,875	$ 44,201	$ 59,309
Total Ag. Imports	$ 139,928	$ 129,182	$ 139,581	$ 143,933	$ 161,789	$ 191,999
Other Imports	$ 964,246	$ 899,035	$ 1,042,136	$ 1,176,882	$ 1,206,941	$ 1,482,247
Total Imports	$ 1,104,174	$ 1,028,217	$ 1,181,717	$ 1,320,815	$ 1,368,729	$ 1,674,246
# Includes Fresh, Chilled, Preserved, Processed Products						
* Includes Processed and unprocessed products						
Source: Central Statistical Office						
p=Preliminary						