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***Contributions of the Caribbean Agricultural Research and
Development Institute (CARDI) to the Hemispheric
Ministerial Agreements and 2005-2006 Report***

La Antigua Guatemala, Guatemala



CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE

BIENNIAL REPORT ON THE ACTIVITIES 2005-2006

1.0 Introduction

The Caribbean Agricultural Research and Development Institute (CARDI) continues to face a number of challenges which are not uncommon for similar institutions in the developing countries of the Americas.

Funding is a major constraint as governments worldwide attempt to contain or reduce public expenditure. CARDI has to operate within a core budget which has not been increased for several years. At the same time there has been a decline in donor funding as traditional donors have reduced their allocations to the Caribbean, in general, and agriculture, in particular.

The “Jagdeo Initiative” (Strengthening Agriculture for Sustainable Growth and Development) is an action programme led by President Jagdeo of Guyana. This Initiative has recognised the problems of funding and is actively engaging funding agencies (traditional and new sources) which are showing interest in the projects being developed through the Initiative. This is particularly important to CARDI as the Initiative also identifies “Inadequate Research and Development as a Key Binding Constraints” to the repositioning of agriculture in the Caribbean.

Another challenge faced by CARDI is the expectations of its 12 member governments. These are requiring CARDI to increase its services to the agricultural sector.

CARDI works with its member governments by a process of regular consultations. The CARDI Representatives in the member countries are expected to meet their senior counterparts in the Ministries of Agriculture at regular intervals to appraise of CARDI’s work in progress. In many countries the programmes of work are initially developed through an organ known as NCCARD (National Coordinating Committee for Agricultural Research and Development). These are chaired by the Ministries of Agriculture and CARDI acts as the secretariat. The NCCARDs comprise all the major players in agriculture in the countries. Besides the Ministry of Agriculture and CARDI a typical NCCARD comprises IICA, tertiary education institutes, marketing agencies, development and donor organisations and private sector bodies. In some of our member countries the Ministries of Agriculture and CARDI have not had to set up these NCCARDs as mechanisms in existence would mean that NCCARD is a duplication of effort.

A major task of the NCCARDs (or the similar mechanisms in place) is to define which agencies are responsible for each required component of agricultural research and development. In this way the CARDI Representatives compile lists of activities required by the countries for execution by CARDI.

These lists are taken to the CARDI Annual Planning and Review Meeting where the CARDI Representatives and other senior managers prioritise and finalise the upcoming annual work programme. Many requested activities have to be eliminated at this stage. The projects which are favoured are those for which CARDI has a regional mandate (for example our priority regional commodities) and those for which external funding is readily available.

CARDI's 12 member countries fall into two categories, the more developed countries of the region (MDC) and the less developed countries (LDC). The four countries labelled MDC are Barbados, Guyana, Jamaica and Trinidad and Tobago. They have well developed national R&D systems, but these tend to be in need of revitalisation. The perceived need for CARDI varies between these countries but CARDI is always seen as being necessary for activities of a regional nature. The national demands for CARDI's services from these MDC countries are based on gaps which are not being filled by the national systems. The size and number of these gaps, as perceived by the countries, are very varied. At one extreme is the view that the national system can (or should) be able to do all the required R&D; at the other extreme, CARDI is called upon to assist in filling a large number of gaps, which our resources cannot fully meet.

The eight countries labelled LDC are Antigua and Barbuda, Belize, Dominica, Grenada, Montserrat, St Kitts/Nevis, St Lucia and St Vincent and the Grenadines. In many of these countries there is no national R&D capability. Where this does exist, CARDI has been encouraged to set up facilities side by side with the national facilities. Most of these countries look to CARDI for all their R&D needs which a challenging situation is given the available resources.

A common feature to at least 75% of our members is the increasing demand for CARDI. We are being asked to increase our presence in the very small countries, something which is quite difficult at the present time. CARDI must restructure to better fit within the current core funds and in restructuring we will need to ensure that we become better equipped to, not only carry out our mandate, but also to attract donors (including private enterprises) to enable future expansion.

2.0 Governance and Management

2.1 Collaboration mechanisms and arrangements

For several years, CARDI has looked to work as much as possible in collaborative mode with strategic partnerships and networking arrangements. This helps to overcome the problems of limited resources, but there are hurdles to overcome. For example some funding agencies put out project bids by competitive tender and are not always kindly disposed to joint proposals from agencies whom they feel should be competing. There are also difficulties in convincing staff of the need to work in a truly collaborative mode. These difficulties are certainly not confined to CARDI; other institutes in the Caribbean region face these problems and they may also exist in other parts of the Americas.

Some of CARDI's networking experiences have been positive. The success of the NCCARD in some countries where such mechanisms did not previously exist is a good example.

The PROCICARIBE networks, however, have not all been effective in recent years. The problem has been linked to network co-ordinators not being active unless they have ready access to funds. This challenge has helped to identify the networks with vibrant groups of scientists as opposed to those who seem to be indifferent to networking. An evaluation of the existing networks showed seven which were active or attempting to be active. There are initiatives to

provide some resources to help to revitalise PROCICARIBE, and these will focus on the seven active networks.

FAO is deeply involved in the development of agriculture in the region and is just completing a major Government of Italy funded project aimed at ensuring food security. CARDI was an important member of this project's Steering Committee and the main consultants to this project reporting to the project manager have been operating out of CARDI Headquarters in Trinidad. CARDI was also involved in designing and executing the training activities in this project. It is understood that FAO and the Government of Italy will be implementing a follow up project. CARDI will be ready to contribute.

Another FAO facilitated activity has been the attempt to develop a regional market intelligence system through the CAMID network. This network also operated out of CARDI Headquarters. This activity ran into some difficulty because the Caribbean is not a region where information is easily obtained or shared. Nevertheless it was a success in demonstrating that development of the region agri-sector needs a good intelligence system and several countries are quite advanced in this process. Although the FAO project is now terminated, some countries are still attempting to implement some of its activities. The CAMID consultants continue to monitor developments and are keeping CARDI informed.

IICA is perhaps CARDI's closest collaborator and many of the programme activities reported in Sections 3 and 4 of this report were funded under the IICA/CARDI programme of collaboration. The monies allocated for the period 2005/2006 under the IICA/CARDI Agreement was US\$179,530 and this supported the conduct of activities in nine projects across the region.

The Technical Centre for Agricultural and Rural Cooperation (CTA), another close and long standing collaborator, also continued to work in close partnership with the Institute under the CTA/CARDI Memorandum of Cooperation, and supported activities reported in Section 4. IICA's strong outreach capabilities, and CTA's expertise in information and communication management complement CARDI's research strengths. Thus by collaboration these agencies are able to effectively solve identified problems and transmit the findings to the relevant stakeholders – usually the farmers of the region.

Invasive species are becoming an even more frequent and dangerous threat to the region's agricultural production and also to the trade in agricultural commodities. CARDI is the chair of the Caribbean Invasive Species Working Group (CISWG). This group has developed a regional policy for the management of the threat of invasive species and out of this policy a project proposal for funding has been prepared. CISWG is also attempting to assist the United States Department of Agriculture (USDA) with an analysis of the pathways taken by invasive species into and within the Caribbean and also from the Caribbean into the United States and other countries.

Another important regional collaborative effort is in biotechnology. This thrust has several arms including a CARICOM biotechnology group which is chaired by CARDI. The group is responsible for developing regional policies on GMOs and other biotechnology issues and also to facilitate the harmonisation of national policies.

Collaborative arrangements such as those listed above are seen as a necessary component in the execution and management of the R&D needs of the region. CARDI cannot deliver on its own and neither can other agencies.

2.2 *Personnel changes*

The Executive Director of CARDI reports to the Chairman of the Board of Directors (BOD). The BOD are responsible for general policies of the Institute and they report to the Board of Governors who comprise the Ministers of Agriculture of the member countries.

The Board of Governors (BOG) is currently chaired by St Lucia. During most of the current reporting period (2005/6) this chair was occupied by Hon. Ignatius Jean, Minister of Agriculture, Forestry and Fisheries, St Lucia. In December 2006, following a General Election in St Lucia, Hon. Ezechiel Joseph was appointed as the new Minister of Agriculture, Forestry and Fisheries, St Lucia and thus assumed the chair of CARDI's BOG.

Hon. Ignatius Jean served CARDI with dedication and distinction during his 3 years as Chairman, BOG and he also ensured that the traditional strong support of the St Lucia government to CARDI was firmly maintained. CARDI thanks him for his service.

From his initial actions, Hon. Ezechiel Joseph has demonstrated that he will be just as effective as Chairman, CARDI BOG. Mr Joseph is a professional agriculturist who was formerly Head of Extension Services in the Ministry of Agriculture, Forestry and Fisheries, St Lucia.

Dr Keith Archibald, OBE of St Kitts and Nevis has been Chairman of CARDI's Board of Directors since 2000. In that time he has managed to keep CARDI firmly on course despite some very turbulent conditions. Some of the challenges CARDI has faced during Dr Archibald's time as Chairman have been mentioned in the Introduction above. Others were outlined in previous biennial reports to IABA. The success of his chairmanship is demonstrated by the fact that, despite all the constraints and challenges, most of CARDI's member countries are much stronger in support of the Institute today than they were in 2000. Dr Archibald has indicated that he will be stepping down from his position in 2007 to allow himself some more time to enjoy his (so far) very active retirement. CARDI will miss Dr Archibald; his successor will be appointed in 2007.

Dr Wendel Parham of Belize was appointed as Executive Director of CARDI on a 3-year contract from January 2004 to December 2006. At the end of this contract Dr Parham indicated that he did not wish to seek renewal for a further period. However, he remained in office until March 2007 and a successor will be selected very shortly. Dr Parham's immediate and closest family are located in the United States of America and his strong family ties have forced him to leave the Caribbean. Dr Parham brought an energetic management style to CARDI and it is unfortunate that his leadership has been cut short at a time when his many initiatives are beginning to bear fruits. CARDI wishes Dr Parham God's blessings and we hope to remain in close contact.

3.0 **Country Highlights**

31. *Antigua and Barbuda*

CARDI's core programme in Antigua and Barbuda is seed technology. Seeds of various crops of economic importance are produced for the local and regional farming communities. In 2005 and 2006, 107 kg of hot pepper seeds were produced for farmers throughout the region. Of this amount 45 kg was Jamaica Scotch Bonnet seeds produced at the request of the Jamaican Government after Hurricane Ivan decimated seed production capabilities in the island. This effort typifies off-shore and diverse location production of planting material to aid in disaster recovery in the CARICOM Region.

Also, as part of the ongoing effort of the hot pepper industry group to tap into the array of indigenous varieties of hot pepper, the indigenous “Peggy Mouth” hot pepper variety of Antigua and Barbuda was stabilised and 1 kg of seed produced. This will assist the industry to return to the original blend of the world famous Susies Hot Sauce, as well as to conserve this pepper which was becoming endangered.

Indigenous cucurbits are also being conserved in order to obtain and maintain enough high quality planting material that can be used as the foundation in recovery efforts after natural disasters

Another noteworthy activity was the contribution of CARDI on the Pineapple National Task Force. CARDI specifically assisted in conducting a status review of the industry, formulating short and medium term plans and implementation, and with other stakeholders on the National Task Force successfully engaged the Ministry of Agriculture station at Cades Bay, as well as farmers to accelerate pineapple production to enable the Government to fulfil its promise to provide a sample of fresh pineapple to every person who visited during the ICC Cricket World Cup Cricket matches played in Antigua.

3.2 Barbados

The three main projects implemented at CARDI, Barbados during the period were:

- Hot pepper improvement for the Caribbean
- IPM services
- Maintenance of the tissue culture laboratory

CARDI’s commitment to the development of the regional hot pepper industry was exemplified in Barbados. CARDI Barbados worked closely with a group of farmers, from the supply of seeds through the provision of production technology to product development. Some of the products - hot pepper sauces, pepper jams and jellies – were exported to other CARICOM countries.

CARDI’s primary hot pepper germplasm development and maintenance centre is at the Barbados Unit. In 2006 approximately 100g each of Breeder’s Seed for cultivars - Red Congo, Yellow Congo, Scotch Bonnet, Cayenne, Tiger Teeth, CARDI Green, CARDI Red and West Indies Red were produced. These are being maintained, for further development, in a “seed room” newly refurbished and equipped for the purpose.

The impact of virus diseases on pepper production is of major concern to the CARDI Hot Pepper Improvement Programme. In 2004 and 2005, CARDI collaborated with AVRDC (Taiwan) in analysing and identifying samples/diseases. Capacity was built in CARDI and, in 2006, all virus analyses and identification were successfully done by CARDI in Barbados.

Working with the sugar industry CARDI developed a strategy which has successfully kept down the damage from the sugarcane moth borer. This has involved rearing and release of biological control agents, *Cotesia flavipes* Cameron and *Lixophaga diatreae* Townsend. Damage from the moth borer has been reduced to well under 5% of the crop which is regarded as the economic threshold level.

The search is on in the Caribbean and elsewhere for suitable candidates for bio-fuels, including sugar cane. CARDI tests on three bio-fuel cane varieties showed that two were negative for

Ratoon Stunting Disease (RSD), indicating that there are good prospects for their development for bio-fuels.

In sweetpotato research and development, meristem tip culture was used by the CARDI laboratory to initiate work towards generating virus-free sweet potato material.

The Barbados Blackbelly Sheep is a unique genetic resource for Barbados and the Caribbean as a whole that can be exploited in niche markets. CARDI and the Government of Barbados have undertaken a project to characterise the breed molecularly. The project has identified genetic markers peculiar to the breed.

3.3 *Belize*

CARDI Belize is the Institute's centre of excellence for cereals and grain legume production technologies. Work on cereals has identified Pioneer 30 K 75 among the yellow corn hybrids and Pioneer 30 F 96 among the white corn hybrids as promising varieties for commercial production.

A modern soybean processing facility has been constructed by the Government of Belize and local production, targeted to reach 8,900 ha to provide about 20,000 t of beans, would provide the raw materials for the facility. A large slice of this target was contributed by CARDI's 2006 production of 4,750 kg commercial seeds for planting.

The 19th meeting of the CARICOM Council for Trade and Economic Development (COTED) Executive Committee mandated Belize to develop a ***Draft Regional Standards for Red Kidney Beans*** to govern intra-regional trade in the commodity. CARDI has lent its technical expertise to the Belize Bureau of Standards to develop these standards.

The technical capacity of CARDI Belize was augmented in 2005 with a resident entomologist. The Belize Agricultural Health Authority (BAHA) has started benefiting from this expertise. Information on commonly intercepted insect pests was compiled from BAHA's pest interception records for 2004-2006 towards developing a list of reference laboratories. A compilation of relevant information on *Scirtothrips dorsalis* Hood (chilli thrips) and red palm mite. *Raoiella indica* Hirst was being done in order to facilitate the design of surveillance programmes for these pests. Also, an assessment of damage to palm trees caused by the infestation by the American palm weevil, *Rhynchophorus palmarum* (L.) has been done and recommendations made for its management.

3.4 *Dominica*

CARDI Green hot pepper is now the pepper of choice by the Dominica Export and Import Agency (DEXIA) for the fresh fruit export. Over 90% of DEXIA's contract farmers cultivate the cultivar. Consistently high yields are required to sustain the market. Research work in 2006 showed that such high yields (40 t/ha) are achievable by the adoption of technologies that promote branching and, hence, increase the size of the pepper plant.

The use of toxins extracted from *Colletotrichum gloeosporiozdes* in phytotoxicity tests on five yam species and 10 cultivars showed that toxins can be used to demonstrate resistance to disease in yam.

Pineapples normally produce well at low altitudes. However, a significant finding by CARDI Dominica, that the commercial variety T#11 produced high fruit weight at Layou Park (228 m

above sea level) means that opportunities now exist for NIPPA to further expand pineapple production.

3.5 *Grenada*

Grenada is still recovering from the devastations of recent hurricanes. Therefore, the major focus of the CARDI Grenada Unit is now on the maintenance, multiplication and distribution of germplasms of fruit trees, and hot pepper and other vegetables to assist with the recovery efforts. More than 400,000 seedlings of various seedlings have been produced for the farming community. The estimated economic impact of this is about EC\$1.5 million. The hot pepper industry in Grenada is still in its infancy but the 20 farmers supplied with seedlings in 2006 increased their area under cultivation by about 83%.

The CARDI innovative golden apple dwarfing technology was further popularised to the farming community by features on two national television networks.

3.6 *Jamaica*

The consultancy project for the Government of Jamaica which provided entomological services for the country's Citrus Replanting Project was successfully completed. The results and recommendations included scouting guidelines, identification of key factors affecting the Brown Citrus Aphid, a list of key natural enemies and suggestions for their conservation, mass rearing protocols for parasitoids and pesticide options deemed most compatible with biological control. The knowledge generated in the project constitutes an original contribution to the scientific understanding of the Brown Citrus Aphid and the options for its management.

A pictorial chart describing the physical characteristics of 10 most popular export varieties of sweetpotato was developed for use by farmers and exporters of the commodity.

An indicator of the success of the USAID funded IPMCRSP project was the drastic reduction in rejection of shipments of fresh callaloo exports to the USA. In 1997 there was an interception rate of 30%; this dropped to 2.5% in 2005.

Following this reduction in pest interception, USDA APHIS invited CARDI/IPMCRSP to play a key role in training exercises as part of the preparation to reinstate the commodity on the preclearance list of exports to the USA.

Under the new phase of the IPMCRSP project the capacity of Trinidad and Tobago vegetable growers was enhanced through the transfer of the successful IPM technology of exclusion and threshold-based pesticide application, especially using environmentally friendly pesticides.

A project to compile and distribute small ruminant information products was undertaken in recognition of the importance of the application of relevant knowledge on the growth of the industry. This was in conjunction with the small ruminant research and development activities that are ongoing at the Sam Motta Demonstration and Training Centre in central Jamaica.

At this site the integrated agricultural production technologies for reclaimed bauxite lands being developed by CARDI, with the support of the Alumina Partners of Jamaica, were shown to the public during an Open Day in November 2006. Hon. Roger Clarke, Minister of Agriculture and Lands and a member of the Board of Governors of CARDI declared the event open and lauded the success of the project.

A pilot facility to commercialise CARDI's research findings on the use of agro and industrial by-product rations was commissioned. Small ruminant farmers in the parishes of Clarendon, Manchester and St Elizabeth who used the 16%-crude protein ration were highly satisfied with it.

A consultancy project, sponsored by CTA, for the documentation of the innovations of Jamaican farmers was completed successfully. A case study was documented involving field pictorial and data collection and analysis on the innovations of ten farmers, as well as a listing of innovations of 15 other farmers.

Scientists of CARDI Jamaica assessed the mole cricket problem at the Sabina Cricket grounds for Jamaica Cricket 2007 Ltd. in the preparation of the grounds for the ICC World Cup and submitted a report outlining recommendations to address the problem.

3.7 *Montserrat*

CARDI support to the development of the cassava industry continued. An improved method of baking cassava bread was introduced using new equipment developed by the Caribbean Industrial Research Institute (CARIRI). Tests on cassava bread baked in the modern ovens showed a somewhat higher cyanide content than that in the bread baked the traditional way, which includes a certain amount of pre-preparation before baking. The cyanide levels in bread baked in modern ovens are still well within international safety limits; nevertheless, research to reduce the cyanide content in bread baked with the modern oven is ongoing.

Other work in Montserrat was targeted at undercover (greenhouse) agriculture.

3.8 *St Kitts and Nevis*

The Government of St Kitts and Nevis allocated 5.6 ha of land at Estridge Estate to be used as the new field station by the CARDI Unit

In 2005 CARDI developed a strategic agricultural marketing plan for the Government of St Kitts and Nevis. In 2006, CARDI developed a short term operational marketing plan out of the strategic plan, prepared a project proposal for the operation of a greenhouse for vegetable production by a group of former women employees in the sugar industry and also prepared designs for a pack house facility for the Government.

High yields of marketable onion bulbs were produced from the out of season production studies in Nevis, indicating the possibility of extending the onion production season with increased economic returns.

Variety trials of onions and vegetables were completed as was the evaluation of 30 sweet potato varieties for pest resistance.

Control strategies and management studies for the West Indian Fruit Fly by the partners of CARDI, University of Florida, IICA and the Department of Agriculture were undertaken. These received a boost with the complete renovation and equipping of the insectary by the Department of Agriculture.

3.9 *St Lucia*

Fruit and root crop germplasm were multiplied at the CARDI field station. Under a revenue generating project, revenue was generated from the sale of bodi beans, cucumber, ochroes and spinach.

The transfer of post harvest technology was greatly enhanced with the construction, from resources generated by CARDI, St Lucia, of a pack house. This was subsequently used to train exporters, farmers and Extension Officers of the Ministry of Agriculture, Forestry and Fisheries in pack house operations and post harvest handling of food crops in general.

Alternative trellising material (discarded telephone wires) for passion fruit production was tested and found to be more cost effective and durable than purchased wires. Also in passion fruit following selection two varieties (Colombia Yellow and CARDI Pearl) were distributed to farmers. Demonstration plots of the two selected varieties are placed at the CARDI field station.

3.10 *St Vincent and the Grenadines*

CARDI St Vincent and the Grenadines has been selected as the Institute's centre for technologies in shade house/greenhouse/undercover/protected agriculture. Funding has been through the CARDI/IICA agreement and the enabling environment provided by the Government of St Vincent and the Grenadines. The facility was used to train 20 CARICOM nationals from Montserrat, St Lucia, St Vincent and the Grenadines and Tobago. An Israeli expert in vegetable production and greenhouse technology, obtained through the CARDI/Israel Co-operation Agreement, facilitated the training.

The unit continued its activities in the sweetpotato industry. Evaluation of three chemicals for the management of the sweet potato grub showed that thiamethoxam (Actara[®]) was more effective than ajadirachtin (Neem X[®]) and pyroll (Pirate[®]). Three sweet potato varieties were analysed for physical and chemical characterisation. These varieties, "Lovers Name" "Black Vine" and "Big Red", are classified as floury potatoes because of their low moisture and sugar contents and high starch levels. The laboratory characterisation and classification of sweetpotato varieties for products such as flour, fries and chips continued.

Significant developments continued in the cassava industry. Baseline data were collected for a better understanding of the industry. On-station evaluation of five improved cassava varieties from CIAT showed the potential of three varieties (CM7514-8 [1], CM7514-8 [2], CM4843-1) to impact on the cassava industry in St Vincent and the Grenadines on the basis of farine yield and ease of processing. The evaluations moved to farms under the supervision of staff of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Also, two propagation bins were constructed to assist the MAFF in the rapid multiplication of cassava planting material for farmers.

Collaborative work with the MAFF on the management of pests of hot pepper showed that the insecticides Neem-X[®] and Pirate[®] successfully controlled thrips. Higher hot pepper fruit yields under plastic mulching were demonstrated.

Comparison between dasheen grown from tissue culture with those grown from traditional planting materials showed that tissue culture is a viable alternative to traditional planting material.

3.11 *Trinidad and Tobago*

Having collaborated with other stakeholders in Trinidad and Tobago to successfully draft a national biosafety policy in 2005, CARDI supported one of the scientists to train in the detection of Genetically Modified Organisms (GMO) content in food, feed and seed. A Factsheet was produced on the subject to treat with frequently asked questions about GMOs.

There are two major components to the organic production systems project, namely technology transfer and techpak development for indigenous medicinal herbs. A range of tree crops has been established at the organic demonstration form in Tobago and training in organic technologies was conducted for farmers. Fourteen herbs have been investigated for suitability for growing under organic conditions. Planting material of lemon grass (*Cymbopogo citratus*) was imported from St Lucia and successfully propagated under organic growing systems. In association with the Tobago House of Assembly, this material, as well as organically grown sorrel is being used for the production of herbal teas.

CARDI Trinidad and Tobago also continued efforts to sustain the hot pepper industry in the country. Manuals on hot pepper production, post harvest technology and marketing were commissioned for the benefit of farmers.

Work is ongoing on the purification and stabilisation of hot pepper accessions of economic importance. Twelve landraces have been characterised.

A project to identify pheromone active compounds in *Amblyomma cajennense* ticks was undertaken. The identified chemicals will be used to make acaricide-impregnated decoys to attract and kill males, thus reducing tick population over time.

The apparent development of resistance by small ruminants to some of the popular commercial worm medicines is a concern to stakeholders of the small ruminant industry. A possible solution to the problem is the use of indigenous knowledge. CARDI in association with the Ministry of Agriculture, Land and Marine Resource and the Tobago House of Assembly conducted a survey on the use of ethno-botanicals as worm medicines. Though only a few farmers are currently using ethno-botanicals, many indicated that they would use them if there was easy access to the preparations. The major ethno-botanicals used are neem (*Azadiracha indica*) and gully root (*Petiveria alliacea*).

4.0 **Headquarters Units**

4.1 *Information Resource*

The Information Resource Unit focuses on delivery of information products and services along with capacity building in information and communication management. Many of these activities are funded by the Technical Centre for Agricultural and Rural Cooperation (CTA). CARDI has been the CTA Regional Branch Office for the Caribbean since 1987. Work done by the Information Resource Unit in 2005/6 included:

- Provision of training in photo editing and provision of digital cameras to assist the work of CariPestNet - the pest identification network, funded by CTA.
- Co-ordination of a CTA funded Caribbean seminar for over 50 persons on the subject "Information and communication tools for implementing food and nutrition security

projects”, working in collaboration with the Government of Belize and the Caribbean Food and Nutrition Institute (CFNI) held in Belize in May 2005.

- Organisation of several training courses which improved skills of over 100 participants from 16 countries in the following areas:
 - Electronic publication;
 - Communication tools and methods
 - Agricultural networking
 - Intellectual property rights;
 - The new trading environment
 - Assessment of Agriculture, Science, Technology and Innovation (ASTI) systems
- Completion of work on user needs assessments in the Caribbean undertaken by the Technical Centre for Agricultural and Rural Cooperation (CTA), and initiation of follow-up activity based on results of the survey.
- Ongoing identification and development of projects on behalf of CARDI and other agencies in the Caribbean agricultural sector through the CTA/CARDI Regional Branch Office e.g. Marketing of convenience foods.
- Technical assistance to identify funding for development of the Caribbean Fisher Folk Network, in collaboration with the Caribbean Regional Fisheries Mechanism (CRFM).
- Coordination of a regional meeting to present the results of the survey of farmers’ organisations and identify workable strategies. Training and ongoing technical support to the Interim Committee of the Caribbean Farmers network (CaFAN) was also undertaken.
- Provision of information to at least 1,500 researchers, farmers, policy makers, educators and extensionists for each year through the Question and Answer Services (QAS) operating from CARDI Headquarters and Ministries of Agriculture in Barbados, Jamaica, St Lucia, St Kitts/Nevis and St Vincent and the Grenadines.
- Hosting of several exhibitions to highlight available publications and information to key stakeholder groups in several countries including – Grenada, Jamaica, St Kitts/Nevis and Trinidad & Tobago.
- Co-ordination of a training course to facilitate improved skills of 10 participants in the use of online fora and electronic networking, in collaboration with CTA and FAO.
- Presentations in the area of information and communications management to audiences in the CARICOM/FAO/Government of Italy Food and Nutrition Security Project.
- Working as part of a team to support the development of capacity in Agriculture, Science, Technology and Innovation (ASTI) in the Caribbean agricultural sector through participation in training and case studies of selected commodities e.g. nutmeg and banana.

4.2 *Agribusiness*

The principal areas of focus by CARDI’s agribusiness programme were technology transfer, the provision of special technical support to the institute’s major stakeholders, within the institute’s

internal portfolio and a selection of special projects. Some activities executed under the programme during 2005/6 were:

- Development of the Montserrat cassava industry
- Completion and presentation of St. Kitts & Nevis Strategic Marketing Plan
- Technical support to the Commonwealth team in their post-hurricane evaluation of the Grenada nutmeg industry
- Technical assistance in the development of selected industries (sapodilla, hot pepper, pumpkin, sweet potato)
- Preparation/presentation of paper on technologies available to support investment in rice and other crops in CARIFORUM countries
- Business advisory support to commercial activities at CARDI demonstration stations
- Evaluation of the Grenada Nutmeg Industry and the co-ordination of a CARDI technical team in the preparation of the CTA sponsored ASTI report
- Regional training in business development involving the preparation of an agribusiness management CD for distance learning, particularly targeting agricultural extension service personnel
- Business advisory support to CARDI's commercial demonstration projects and private commercial projects

4.3 *Marketing*

A number of key constraints have been identified as hindering agricultural market development and the concomitant stifling of the overall development of the region's agricultural industry. These constraints can be succinctly stated as follows:

- Inadequate transportation systems
- Inadequate marketing infrastructure
- Poorly developed market information systems
- Inadequate market linkages

CARDI's Marketing Unit has undertaken a number of initiatives in an attempt to address some of the impediments to agricultural market development:

- In collaboration with the CARDI Agribusiness Unit prepared the St Kitts/Nevis Strategic Marketing Plan.
- Preparation of a paper for the 21st Meeting of the CARICOM Council for Trade and Economic Development (COTED) titled "Addressing weak linkages and participation of producers in growth market segments".
- Circulation of documents to the Jagdeo Initiative Core Group in connection with the terms of reference for the agricultural marketing task force.

- Facilitation in the development of market information systems through CAMID with funding from FAO.
- Participated in the CTA sponsored ASTI project in Grenada.
- Preparation of a manual entitled “Marketing Trinidad & Tobago Hot Peppers” in conjunction with the National Agricultural Marketing Development Corporation (NAMDEVCO).

Considerable attention has been paid to improving farmers’ linkages with markets. The Marketing Unit facilitated Miami market visits for representatives from NAMDEVCO and The University of the West Indies (UWI) to meet with regular importers of Caribbean produce. Based on market opportunities identified efforts are being made to have small farmers cooperate to exploit these opportunities.

4.4 Public Relations & Communications Unit

The Public Relations and Communications Unit (PRCU) has increased awareness, media publicity and greater visibility of CARDI in national, regional and international newspapers, television and radio stations with respect to the Institute’s research activities that are designed to achieve sustainable development and improvement of the quality of lives of the people in the Caribbean Community (CARICOM).

The PRCU produced a plethora of press releases, fact sheets and posters. The Institute has been featured on several occasions on the CANA Regional Media Network. CARDI displays were mounted at several exhibitions.

Public relations and communications initiatives were utilised to promote and communicate more effectively and in a timely manner with policy and decision makers, collaborators, partners, stakeholders and the media regarding agricultural developments with specific reference to the CARICOM Single Market and Economy (CSME) and also the global trading environment.

Faced with the rapidly changing information and technological environment in the region, the PRCU was instrumental in promoting CARDI as contributing to the development of the agricultural sector in CARICOM and as leading the region in small ruminant, hot pepper, and root crop research.

5.0 CARDI Financial Statements

CARDI’s financial statements for 2005 and 2006 are shown in the attachment. The 2005 figures were audited, however the audit for 2006 is not yet complete and the figures are in draft form. The figures are presented in Eastern Caribbean dollars, the reporting currency of the Institute.

A look at the Balance Sheet reveals a fall in total assets from EC\$10.9Mn in 2005 to EC\$9.6Mn in 2006. This reflected the trend over the years of a lack of investment in fixed assets. This lack of capital renewal was as a result of the insufficiency of funds to allocate to the maintenance of the institute’s plant. This dilemma could be explained in part by the fact that accounts receivable from member contribution represented 36% of total assets. This is a significant amount of resources being tied up at time when these resources are needed to fund the institute. The period 2005/2006 however did see a significant drop in this ratio through payments by members of arrears of contributions. These funds were used to reduce liabilities to staff and other creditors, hence the fall in current liabilities.

The Statement of Operation show a deficits of EC\$811,348 in 2006 and EC\$1,655,955 in 2005. These do not represent cash deficits as included in Office and Administration expenses is depreciation which averages EC\$1,250,000. In 2005 the deficit is large because also included in Office and Administration expenses for that year is a provision for doubtful receipt of arrears of contributions of a member country in the amount of EC\$1,200,000. The auditors insisted that this provision be made.

An analysis of the Statement of Operations on a cash basis would reveal an almost breakeven position. This is not surprising as expenditures are carefully matched with revenues. This results in the delay of activities at times to avoid the build-up of liabilities of the institute.

By way of ratios, the most significant ratio in the Statement of Operations is that personnel cost represent 60% of total cost, 78% of the total member government contributions due and 87% of member government contributions received.

Attached to the financials is a Statement of Operations that separates core expenditure from that of co-operative programmes. This gives some sense of degree of collaboration through co-operative programmes.



CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE

FINANCIAL STATEMENTS

2006

**CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT
INSTITUTE**

Balance Sheet

For the year ended December 31, 2006
with the comparative figures for 2005
(Expressed in Eastern Caribbean Dollars)

	Dec-06	Dec-05
NON CURRENT ASSETS		
Leasehold Properties	506,077	523,348
Buildings	1,955,040	2,056,293
Equipment	1,643,762	1,840,560
Motor Vehicles	262,961	125,212
Livestock	71,722	70,493
	<u>4,439,562</u>	<u>4,615,906</u>
CURRENT ASSETS		
Cash	984,548	1,158,649
Fixed Deposits	394,139	492,936
Accounts Receivable		
Member Governments	3,440,876	4,320,513
Other	254,051	291,719
Pre-paid expenses	66,463	37,359
	<u>5,140,077</u>	<u>6,301,176</u>
TOTAL ASSETS	<u><u>9,579,639</u></u>	<u><u>10,917,082</u></u>
NON -CURRENT LIABILITIES		
Net Long -term liabilities	<u>114,286</u>	<u>157,664</u>
CURRENT LIABILITIES		
Bank Overdraft	499,371	496,130
Accounts Payable & Accrued Liabilities	787,463	912,021
Due to The University of the West Indies	724,856	633,986
Provision for Pension Costs	10,803	167,841
Due to Employees	99,093	359,570
Current portion of long-term liabilities	138,495	173,250
	<u>2,260,081</u>	<u>2,742,798</u>
NET TOTAL LIABILITIES	<u><u>2,374,367</u></u>	<u><u>2,900,462</u></u>
ACCUMULATED FUND	7,205,272	8,016,620
TOTAL LIABILITY & FUND	<u><u>9,579,639</u></u>	<u><u>10,917,082</u></u>

**CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT
INSTITUTE**

Statement of Operations

For the year ended December 31, 2006
with the comparative figures for 2005
(Expressed in Eastern Caribbean Dollars)

	December 2006	December 2005
Revenue		
Government Contributions:		
Annual Core Budget	7,662,025	7,662,025
Non-government Contributions:		
Co-operative Programmes/Technical Assistance	985,054	1,706,823
Consultancies	59,962	99,197
Produce Sales	255,599	296,046
Interest	32,674	71,530
Gain/Loss on Translation	99,142	69,103
Miscellaneous	28,531	19,594
 Total Revenue	 <u>9,122,987</u>	 <u>9,924,318</u>
 Expenses		
Personnel – Professional	2,980,814	3,244,436
Personnel – Support	2,454,526	2,547,408
Professional Services	424,448	563,244
Casual Labour	545,645	515,687
Materials, Supplies & Services	293,878	261,340
Motor Vehicle Costs	258,770	252,791
Official Office Travel	62,881	81,632
Official Foreign & Regional Travel	271,777	191,383
Training & Workshops	584,446	962,948
Field Station and Laboratory	225,613	174,469
Communication Products	8,036	11,160
Information Services	16,775	9,160
Office and Administration expenses	1,757,810	2,667,820
Board Meetings	117,000	136,784
(Gain)/Loss on disposal of fixed assets	(68,084)	(39,989)
 Total expenditure	 <u>9,934,335</u>	 <u>11,580,273</u>
 Net (deficit)/surplus of revenue over expenditure	 <u>(811,348)</u>	 <u>(1,655,955)</u>

CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE

Statement of Operations

	December 2006	December 2005	Year To December 2006	Year To December 2005	Year To December 2006	Year To December 2005
	Total	Total	CORE	CORE	PROJECTS	PROJECTS
Revenue						
Government Contributions:						
Annual Core Budget	7,662,025	7,662,025	7,662,025	7,662,025	0	0
Non-government Contributions:						
Co-operative	985,054	1,706,823	52,516	158,101	932,538	1,548,722
Programmes/Technical Assistance						
Consultancies	59,962	99,197	59,962	13,678	0	85,519
Produce Sales	255,599	296,046	236,979	287,112	18,620	8,934
Interest	32,674	71,530	30,378	68,384	2,296	3,146
Gain/Loss on Translation	99,142	69,103	98,986	68,615	156	488
Miscellaneous	28,531	19,594	28,412	15,842	119	3,752
Total Revenue	9,122,987	9,924,318	8,169,258	8,273,757	953,729	1,650,561
Expenses						
Personnel – Professional	2,980,814	3,244,436	2,823,691	2,890,206	157,123	354,230
Personnel – Support	2,454,526	2,547,408	2,437,186	2,517,391	17,340	30,017
Professional Services	424,448	563,244	271,762	331,916	152,686	231,328
Casual Labour	545,645	515,687	472,073	475,366	73,572	40,321
Materials, Supplies & Services	293,878	261,340	192,706	183,211	101,172	78,129
Motor Vehicle Costs	258,770	252,791	220,885	221,622	37,885	31,169
Official Office Travel	62,881	81,632	35,626	62,054	27,255	19,578
Official Foreign & Regional Travel	271,777	191,383	240,265	160,643	31,512	30,740
Training & Workshops	584,446	962,948	245,054	186,869	339,392	776,079
Field Station and Laboratory	225,613	174,469	161,821	138,816	63,792	35,653
Communication Products	8,036	11,160	5,136	4,524	2,900	6,636
Information Services	16,775	9,160	15,289	8,103	1,486	1,057
Office and Administration	1,757,810	2,667,820	1,747,230	2,656,630	10,580	11,190
expenses						
Board Meetings	117,000	136,784	117,000	136,784	0	0
(Gain)/Loss on disposal of fixed assets	(68,084)	(39,989)	(68,084)	(39,989)	0	0
Total expenditure	9,934,335	11,580,273	8,917,640	9,934,146	1,016,695	1,646,127
Net (deficit)/surplus	(811,348)	(1,655,955)	(748,382)	(1,660,389)	(62,966)	4,434

