



**Caribbean Agricultural Research and Development Institute**  
Improving lives through agricultural research

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**2009-2010 IICA/CARDI REPORT  
TO THE  
EXECUTIVE COMMITTEE OF THE INTER-AMERICAN INSTITUTE  
FOR COOPERATION ON AGRICULTURE**

**Trinidad and Tobago  
July 2011**



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**1 INTRODUCTION**

The period has seen signs of increased acceptance, by development agencies and recognised hemispheric and global research institutions and the regional integration entities, that CARDI has an important role in the development of the Region's agricultural and rural sectors. This is manifested, inter alia, in the reasonably successful negotiations for project funds, the willingness for institutions to enter into meaningful partnerships with CARDI and the requests for the Institute to co-ordinate and/or lead activities relative to the development of the sector in the Region.

To ensure that this improved image is maintained, and that CARDI can improve its delivery of tangible results to its member countries, the Institute continues to "fine tune" the processes for the conduct of research activities, with greater importance being placed on validation and transfer. In addition, improvement to its financial and administrative systems continues.

However, the Member States of CARDI have generally been impacted negatively by the recent financial and energy crises. This has caused some countries to struggle to meet their agreed upon commitments.

This report, which provides some examples of the above, is presented following the structure of the Medium Term Plan (MTP) 2008/2010. Nevertheless, it is to be noted that the MTP, 2011 to 2013, has recently been approved by CARDI's Board of Directors for submission to its Board of Governors.

**2. WORK PROGRAMME**

The Work Programme is conducted within a hierarchical system starting with Strategic Axes and ending with Programmes/sub-programmes each having discrete Expected Results at Institutional and Unit levels. This system is illustrated in Table 1.

## **2.1 Strategic Axis 1 - Development of Sustainable Industries**

The Expected Results (ERs) from the Institute's Programme of Work (POW) within the Commodity Development Programmes in Strategic Axis 1, Development of Sustainable Industries, have been defined in the 2008-2010 Medium Term Plan (MTP) as follows:

- Availability to farmers of quality seeds, disease-free propagules and improved breeding stock to facilitate higher productivity
- Increased productivity and production from popularised, validated and economical technologies
- Availability of new/ improved production and post-harvest technologies through continuous generation and/or adaptation of new technologies
- Enhancement of value added products through the identification/ selection of suitable varieties/ breeds and relevant post-harvest technologies
- A cadre of knowledgeable and skilled producers and processors through the dissemination of and training in already assembled "tech packs" on production and post-harvest technologies
- Information on productivity and returns to investment of improved production practices known to the agricultural and general community

The achievement of these ERs is supported by relevant ERs in thematic areas, such as, Technical Systems and Services and Natural Resource Management. The purpose of these ERs is to contribute to the attainment of food and nutrition security and, thus, the alleviation of hunger and poverty in Member Countries. Throughout the 2008-2010 MTP period, our approach has been to work with our partners and stakeholders to deliver these ERs along the commodity value chain and the research and development and application chain.

The highlights of the POW within Strategic Axis 1, Development of Sustainable Industries, during the period are as follows:

### **2.1.1. Science, Technology and Innovation**

Most of the Institute's POW in Strategic Axis 1 revolved around the two CFC/EU projects on Roots and Tubers (R&T) and Protected Agriculture Systems (PAS), and those within the IICA/CARDI programme.

### 2.1.1.1 Roots and Tubers

#### *a. Production of Planting Material*

- The vigorous pursuit of the most appropriate methods for mass-producing sweet potato, cassava and yam planting material for distribution to farmers for use and for replication to supply farmers continued.
  
- **Barbados**
  - A 0.4 ha cassava nursery established. 6 farmers provided with 6,550 cuttings to establish approximately 3 ha of the crop on their holdings. Additionally, farmers acquired knowledge on establishment and management practices through training workshops.
  - Two hundred 4-node cuttings each of the varieties, Mcol, BRA 383 and CM 3306-4 were established in the field for continuous multiplication
  - Trials to optimize protocols for the nursery establishment of cassava in seedling trays showed that hard wood, either whole or split in half gave the highest establishment (99%) followed by semi-hard wood (89%) and soft wood (45%)
  - The refurbishment of a nursery for weaning and hardening micropropagated plantlets is complete (except for installation of side nettings) and trial runs completed successfully.
  - Retrofitting the laboratory to facilitate quality control and/or certification for plantlets produced in tissue culture laboratories in the Region.
  
- **Dominica**
  - Weaning and hardening facilities have been completed and phytosanitary requirements for importing plantlets forwarded to the tissue culture lab in SVG and the quality control lab in Barbados
  
- **Jamaica**
  - Obtained pest and disease lists and protocols from the Plant Quarantine Division of the MOA for importation of planting materials
  - A trial on the production of sweet potato disease-free planting material showed that the flat bed produced twice (679 m running length) as much material as the hanging baskets (301 m) although it was easier to harvest vines from the hanging baskets.
  
- **St. Lucia**
  - Approximately 600 kg of sweet potato slips, 12,000 sweet cassava sticks, 310 kg of tannia and 350 kg yam planting material, that together would plant out the equivalent of 8 ha, were produced and distributed to 57 small farmers.

**b. Popularising Validated and Economical Technologies**

- **Dominica**

- Six demo plots (2 cassava, 3 sweet potato and 1 yam) out of the 19 plots under the CFC/EU R&T project established.

**c. Agronomic Trials**

- **Antigua and Barbuda**

- Conclusions from production field trials on the performance of ten sweet potato varieties were that varieties, planting season and agro-ecological zones influenced yield.

- Catch Me (41,250 kg/ha) and Hurricane (28,750 kg/ha) gave highest marketable yields.
- Highest marketable yields obtained from the January (27,250 kg/ha) and the October (30,750 kg/ha) plantings compared with April and July plantings;
- Crops at Cades Bay (27,750 kg/ha), and Green Castle (20,750 kg/ha) yielded higher than at Betty's Hope (11,800 kg/ha).

- **Jamaica**

- Earlier work had shown similar varietal and agro-ecological zone performance differences as in Antigua and Barbuda.
- In conclusion, the findings suggest that varieties must be matched with agro-ecological zones and planted at suitable times of the year in order to optimise marketing, export and food security opportunities for the crop.

**d. Pest Control**

- **St Kitts and Nevis**

- Simplicity is the best. A repeat trial on managing sweet potato weevil confirmed that the simple plastic (Chlorox) bottle captured the most weevils.

- **Barbados**

- The biopesticide, Naturalis L (*Beauvaria* sp.), is being tested and used for the control of the Scarabee weevil in sweet potato.

**e. Value Added**

- **Dominica and St Vincent and the Grenadines;**

- Infrastructure and equipment needs assessment of small scale cassava processors completed. All processors needed their cassava presses up-graded and stainless steel utensils introduced to replace plastic and wood utensils.

- **Jamaica**

- Oven racks for the Twickenham Bammy Factory have been provided and installed.

- ***Trinidad and Tobago***
  - o A cassava washing/ peeling machine has been acquired for the Trinidad and Tobago Agribusiness Association (TTABA).
- f. ***Extension and Training***
  - ***Regional***
    - o A Technical Manual on aspects of sweet potato production, marketing and disaster mitigation has been produced with funding provided by CTA. This will be of benefit to all actors along the sweet potato value chain within the Region and the tropical and sub-tropical world.
    - o CARDI and IICA have agreed for IICA's Regional Agribusiness Specialist to provide services as Cluster/Group Dynamics trainer for the CFC/EU projects
  - ***Dominica***
    - o Forty-eight stakeholders, including agricultural teachers, agri-students, farmers, extension officers and agricultural trainers, competent in constructing new and improved trellising system for yam production.
    - o Forty stakeholders have better understanding of the yam mini-setting technique.
    - o Eighteen stakeholders benefited from exposure on post-harvest treatment of horticultural crops.
  - ***St Vincent and the Grenadines***
    - o Approximately twenty stakeholders upgraded their knowledge and skills in cassava propagation and both sweet potato and cassava production systems through training sessions conducted by CARDI and MoA.
  - ***St. Kitts and Nevis***
    - o Thirty-three farmers and 26 extension and agricultural officers are now better able to manage post-harvest aspects of potato and onions and diseases and pests, especially Diamond Back Moth and Fruit flies, with FAVACA's support.
  - ***Grenada***
    - o Thirty NEFO farmers trained in GAPs to better produce tannia, dasheen, yam and sweet potato

#### **2.1.1.2. Cereals and Grain Legumes**

##### **a. *Agronomic Trials***

- ***Belize***
  - The annual evaluation and selection for farm production of introduced corn varieties gave the following results:
    - o Open pollinated white corn:- S03TLW-3B (4,100 kg/ha grain yield) and S03TLWLN-2 (3,300 kg/ha) from CIMMYT were selected from a list of eight entries.
    - o Hybrid white corn (provided by local seed suppliers):- Two Pioneer entries, 30F32 (5,500 kg/ha) and 30F96 (4,700 kg/ha) and DK 353 (5,100 kg/ha) were selected from six entries

- Hybrid yellow corn (provided by local seed suppliers):- X8A452 (5,500 kg/ha) and X8A459(5,400 kg/ha) were selected from 13 entries.

**b. *Popularising Validated and Economical Technologies***

**- Belize**

- The IICA-RedSICTA project on innovations to improve the competitiveness and thus the income of small white maize and black bean producers of Jalacté and San Vicente is progressing satisfactorily. Improved innovations in bean production (closer spacing, 30 x 15 cm vs. 30 x 30 cm, and application of fertilizer and post emergence herbicides) gave 26% increased production (1,190 vs. 945 kg/ha) over farmer practices.

**c. *Fertiliser Evaluation***

**- Guyana**

- A trial was initiated on the use of Deep Placed Urea, provided by the International Fertilizer Development Centre (IFDC), on swamp rice in Guyana. To date, the results are promising.

**d. *Production of Commercial Seeds***

**- Belize**

- 41 t and 39 t of soybean and corn, respectively produced for commercial use.

**2.1.1.3. Hot pepper:**

**a. *Seed Production***

**- *Regional***

- An agreement was reached with Caribbean Chemicals, a dominant input supplier in the Region, to market CARDI high quality and disease-free seeds in the Region and beyond.

**- **Trinidad and Tobago****

- 15 kg of seed from the purified and stabilised landrace, Moruga Red was distributed to farmers.

**- **Antigua and Barbuda****

- 52 kg of WI Red seed was produced. A corresponding pulp yield of 2,350 kg was produced and it was donated to MoA for value added activities

**b. *Pest Control***

**- **Grenada****

- A trial evaluating five chemicals against stem borer in hot pepper showed that four of the chemicals, Admire, Actara, GSR Calcium and Bio-neem, gave good control.



*c. Popularising Validated and Economical Technologies*

**- Barbados**

- Demonstration and subsequent adoption of CARDI production tech pack is having positive impact on hot pepper productivity and livelihoods. For example,
  - Harvesting hot pepper for six months provides an acceptable income stream for a fairly sustained period
  - One farmer harvested berries the equivalent of 45,600 kg/ha, which is 260% of the national average of 17,100 kg/ha.

**2.1.1.4 Fruits and Vegetables**

*a. Production*

**- Grenada**

- On-farm validation of the dwarfing technology for golden apple as compared to traditional production from seedlings, started in 2009 began to show favourable structural differences in tree growing patterns.

**- St Lucia**

- Explants of five most popular pineapple cultivars obtained for the tissue culture plantlets for rapid multiplication and sale to farmers

**- Trinidad and Tobago**

- In **Tobago**, tomato variety, Homestead, identified as an additional option for farmers when compared to the traditional varieties, Flora Dade and Calypso.

*b. Pest Control*

**- Grenada**

- Established that Red Lady papaya variety possesses a good degree of tolerance to bunchy top disease.
- A preliminary hot water treatment trial (50 and 55 °C at 35 and 30 minutes, respectively) to manage fruit fly on golden apples did not produce definitive results (fruit damage one hour to four days after treatment). Trials will be repeated.

*c. Extension and Training*

**- St Lucia**

- Pictorial descriptors of different stages of pineapple maturity for four locally cultivated varieties (Antigua Black, Smooth Cayenne, Boutielle and Victoria Sweet) have been documented for use by farmers as a production and marketing guide

#### 2.1.1.5. Small Ruminants

##### *a. Production and dissemination of improved stock*

###### - **Jamaica**

- Sixty animals have been distributed to farmers as improved breeding stock.

##### *b. Forage Evaluations*

###### - **Trinidad and Tobago**

- Mulato II (*Brachiaria* sp.) outperformed the standard, Tanner grass (*Brachiaria arrecta*), with higher dry matter concentration enabling a stocking rate increase of 20-25%

##### *c. Value Added*

###### - **Jamaica;**

- Construction of a pilot dairy goat Unit at the Sam Motta Demonstration and Training Centre (SMDTC) initiated. It will be functional in late 2011.

##### *d. Extension and Training*

###### - **Barbados**

- With strong governmental support, the livestock programme has provided technical assistance to both small and large ruminant farmers. Small farmers trained in areas, such as, housing improvement, forages, supplementary feeding, husbandry and milk and cheese production. For example:

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- Mulato and African star grasses and mulberry shrub have been introduced on five small ruminant farms and Mulato grass on three dairy farms.
- Stock housing facilities and production parameters, such as, lambs weaned, lamb mortality and milk production, have improved for ten small ruminant farmers
- Mechanisation of ensilage in drums using a compactor has been introduced
- Commercial manufacture of molasses-urea block (MUB) introduced
- A farmer group, Feed Products Inc., formed and has produced 400 of 20 kg MUB and sold to other small ruminant farmers
- Capacity for cottage cheese making increased as three goat farmers assisted in making goat cheese

###### - **Jamaica**

- Under an 18-month contract with the FAO/EC Global Food Security Facility, to improve small ruminant production and productivity through capacity building in production practices in 180 beneficiaries;

- Provision of technical assistance in the establishment and monitoring of nine pilot demonstration units and four specialised breeder units;
- Collaboration on training in Artificial Insemination (AI) of goats;
- Development of fodder banks;
- Construction and use of vermicompost pits;
- Production/distribution of fodder and agro and industrial by-product feeds

- **Grenada**

- Approximately 30 producers trained in the management of internal parasites in small ruminants

**2.1.1.6. Planting material**

- **St Lucia**

- Planting materials disseminated as follows;
  - Quality and disease free that could establish approximately 2 ha of crops were distributed to 23 farmers for the year. Major crops were passion fruits, golden apples and pumpkins, plantain and pineapple.
  - Disease tolerant seedlings of Malayan dwarf coconut tolerant for Red Palm Mite were distributed to 15 farmers through the Ministry of Agriculture. The programme is continuing.

- **Grenada**

- Planting materials, including 470,500 vegetable seedlings, seeds of fruit trees, cashew nut and sapodilla and vegetative material of cassava sticks, sweet potato slips and Julie mango were distributed to farmers.
- Approximately 1,630 kg of golden apple fruits supplied to the Trinidad and Tobago Agri-business Association (TTABA) to produce 53,000 seedlings to enhance the fruit juice industry in that country.

**2.1.1.7. Protected Agriculture**

*a. Agronomic Practices*

- A holistic programme to determine the critical parameters for their sustainable use of Protected Agriculture Systems (PAS) in the Region is being implemented.

- **St Lucia**

- The second year of evaluation was initiated on the productivity and economics of Open Air vs. PAS with the view to developing an enterprise budget and investment profile. Activity interrupted by Hurricane Tomas in October/November, 2010.

- **Dominica**

- Work initiated on the comparison of (a) five different growing media (Promix, soil, bay compost, coconut coir and Bellevue Chopin Organic Medium), (b) two types of structures, and (c) covering types. The work is continuing.

- **Jamaica**

- The preliminary results for a cropping cycle of peppers (hot and sweet) under three ventilation regimes (standard farmer house, passive ventilation with wider mesh and active ventilation using cooling fan) showed that crop yields under passive vents and active vents were 2% and 28% higher, respectively than the farmer standard .

***b. Extension and Training***

- **St. Vincent and the Grenadines**

- 17 extension and communication officers and 20 farmers now have better insight and appreciation of PAS following a one-week training workshop conducted with support of FAVACA volunteer.

- **Dominica**

- Eighty-three participants (extension officers, greenhouse farmers, educators and college students) trained with the support of a FAVACA volunteer.

- **Trinidad and Tobago**

- PAS technology is being transferred to six groups and three clusters.

**2.1.1.8. Herbals**

***a. Agronomic Practices***

- **Jamaica**

- The compilation of technical packages for developing a technical manual on commercial production of selected herbs continued.
- Better growth of blackmint (*Menthaspicata*, syn *M. vividis*) and peppermint (*Sature javiminea*) obtained in the cooler ecozones.

***b. Extension and Training***

- **Jamaica**

- As part of the commercialisation of herbal production knowledge/ experience sharing exercises on propagation methods, nursery management, agronomic practices, harvesting and drying were held for 15 stakeholders (Charles Town Young Farmers Association, MoA, IICA and CARDI).

#### **2.1.1.9. Soil and water management**

##### **- Jamaica**

- Work on the sustainable development of “mined out” bauxite soils continued in two areas:
  - the determination of viable amelioration practices to return “mined out” bauxite soils into sustainable agricultural production. During the period, crops of corn and red peas were rotated. Callaloo (*Amaranthus spa*) production on mulch and under protected cage, as well as vermicomposting were demonstrated to farmers and students from surrounding farming communities
  - Evaluation of varieties of castor and jatropha as potential feedstocks for bio-fuel production. Grant-funded by Petroleum Company of Jamaica.

#### **2.1.1.10. Biotechnology Development**

##### **- Barbados**

- Work is continuing to;
  - Transfer of the CMV and PVY resistance to Caribbean hot pepper varieties through hybridisation. Donor resistant parent PBC 161 (*C. annum*) was successfully crossed with Cherry WiriWiri pepper (*C. frutescens*) towards generating resistant progeny; and
  - Introduction from Japan, the Bukang variety, a new potential source of CMV and PVY resistance, for field and nursery testing.

#### **2.1.1.11. Technical Systems and Services**

##### **a. Support to Research and Development**

- Assistance and technical support was provided to CARDI staff and collaborators/stakeholders as follows:
  - Provided scientists with a list of guidelines of Peer Reviewed Journals in areas of crops and livestock.
  - Provided over 1,500 documents for 15 displays at meetings and seminars
  - Produced (with CTA funding) and distributed to all CARDI Member States, ten posters demonstrating the major aspects of CARDI initiatives
  - Design and analysis of experiments and surveys.
  - Circulated a Technical Bulletin “Impact Assessment” to guide the conduct of assessing the impact of developed technologies
  - Customised searches, references and provided information through email links, regular mail, information alerts and Selective Dissemination of Information Services for key topics, including

small ruminants; advocacy and partnerships; roots and tubers, fruits and vegetables, and climate change. This included 50 requests for information from selected partner institutions and clients.

- Re-introduced access to a key online database –(CAB Abstracts) through the support of CTA.

#### ***b. Approach to conduct of Research and Development***

- In keeping with R&D institutions globally, CARDI is changing the way it conceptualizes its R&D activities, the manner in which it conducts same and reports on the findings. With the support of CTA; it
  - Introduced/emphasised this “new” dimension;
  - Prepared a Strategy following the Agriculture Science and Technology and Innovation Systems (ASTI).
  - Conducted practical work in **Barbados, Belize, Grenada, Jamaica, St Kitts/Nevis and Trinidad and Tobago** to determine and characterize the Science, Technology and Innovation System that supports the Small Ruminant Industry in the Region.

### **2.1.2. Natural Resource Management**

#### **2.1.2.1. Invasive species control and coordination of approach**

##### **- Regional**

- A multi-institutional (MFPLMA, CARDI, CABI, UWI, UTT, TTABA) effort initiated to mitigate and control Red Palm Mite in the Region, starting in Trinidad & Tobago.

##### **- Jamaica**

- Technical support provided to the participatory coordination group for the management of pink mealy bug, red palm mite, citrus greening and papaya mealy bug.

##### **- Montserrat**

- Supported the development of Terms of Reference to conduct a Pest Risk Analysis.

##### **- St Lucia**

- 1.5 kg seeds from CTV-tolerant lemon rootstock varieties provided to MoA for propagation of CTV tolerant rootstocks for farmers

#### **2.1.2.2. Climate Change and Agriculture**

- CARDI is being supported by The Caribbean Community Climate Change Centre (5Cs) and the Caribbean Meteorology and Hydrology Institute and CTA in the conduct of its activities in this area as follows;

- (a) To equip CARDI’s field stations with agromet instruments. This would facilitate the collection of data to enable modelling the effects of climate change on the adaptability and consequential productivity of key regional commodities.

(b) Involvement in the Caribbean Agricultural Management Information project through:

- Membership in the Steering Committee
- The assignment of a specialist in pest and disease management
- Contribution to the following Workshops/Seminars on:
  - Climate Change and the Agricultural Sector of Jamaica
  - Drought Management
  - Information Dissemination

(c) Conduct of a major workshop “Climate change and agriculture in the Caribbean: Protected Agriculture – An adaptation option” during the Caribbean Week of Agriculture, 2010 in Grenada,

### **2.2.1.3 Seeds and Seedling Banks**

- Equipment for production, processing and storage of seeds and the supply of seeds and seedlings for farmers during post disaster restoration have been acquired and installed in **Antigua and Barbuda** and **Belize** under the project funded by the CARICOM/Japan Friendship Agreement

## **2.2 Strategic Axis 2 – Development of Strategic Linkages**

### **2.2.1 Partnership and Collaborative Initiatives**

#### **2.2.1.1 Build and Maintain Relationships**

##### **a. Agricultural Commodities Programme**

In January, 2010, CARDI signed the Agreement to become the Caribbean Focal Point for the EU/ACP All Agricultural Commodities Programme (AAACP) which started in 2007. The key role of CARDI is to address an identified major deficiency of the programme; that is, a lack of integration of the programme’s activities in the Region. In this context, CARDI liaises with the International Organisations (IOs) - The Common Fund for Commodities (CFC); the Food and Agriculture Organisation (FAO), International Trade Centre (ITC), United Nations Conference on Trade and Development (UNCTAD) and World Bank (WB). The major purpose is to ensure integration within the programme and between the programme and other activities in the Region.

CARDI has won two contracts from the IOs; from World Bank to develop on line training modules for farmer risk management and from UNCTAD to prepare five commodity profiles for the Caribbean.

## **b. Agricultural Research and Development Strategies**

In April 2010, there was a 1-day meeting of the team reviewing the draft strategy “Towards a Caribbean Regional Strategy for Agricultural Research and Development”. This has been further elaborated at a Workshop of major Stakeholders.

At both the 13<sup>th</sup> Annual Assembly of the Caribbean Council for Higher Education (CACHE) and a forum for Directors of Research Institutions, CARDI presented definitive initial proposals for reactivation of PROCICARIBE. These were generally favourably received. CARDI is discussing with IICA for support for this initiative so as to link it to the hemispheric PROCIS systems within FORAGRO (discussed further).

The Caribbean Plant Genetic Resources Network (CAPGERNET) has continued to link the germplasm conservation and utilisation programmes of the Caribbean with Biodiversity International and the International Treaty on Plant Genetic Resources for Food and Agriculture. A regional pre-proposal has been submitted to the Access and Benefit Sharing Fund of the Treaty.

## **c. Agricultural Cluster of CARICOM Institutions**

CARDI continues to co-chair the above named cluster. At a teleconference of the institutions and representatives of member States, it was agreed that agro-tourism will be prioritized in efforts to obtain funding. The CARICOM Secretariat is leading this initiative.

### **2.2.1.2 MOUs with Key Institutions and Partners**

The Institute uses its relationships with Strategic Partners and Institutions to enhance its human, technical and financial capacity to conduct its work programme. The following initiatives have been conducted for the reporting period:

#### **(a) Active MOUs**

##### **- Inter American Institute for Co-operation on Agriculture (IICA)**

- This relationship, a new 3-year Agreement with IICA was signed in March 2010. The major activities are:
  - Herbs, Condiments and Beverages in **Jamaica and Trinidad & Tobago**, the agronomy of shado beni, lemongrass, mints and sorrel. In **St. Lucia**, the revitalisation of the coconut water industry with promotional actions. Hot pepper seed production in **Antigua and Barbuda, Belize and Trinidad & Tobago**.
  - Protected agriculture systems work in **Dominica, Jamaica, Monsterrat, St. Kitts/Nevis and St. Lucia**



- Root Crops: primarily, cassava and sweet potato in **Antigua and Barbuda, Barbados, Grenada, St. Kitts/Nevis, St. Lucia and St. Vincent and the Grenadines**
- Small Ruminants: emphasis on forages and herd management for small ruminants in **Bahamas, Grenada and Jamaica**
- Details have been provided under Strategic Axis 1.
- A CARDI/IICA Working Together Document was completed.
- Two meetings between the Executive Director and IICA’s Director General were held.
- CARDI also participated in the IICA Caribbean Planning Meeting.
- An integrated programme with six components, including the component above, has been jointly developed for presentation to the Executive Committee of IICA

- **Caribbean Farmers Network, (CaFAN)**
- **University of Florida (UF)**
- **Chinese Academy of Agricultural Sciences (CAAS)**
- **Florida Association for Volunteer Action in the Caribbean and America (FAVACA)**
- **Consortio Latinamericano y del Caribe de Apoyo a la Investigación y Desarrollo de la Yuca (CLAYUCA)**
- **Technical Centre for Agricultural and Rural Cooperation (CTA)**
- **International Fertilizer Development Centre (IFDC)**
- **Scientific Research Council, Jamaica (SRC)**

**(b) MOUs entered into**

- **Institut de Recerca i Tecnologia Agroalimentaries, Catalonia, Spain (IRTA)**
- **University of Guyana, (UG)**

**2.2.2 Advocacy**

**2.2.2.1 Re-branding and promotion of CARDI**

**2.2.2.1.1 Promotion of the “New” agriculture**

**(a) Public Lecture Series**

- The introduction of a Public Lecture Series initiated in Trinidad and Tobago.

**(b) Publications, Videos, etc.**

- CARDI publications now have standard designs. The unified visual identity is a major step towards clarifying CARDI's image and public recognition.
- The following were produced in the standard CARDI design:-
  - CARDI Review, Issues 8 and 9;
  - CARDI Update Issues 2/2009; 1/2010; 2/2010 and 1/2011
  - A Technical Manual on Sweet Potato;
  - A video on Protected Agriculture; and
- The following CARDI Factsheets:-
  - i. Caribbean efforts against invasive species
  - ii. Macro-minerals in sheep nutrition
  - iii. Meat goats in the Caribbean
  - iv. Producing Coconuts using the Dwarf Plant
  - v. Hot pepper varieties for commercial production in the Caribbean
- Currently work is being done on a Commemorative Issue celebrating 35 years of achievements.
- In addition, the following publications were introduced in 2009/2010.
  - One Issue of *R & D in Agriculture*- a guide to articles, journals, books, audio-visual materials, institutions and events on CARDI's priority Commodities and Thematic Areas. One issue is under production.
  - Five Issues prepared for *Agriculture in the News*: a newsletter which provides references to news articles in the Region and abroad on issues affecting agriculture.
  - 3<sup>rd</sup> Publication in the series *List of Peer Reviewed Journals* in CARDI's Priority commodities and themes: Natural Resources Management

**(c) Open Days and Exhibitions**

- Exhibitions
  - Participated in Denbigh Fair, Jamaica and AgroFest, Barbados.
- CARDI Open Days 2009 and 2010 were held.

**2.3 Strategic Axis 3: Institutional Strengthening**  
**2.3.1 Resource Mobilisation and Management**  
**2.3.1.1 Income Generation**  
**2.3.1.1.1/2.3.1.1.2 Relationships with donor/resource agencies/Proposal Development and Management**

A Project Implementation Unit (PIU) has been established to oversee the implementation of externally funded projects. Currently, it is primarily responsible for the timely implementation of the CFC and CARDI/IICA projects.

**1. Implementation of actions within existing relationships**

- Two CFC/EU funded projects in Protected Agriculture and the Development of the Roots & Tuber Crops industry valued at approximately EC\$16.0 m were launched during the first quarter of 2010. The implementation of these projects in six CARICOM member countries has been initiated and is in progress.
- Procurement of equipment and the execution of services funded by the CARICOM-Japan Fund for disaster mitigation/seed restoration (Phase 1 valued approximately EC\$127,000) have been initiated.
- The CARDI/IICA Projects as detailed in Section 2.1.1.2. This programme is being integrated into a larger programme as illustrated in the Framework of IICA/CARDI Collaboration (will be discussed at Agenda Item 3 b – IICA-CARDI Collaboration)

The efforts to obtain resources for CARDI's technical programme are summarised in Table 1. The estimated total value of grant funds pursued amounts to EC\$49.6M of which approximately EC\$30.9M has been approved as at March, 2010, while the balance, EC\$18.7M is under negotiation and various stages of development.

**2. New Relationships**

In the pursuit of the search for more resources, a variety of “new” sources is being tapped. These include technical agencies, such as, 5Cs, CMHI, IFDC and UNCTAD, financial agencies e.g. World Bank, human capacity agencies, e.g. FAVACA and University of Wageningen, and production entities, such as, TTABA and CaFAN.

TABLE 1 - ELEMENTS OF MTP 2011-2013

Strategic Axis	Focal Area	Priority Area	Programme	Sub-Programme		
1. Development of Sustainable Industries	1.1 Science, Technology and Innovation	1.1.1 Knowledge generation, diffusion and application	1.1.1.1 Commodity development - Crops	1. Roots and tubers 2. Cereals & grain legumes 3. Hot pepper 4. Fruits and vegetables		
			1.1.1.2 Commodity development - Livestock	1. Small ruminants 2. Feeds and feeding systems		
			1.1.1.3 Germplasm	1. Plant genetic resource 2. Animal genetic resource		
			1.1.1.4 Emerging issues	1. Herbals 2. Organics 3. Agro-energy		
			1.1.1.5 Protected Agriculture	1. Production and marketing systems development		
			1.1.1.6 Biotechnology development	1. Biotechnology for livestock commodities 2. Biotechnology for crop commodities		
			1.1.1.7 Technical systems and services	1. Information & Communication 2. Marketing 3. Biometrics 4. R & D coordination		
			1.1.1.8 Promotion of Science, Technology and Innovation	1. ASTI capacity building 2. Institutional support systems		
			1.2 Natural Resource Management	1.2.1 Risk management	1.2.1.1 Invasive species management	1. Control 2. Coordination of approach
					1.2.1.2 Climate change for agriculture development	1. Species/variety adaptation 2. Models and modelling 3. Seeds and seedling banks
	1.2.2 Soil and water management	1.2.2.1 Soil management		1. Soil rejuvenation 2. Soil conservation		
		1.2.2.2 Water management		1. Water harvesting and use 2. Soil water enhancement		
	2. Development of Strategic Linkages	2.1 Partnership and Collaborative Initiatives	2.1.1 Build and maintain relationships	2.1.1.1 Regional R&D strategies	1. Development of R & D strategies 2. Coordination of initiatives to implement strategies	
				2.1.1.2 Relationships with key institutions and partners	1. Implementation of actions in current relationships 2. Develop new relationships	
				2.1.1.3 Membership base of CARDI and "Friends of CARDI"	1. Membership base of CARDI 2. Friends of CARDI	
		2.2 Advocacy	2.2.1 Promotion of CARDI	2.2.1.1 Branding CARDI as preferred R&D institution in CARICOM	1. Promotion of the "New" agriculture 2. Communications & Outreach strategy • Traditional and New media • Exhibitions • Open Days/ Field Days 3. Website management	
					1. Proposal development & management 2. Implementation 3. Monitoring and evaluation	
3. Institutional Strengthening	3.1. Resource Mobilisation and Management	3.1.1 Income generation	3.1.1.1 Donor/ resource agency mobilisation	1. Proposal development & management 2. Implementation 3. Monitoring and evaluation		
			3.1.1.2 Technical assistance			
			3.1.1.3 CARDI commercial activities			
	3.2 Capacity building	3.2.1 Human resource development	3.2.1.1 Human resource capacity	1. Train staff, stakeholders/ clients 2. Leadership/ succession planning 3. Thematic/ Commodity Teams 4. Centres of excellence		
			3.2.1.2 Rebrand human capacity, talent management	1. Core values 2. Performance management 3. Policies and procedures		
		3.2.2 Physical resources	3.2.2.1 Maintenance	1. Physical upgrade		
			3.2.2.2 Administration/ Operations	1. Security 2. Registry 3. General administration		
	3.2.3 Financial resources	3.2.3.1 Core and external resource management / FMIS	1. Accounting database management 2. Treasury management 3. Fixed asset management			
			3.2.3.2 Reports to stakeholders/agencies, etc.	1. Audit, financial, technical reports		

**Table 2: Identification and prioritisation of potential financial and human resource donors/collaborators**

Source of Funds	Amount (EC\$'000)		
	Approved/ In Progress	Awaiting Approval	Total
<b>PROJECTS</b>			
<b>CARICOM/Japan</b>	778	540	1318
<b>CARICOM/Haiti</b>	216		216
<b>CFC/EU</b>	19,491		19,491
<b>EU/10<sup>th</sup> EDF</b>		3,896	3,896
<b>FAO</b>	675		675
<b>Intra-ACP</b>		11,380	11,380
<b>IICA / CARDI</b>	2,160	0	2,160
<b>INTERNATIONAL TREATY</b>		808	808
<b>CAPERGNET</b>	108		108
<b>CTA</b>	3,370	0	3,370
<b>CDB</b>		2,041	2,041
<b>ALPART</b>	124		124
<b>UNCTAD</b>	41		41
<b>SPC</b>	370		370
<b>ISTRC</b>	509		509
<b>IFDC</b>	27		27
<b>MOA (St. Lucia)</b>	40		40
<b>MOA (St. Kitts &amp; Nevis)</b>	20		20
<b>Sub Total (Projects)</b>	<b>27,929</b>	<b>18,665</b>	<b>46,594</b>
<b>CONSULTANCY SERVICES</b>	<b>1,782</b>		<b>1,782</b>
<b>TECHNICAL ASSISTANCE</b>	<b>1,205</b>		<b>1,205</b>
<b>TOTAL</b>	<b>30,916</b>	<b>18,665</b>	<b>49,581</b>

### 2.3.1.2 Monitoring and evaluation

- Monitoring and Evaluation is a critical activity to ensure that funding obtained is used in a timely and efficient manner. The UNDP project “Improved Farming Systems” in Belize was used as a pilot to test out a computer based project monitoring system that could be used throughout the Institute. This test phase of “rolling out” to the other offices has been started with Jamaica and its CFC projects.
- Further, the process of programming from planning to implementation (along with the operational tools) has been “fine tuned”.

### 2.3.1.3 Revenue Generation

#### 2.3.1.3.1 *Consultancy Services and Technical Assistance*

The following have been executed/are in progress:

- Coordination of Caribbean portfolio of the All ACP vegetable and fruit development programme.
- Completion of technical assistance to UNDP Farming Systems project in Belize
- Continued execution of technical assistance in Belize in the production of kidney beans, (Red/SICTA)
- Technical assistance to the Ministry of Agriculture, Land & Marine Resources (Trinidad & Tobago) in the preparation of the Operational Plan of the Agricultural Sector of the Republic of Trinidad and Tobago.
- Support to UNCTAD and FAO in the conduct of regional workshop on critical issues to the development of agriculture in the Region.

#### 2.3.1.3.2 *CARDI Commercial Activities*

In 2009, an effort was initiated to separate activities that set out to at least make gross profits as opposed to those activities that generate income as a “by product” of research activities. To date, four countries, **Antigua and Barbuda, Belize, Grenada and St Lucia** are involved and the activities are primarily production and sale of planting material.

The financial outcome to date of the commercial activities is shown in Table 2. The profits totalling EC\$141,250 were used to supplement quota subscriptions.

This commercial concept will be further elaborated in 2011.

**Table 2. Funds obtained through the conduct of “commercial” activities**

<b>Country</b>	<b>Expenditure EC\$</b>	<b>Revenue EC\$</b>	<b>Gross profit EC\$</b>
Antigua and Barbuda	3,238	9,450	6,212
Belize	43,109	124,149	81,040
Grenada	24,903	65,479	40,576
St Lucia	2,385	15,807	13,422
<b>Total</b>	<b>73,635</b>	<b>214,885</b>	<b>141,250</b>

## **2.3.2 Capacity building**

### **2.3.2.1 Human resource development**

#### **2.3.2.1.1 Human resource capacity**

##### **a. General**

- The organisation continues to build capacity in order to strengthen the quality of its human, technical and financial resource, as well as to develop its organisation capacity. At the individual level, the Institute is committed to its continued development of staff equipping them with the required skills; knowledge and experiences that would enable them to perform both efficiently and effectively.
- The Institute continued to endeavour to enhance the performance of its most critical asset, staff, through (1) improving their capacities; and (2) putting in an improved and more objective operating environment.

##### **b. Training/Exposure**

- Training for 2010 saw all Administrative Assistants in the Country Units receiving training in the new FMIS Program. In addition, one member of staff at Headquarters was also trained in Adobe In-design.
- The On-the-Job (OJT) programme continued with the support of the Government of Trinidad and Tobago. All of the OJTs have been exposed to training via seminars, workshops and attendance at meetings. In addition, one of the OJTs was exposed to the CWA activities, specifically Climate Change Workshop, which was held in Grenada.
- Two CARDI staff members and three persons from the MoA in Dominica, Jamaica and Trinidad and Tobago attended five days training courses on cassava propagation and value added at CLAYUCA, Colombia
- The CAMI project on climate change and agriculture has built capacity in technicians on rainy season predictors and interpretation and management and modelling for pest and disease management in relation to a changing climate

**d. Enabling Environment**

- Some of CARDI's Country Offices and Sections of Headquarters have been refurbished to ensure that staff are working in a comfortable environment.
- The need to provide further support to staff has been recognised by (1) way of introducing mini lecture and (2) seminars to address personal situations, e.g. health issues, work output and safety, retirement planning.

**e. Rebrand human capacity, talent management**

- Policies, including a first draft of the Human Resource Manual, have been revised and in some cases developed.
- A new Performance Management System based on results has been implemented.

**2.3.3 Financial Resource Management**

The major achievements are as follows:

- Completed audit of CARDI's Financial Statements for 2009 and 2010.
- Our net annual deficit on core operations fell from US\$0.55Mn in 2008 to US\$0.48Mn in 2009 (US\$0.78 in 2007), reflecting cost-saving measures.
- Completed all financial reports for donor projects/Co-operative programmes due during the period.
- Continued the pursuit of collection of Arrears of contributions by writing to countries.
- CARDI's new Financial Management Information System (FMIS) has been implemented in Headquarters and to April 2011 has been rolled out to Jamaica, Barbados, Dominica and St. Vincent and the Grenadines. The new accounting software will link all member countries in a "real time" and online fashion. Once fully implemented, it would improve the timeliness of the Institute's financial and decision making information. The roll out to the other CARDI Units will be completed by the end of June 2011.
- During the period some internal restructuring was done which split the Corporate Services Division into a Finance Unit and an Institutional Capacity Building Unit. The latter unit covers Human Resources, Services and Registry.
- The Finance Unit is being re-organised to reflect the changing role brought about by the new system as well as the new demands of increased external projects.