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BIENNIAL REPORT

**ON THE ACTIVITIES OF
THE CARIBBEAN AGRICULTURAL
RESEARCH AND DEVELOPMENT INSTITUTE**

**CARDI
2001 – 2002**

Improving lives through Agricultural Research



Panama City, Panama

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1.0 INTRODUCTION

CARDI was established in 1975 when the UK government ended its funding for the Regional Research Centre (RRC) of the Faculty of Agriculture at the University of the West Indies. The Institute develops its programmes in response to national and regional agricultural plans and policies, as well as changes in the global economy. Intrinsic to CARDI's mandate is adaptive research leading to the use of innovative technologies in critical areas along the 'farm to fork' continuum.

In the last 10 years the changing needs of its member states and the imperatives of globalisation led to CARDI refocussing its activities to address declining revenues from traditional export crops. The advent of the WTO and other changes in the global economy required the transformation of agriculture in the region to international competitiveness. In pursuit of this vision the Heads of Government of the Caribbean Community (CARICOM) approved a Regional Transformation Programme (RTP) for agriculture in July 1996. Under this programme, CARDI was designated the Lead Agency for two of the nine sub-programmes namely:

- Technology Generation, Validation and Transfer
- Market Development.

Subsequently, two other areas were added by ministerial decision, namely:

- Technical Assistance Services;
- Integrated Production and Marketing Programmes.

In the more recent past, CARDI has been given responsibility for specific commodities under the Committee of Lead Agencies of the RTP, namely:

- Hot pepper
- Sweet potato
- Small ruminants

During the biennium under review, a Small Multidisciplinary Independent Team, headed by Dr. Carlos Aquino, former Director General of IICA undertook an external review of CARDI. The team prepared a report entitled "A definitive proposal for the future of CARDI: A new dimension", which was presented

to the Heads of Government for a decision to implement its recommendations. This report reiterated the need for CARDI to refocus its activities more directly to research and development, in keeping with its original mandate.

The report of the Small Multidisciplinary Independent Team also called for specific action by the Conference of Heads of Government, CARDI's Board of Governors and Board of Directors and the CARICOM Secretariat. It also reiterated the importance of agricultural research in enabling the regional agricultural sector to respond effectively, and in a timely manner, to the strategic challenges and dynamic opportunities characterising the agricultural and food sectors of CARICOM. More details of the processes which led to the formation of this team and the actions arising after the team's report are given in sections 2.2, 2.3 and 2.4 of this report.

The Institute was forced to respond to a number of developments affecting its structure during the period, including changes in its management. In 2000 the Executive Director of CARDI demitted office and was replaced by an acting ED, Dr. Compton Paul. In 2002, Dr. Paul demitted office and was replaced by Mr. Bruce Lauckner, who is the current acting Executive Director. The Institute also saw changes in human resource management and experienced the departure of a number of professional staff. CARDI however, has retooled its operational base, given priority to training and development and has made significant progress in managing its human resources. CARDI also renewed its focus on resource mobilization and the establishment of strong collaborative linkages with regional and international partners in agricultural development. In this regard fresh memoranda of agreement have been signed with IICA and the University of Florida (UF). The Institute has carefully positioned itself by a series of deliberate actions to respond to the current needs of Member States and to anticipate the new demands occasioned by globalisation and trade liberalization.

The details of these actions are presented in this report, which covers the period 2001-2002. At the time of writing the Institute's auditors had still not presented their 2002 financial report, but the 2001 audited financial statements have been submitted.

2.0 GOVERNANCE AND MANAGEMENT

2.1 *CARDI's strategic focus*

The strategic planning workshop held in October 2000 defined the commodities of focus for CARDI for the period 2001-6. These commodities were identified by priority setting exercises with the Ministries of Agriculture and by CARDI's responsibilities under the RTP. Section 3.1 of this report details the work done in the commodities identified during the period 2001/2.

2.2 *Uncertainty during 2001*

During 2001 the future of CARDI was uncertain. Most of its Member Countries stated very clearly that they saw the need for a regional agricultural research and development institute, but some of these countries had fallen into arrears in their contributions and this impacted on the Institute's delivery performances.

The 22nd CARICOM Heads of Government Conference held in July 2001 in the Bahamas accepted a proposal from the President of Guyana, the CARICOM Quasi-Cabinet Lead Head with portfolio responsibility for agriculture, to submit proposals regarding the future of CARDI. These proposals were considered by the Bureau of Heads of Government in October 2001. The Conference reviewed the proposals, but were unable to come to a decision to accept the proposals. However, they agreed that the University of the West Indies (UWI) should submit a proposal to the 13th Intersessional Meeting of the Heads of Government in Belize in February 2002.

2.3 *Review by Small Multidisciplinary Independent Team*

After examination by the CARDI Board of Governors, the proposal of UWI was withdrawn and the 13th Inter-Sessional Meeting requested a Small Multidisciplinary Independent Team to prepare a definitive proposal for the future of CARDI to be presented to the 23rd Meeting of the Conference of Heads of Government in Guyana in July 2002.

The composition of the team was as follows:

- ◆ Dr Carlos Aquino G (Former Director General, IICA), Chairman
- ◆ Dr Marcelino Avila (Manager, Sectoral Programmes, CARICOM Secretariat)

- ◆ Dr Richard Cheltenham (Attorney at Law and Former Chairman, CARDI, Board of Governors)
- ◆ Dr H Arlington Chesney (Director, Caribbean Region, IICA)
- ◆ Professor Charles McDavid (Dean, Faculty of Agriculture and Sciences, University of the West Indies)
- ◆ Mr Anslem Walters (National Flour Mills, Trinidad and Tobago)

The team prepared a 31-page proposal for the Heads of Government entitled “A definitive proposal for the future of CARDI: A new dimension”. In this proposal it is stated that the team came to the unanimous conclusion that:

“CARDI is essential but urgently requires a **new dimension** with a restructured organisation that enables it to respond effectively and timely to the strategic challenges and dynamic opportunities characterising the agricultural and food sectors of CARICOM and pertinent to the mandate of a regional research and development institute”

The team invited a number of actions from the Conference of Heads of Government, the CARDI Board of Directors, the CARDI Board of Governors and the CARICOM Secretariat.

In particular the team urged that CARDI’s core budget should be maintained at a minimum of EC\$8.8M which had been recommended by the Ministers of Agriculture.

2.4 Discussions on the way forward

The proposal of the Small Multidisciplinary Independent Team was presented was presented to the 23rd Conference of the Heads of Government in Guyana in July 2002. The Heads of Government reiterated the importance of agricultural research in enabling the regional agricultural sector to respond effectively, and in a timely manner, to the strategic challenges and dynamic opportunities characterising the agricultural and food sectors of CARICOM. However, Guyana expressed concern about the need to get value for money invested in regional institutions. The Conference agreed that Guyana, the Caribbean Development Bank and CARICOM would discuss the way forward with CARDI as a matter of urgency.

In connection with the decision, CARICOM and the Government of Guyana arranged a meeting at the office of the President of Guyana, CARICOM's Quasi-Cabinet Lead Head for Agriculture. CARDI was invited to participate in that meeting which was chaired by the President.

At the meeting the President indicated broad agreement with the proposal submitted by the Small Multi-Disciplinary Team. However, the President indicated that:

- (i) The proposal did not set out any justification for the minimum recommended core budget of EC\$8.8M in terms of what that core would contain and the costs attached.
- (ii) The view of the Government of Guyana was that the minimum core is probably less than EC\$8.8M.
- (iii) A document was needed to explain what the core budget was going to provide.

The meeting agreed that CARDI should develop a clear well-justified position on the core needed.

2.5 Scenarios for future operation of CARDI

A sub-committee appointed from the CARDI Board of Directors prepared a document entitled "Proposed scenarios for CARDI's core funding". This document presented three possible scenarios as described below:

- 1 Scenario 1. "Reflecting the recommendations of the Small Multidisciplinary team" with an annual budget of EC\$7.79M, a professional staffing of 30 with 68 support staff in various categories.
- 2 Scenario 2. "Absolute minimum for a self functioning institute" with an annual budget of EC\$6.25M, a professional staffing of 24 with 61 support staff in various categories. Also this scenario had no provision for development funds.
- 3 Scenario 3. "Compromise between scenarios 1 and 2" with an annual budget of EC\$6.85M, a professional staffing of 27 with 65 support staff in various categories. There was limited provision only for development funds.

None of the scenarios had any provision for funding by the Government of Guyana. That government is currently examining its role with CARDI and it is expected that discussions with CARDI and the government of Guyana will define this relationship.

The document “Proposed scenarios for CARDI’s core funding” was forwarded to the President of Guyana who tabled it at the 15th Bureau of Heads of Government in Barbados on November 11 2002. CARDI was invited to attend the session when the document was discussed.

The Bureau expressed support for CARDI and the President of Guyana noted that the document was what had been requested from CARDI. It gave clear indications of how the proposed core budgets would be spent and therefore Guyana had no objection to the other participating States proceeding to implement the recommendations of the Small Multidisciplinary Independent Team.

The Bureau members observed that Scenario 1 would facilitate the recommendations of the Small Independent Multidisciplinary Team, but they concluded that the Ministers of Agriculture should make a recommendation concerning the scenario for the future restructured Institute.

2.6 Decisions made in 2003

The CARDI Board of Governors comprising the Ministers of Agriculture met early in January 2003 and considered the document “Proposed scenarios for CARDI’s core funding”. The meeting recommended Scenario 1 to the Heads of Government and this recommendation was broadly agreed by the Heads at their 14th Inter-Sessional meeting in Trinidad in February 2003. Full details of these decisions will be presented in the 2003/4 biennial report.

2.7 Strategic partnerships

The renewed commitment of the Member Governments to CARDI was confirmed in a letter sent by the President of Guyana to a number of international and bilateral agencies which collaborate or otherwise support activities by CARDI and who needed some assurance of the support of the governments to CARDI.

One outcome of this letter was that IICA signed a new collaborative agreement with CARDI in December 2002. CARDI’s management is presently aggressively pursuing strategic partnerships and joint projects to compensate for the effective freezing of government contributions for over 10 years.

2.8 Change management

Implementation of CARDI's Change Management Plan was difficult during 2001, but the Small Independent Multidisciplinary Team endorsed the CARDI Change Management Plan and steps were taken to implement it during the second half of 2002. This is leading to a decentralisation of operations, more resource mobilisation, improved impact and, as outlined above, more collaboration with national, regional and international partners.

3.0 PROGRAMMES

3.1 *Commodity focused programmes*

The main focus of CARDI's 'research for development' approach is the generation, transfer and validation of improved production and marketing technologies for the commodities identified under the RTP. In this regard, the major commodity-based focal points of the Institute during the biennium were as follows.

3.1.1 *Hot pepper (Capsicum chinense Jacq)*

CARDI's hot pepper sub-programme is underpinned by the breeding work which is conducted by its scientists in Barbados. The seed technology and production centre in Antigua has responsibility for the testing and commercial production of quality seed. Some aspects of seed technology and a limited production of seed also occur in Belize. The activity in Belize is currently restricted to the production of seeds of the cultivar West Indies Yellow. In Dominica, the local variety "Bonda Ma Jacque" has been identified as showing good commercial promise. It subsequently showed some susceptibility to fungal and bacterial wilts but has enough desirable characteristics to occupy a niche market. In Jamaica, work was carried out to develop systems for organic hot pepper cultivation, where there is considerable potential for the export market. This research is still ongoing. Hot pepper work in Grenada has focused on technologies for seedling production and the selection of breeding lines that meet current market expectations.

The breeding work has been focused on the creation and selection of new and superior genotypes. Additionally, the programme also addressed breeding highly aromatic and pungent hot pepper cultivars to widen the advantage the Caribbean already enjoys on the hot pepper export markets. Resistance to Gemini viruses is one of the factors that also inform the multi-pronged approach that CARDI has adopted to hot pepper development. During the period, 13 stable genotypes and 45 recombinant lines were bred and selected for Caribbean farmers, processors and exporters. Out of these accessions, two stable genotypes CARDI Red and CARDI Green were selected along with five purified landraces to go into the

Caribbean regional hot pepper varietal trial due to be carried out in 2003. This is part of the continuous programme of testing and selection that goes into the development of new and improved cultivars for the dynamic export market for hot pepper. Four of the accessions exhibited high levels of tolerance to the broad mite and will be further evaluated for use as commercial varieties and as parents in crosses to breed for resistance against broad mite. The other accessions are being maintained for evaluation purposes.

3.1.2 Root crops

3.1.2.1 Sweet potato (*Ipomoea batatas*)

This is an important diversification and food security crop for the Caribbean. CARDI research efforts have therefore been targeted at improving production and marketing efficiency in the countries where the commodity is grown. The work has been variously divided, depending upon CARDI's resources in collaborative linkages in each member state. Work done in Jamaica has been focused on the IPM needs of the crop.

Sweet potato weevils, sweet potato leaf beetles and the wireworm-*Diabrotica systema* (WDS) soil insect complex significantly reduce sweet potato production in Jamaica and the rest of the Caribbean. In response, CARDI widened its IPM approach to include growing resistant cultivars, using cultural practices and environmentally friendly insecticides such as botanicals and biorationals. This was aimed at assisting sweet potato farmers to produce a high quality, internationally competitive commodity. In 2001–2002, a total of 16 sweet potato accessions were evaluated in Jamaica. Most of them (including local entries) were found to be more tolerant to damage by sweet potato weevils than the susceptible checks 'Beauregard' and SC 1149-19. CARDI also conducted training exercises for Ministry of Agriculture personnel in the construction and use of pheromone traps for the sweet potato weevil.

In St. Kitts it was discovered that local lines of sweet potato performed better than many of the recently introduced lines. Under the dry exposed field conditions in which the plants were grown, survival of the local lines was better and they were more tolerant to stem and root damage by sweet potato weevils.

Work in Tobago was initiated during the period with the establishment of a germplasm bank. The cultivars in the bank have been evaluated for yield potential and resistance to the sweet potato borer (*Megastres grandalis*). Early results indicated that two cultivars (White Man and Red Skin) are highly susceptible to borer damage.

3.1.2.2 Dasheen (*Colocasia esculenta*)

In CARICOM, Dominica, Jamaica and St Vincent and the Grenadines are the main producers of dasheen for both local consumption and export of the fresh commodity. CARDI's root crop research over the reporting period was largely executed in Dominica but will have application for all member states that grow the crop. In Dominica, CARDI has been working on providing producers with information to facilitate more accurate yield prediction and has conducted agronomic trials to this end. The Institute has also attempted to address the concerns of consumers in importing countries regarding pesticide residues on food crops. Balancing human health issues with the sanitary and phytosanitary requirements of the export trade prompted a study on the use of calcium hypochlorite as an alternative post harvest dip.

3.1.2.3 *Yam (Dioscorea spp.)*

Export revenues from the production of yam in Dominica and other counties in the Eastern Caribbean have been declining principally because of the incidence of the anthracnose-causing fungus *Collectotrichum gloeosporioides*. This fungus is thought to be made up of different physiological races which are cultivar specific. Studies were carried out in Dominica to determine the existence and distribution of physiological races of *C. gloeosporioides* and validate which of these races were pathogenic to the various cultivars in use. Another problem being tackled in Dominica relates to the incidence of hollowing in yam tubers reported by farmers that grow the commodity. Limited resources have slowed the progress of the first study but recent research results from the yam hollowing work suggest that the problem may be economically insignificant

In St Kitts/Nevis CARDI provided technical support in pest management to yam cultivators and produced in excess of 3,200 kg of planting material for distribution to farmers. The Institute has successfully used an enterprise development initiative to transfer this activity to the private sector. As a result, the St. Kitts Sugar Manufacturing Company is now the largest producer of yam planting material for farmers.

3.1.2.4 *Cassava (Manihot esculenta)*

CARDI is collaborating with an agro-processing enterprise in Dominica to support the processing of cassava into snack chips. Scientists are conducting an assessment of eight local cultivars to determine their suitability for processing

In Montserrat, activities completed included the establishment and multiplication of cassava germplasm. The technique used was very successful and the material is being further multiplied for distribution to farmers. The Institute is using this work to assist in the development of the local cassava bread industry.

Germplasm maintenance and evaluation formed the bulk of the work that CARDI conducted on cassava in Tobago.

3.1.2.5 *General considerations with root crops*

Work conducted in all the countries in respect of root crops is intricately tied to the goal of the sub-programme of increasing incomes from these commodities through a range of agronomic and downstream initiatives. In this regard the Institute has developed close links with the Food Technology Department of the UWI explore the development of a range of value added products from sweet potato, dasheen and cassava.

3.1.3 *Cereals and grain legumes*

Work in this area is restricted to Belize and was conducted in active collaboration with the Ministry of Agriculture, Fisheries and Cooperatives, non-governmental organisations, private industries and farmers. The major objective was to increase the availability of quality seed crops of cereals and legumes and includes research and development activities in soybean, peanuts, cowpea and corn.

3.1.3.1 *Soybean (*Glycine max*)*

Much of the soybean research and development work was done in support of Belize's aim of achieving domestic self-sufficiency in protein concentrate for animal feed, and oils and fats for human consumption. The 2001-2002 soybean research activities were concentrated on the continued screening and evaluation of cultivars/lines with the principal objective of identifying for commercial production, those that perform as well as or better than existing cultivars. Of the 87 entries in the preliminary evaluation trial planted in December 2001, 38 performed better than the control CARDI-15. In the varietal evaluation trial planted in November 2001, 12 cultivars/lines were compared with CARDI-15 as the control. At least six of the entries performed just as well as the control.

3.1.3.2 *Peanut (*Arachis hypogaea* L.)*

Under the Peanut Collaborative Research Programme, emphasis was placed on investigating and identifying suitable methods for maintaining post harvest quality and reducing production costs. The latter was to be achieved through improvements in harvesting, threshing, shelling, drying and storage operations. Activities in 2001-2002 focused on screening and evaluating peanut cultivars/lines with characteristics as good as or better than cultivars currently in commercial use. Efforts were also directed at identifying cultivars/lines for specific end uses such as the manufacture of peanut butter and salted nuts. It was found that a significant number of accessions performed better than the control and two entries were found to be highly tolerant to leaf spot and rust diseases as compared with the control Tennessee Red.

3.1.3.3 *Cowpea (*Vigna unguiculata* (L.) Walp.)*

CARDI conducted evaluation work to screen new cultivars and to identify those that performed best under local conditions. In a replicated variety evaluation trial planted in late November 2001, 10 cultivars/lines were evaluated and it was found that there was no significant difference in yield among the entries.

3.1.3.4 Corn (*Zea mays*)

Evaluation trials were carried out to assess the yield performance of 32 lines of corn. Some of this work was done in collaboration with the International Maize and Wheat Improvement Centre (CIMMYT), a link which was established through the PROCICARIBE system. The results have so far indicated no significant differences between the evaluated lines and the controls. CARDI continues to screen new lines for farmers in support of the national effort to increase food security in this commodity.

3.1.4 Vegetables

3.1.4.1 Callaloo (*Amaranthus* sp.)

Callaloo is a traditional staple in the diet of many West Indians and is also an important export commodity. Based on studies carried out by CARDI in Jamaica, a pest management strategy using an IPM approach has been developed for callaloo. The emphasis of this work has been on the rationalisation of pesticide use to increase consumer safety and to reduce environmental and user hazards. The strategies developed by CARDI gave improved plant protection against Lepidopteran species and demonstrated the potential to reduce pesticide use in this cropping system by 75–92%. This has immediate implications for cost reduction and food safety, both of which are critical issues in the sustainable development of cropping systems for callaloo. These are some of the technologies that CARDI is working to transfer to farmers as a means of improving their lives.

3.1.4.2 Other vegetable crops

In Tobago CARDI has been identifying improved cultivars of traditional vegetable crops including tomato, cabbage and sweet pepper. Research has also looked at agronomic measures to increase yields and to reduce the cost of production for farmers.

3.1.5 Fruit crops

3.1.5.1 Mango (*Mangifera indica*)

Over the past 2 years, scientists in the CARDI Dominica Unit have continued collaborative efforts with the Ministry of Agriculture and the Environment and the Dominica Export Import Agency (DEXIA) in forecasting the yields of Julie mango. This work was carried out to allow reliable and timely estimates of the potential volumes available for export and in so doing facilitate contractual and marketing arrangements with farmers.

3.1.5.2 Golden apple (*Spondias cytherea*)

Work with this commodity is centred in Grenada where CARDI conducted trials aimed at producing large fruit from dwarf trees. Given the growing importance of Golden Apple as a cash crop, this work was undertaken to reduce the difficulty and economic losses associated with harvesting the fruit from tall trees. A number of methods were used to produce the dwarfed trees including grafting and heavy pruning. The major outcome of this work thus far has been the production of large fruit from experimental plots in just over 12 months.

3.1.5.3 Papaya (*Carica papaya*)

Bunchy top and *Erwina* diseases (bacterial decline) continue to be the two most limiting factors to papaya production in Grenada. In 2002 CARDI tested a system of disease management that consisted of using extremely hardened seedlings for crop establishment. Fertilisers that did not contain the ammonium ion were used as part of the control mechanism. The total benefits of using this approach are still being evaluated but it was shown that economic production was still possible using cultural methods only.

3.1.5.4 Pineapple (*Ananas comosus*)

In Dominica, pineapple is one of the main crops in that country's diversification programme. The productivity of the cultivar Smooth Cayenne was studied in three agro-ecological areas that ranged from a zone with a marked dry season to a wet zone without a pronounced dry season. Significant differences were found in the brix content in the different zones. This research will enable CARDI to recommend specific varieties for varying agro-ecological zones in order to optimise production from those areas.

3.1.6 Traditional export crops

CARDI conducted research in two of the major traditional crops during the period, both related to IPM. In this regard, work was conducted in Barbados on the sugar cane moth borer and work was done in Jamaica on the coffee berry borer.

3.1.6.1 Sugarcane (*Saccharum* spp.)

Scientists at CARDI provided technical assistance to the Barbados sugar industry by the mass rearing and release of the parasite *Cotesia flavipes* Cam. This parasite is a larval parasitoid of *Diatraea saccharalis* Fabricius, the sugarcane moth borer which is one of the major pests of the crop. IPM research focused on the use of biological control strategies to mitigate the effects of the sugar cane moth borer. In 2001-2002 moth borer infestation was kept below the economic threshold level of 5%.

3.1.6.2 Coffee (*Coffea* sp.)

CARDI's work in Jamaica in this crop focused on the development and use of biological control strategies for the coffee berry borer. Losses from this pest is estimated in the vicinity of US\$3.0 million. Results from work over the last 2 years indicate that even a small release of parasitoids can result in a 50% reduction in coffee berry borer infestation. This work supports the continued commercial success of the coffee growers of Jamaica and is critical to the long-term sustainability of the industry

3.1.7 Small ruminants

Research and development activities in sheep and goats are centred in Jamaica and Trinidad and Tobago. Work in Jamaica is focused more on goat production and marketing systems, whereas research in Trinidad and Tobago is more directed towards sheep production and marketing systems. However, in the two countries, some attention is given to both sheep and goats. In Jamaica, over 150 persons benefited from training in goat production technologies and six farmers were direct beneficiaries of the goat commercialisation project. Additionally more than 5ha of improved forages were established.

Livestock research conducted in Tobago revealed that farmers, vendors and extension personnel could benefit from training in the treatment of helminthosis in small ruminants, as results suggest that prophylactic measures are urgently required to prevent the development of parasite resistance. An industry analysis was undertaken resulting in two proposals being developed that outlined the case for self-sufficiency and the negotiating strategies for international trade in small ruminants, including legal protection measures for the local industry. CARDI's work in small ruminants is regionally driven, given the importance that each member state has attached to the commodity.

3.2 Organic agriculture

This is a relatively new area for the Institute but is in keeping with CARDI's policy of pursuing environment friendly agriculture. The work is centred in Trinidad and Tobago but quite a lot of training has been conducted in several other member states. CARDI has been working with national and regional partners to support the development of the organic agriculture industry in the region. The Institute has been working closely with the Inter-American Institute for Co-operation on Agriculture (IICA) to develop and implement a range of initiatives including, production audits, sensitisation drives, workshops, seminars and other forms of technology transfer including multimedia. More than 200 persons including farmers and extension agents were trained in eight countries.

3.3 *Natural resource management*

In 2001-2002, CARDI conducted a review of soil management practices in Jamaica and St. Lucia. The results showed very high chemical usage as well as the fact that very little attention was paid to mitigating the effects of soil erosion through prophylactic measures. The results of this work was presented to stakeholders and it is expected that regional governments will increasingly recognise the importance of the land resource in sustainable development planning

4.0 SUPPORT SERVICES AND NETWORKING

4.1 *Information and communication*

This programme is run out of Headquarters in Trinidad and Tobago. During the review period, the Information and Communication Department continued to meet its objective of developing and coordinating appropriate systems, policies and procedures for handling CARDI's corporate and technical information resources. This is a highly collaborative programme, executed in conjunction with a number of partners including CTA, CARICOM Secretariat and FAO. The outputs of this programme included the delivery of information technology and publications services to internal and external clients. Workshops have been held in almost all of the member states to build capacity in information management. Through this programme, CARDI's corporate communications platform was developed, which includes a series of initiatives aimed at enhancing the Institute's corporate identity. All staff across the Region participated in developing a message and slogan for the Institute.

4.2 *PROCICARIBE*

During the period, the Secretariat experienced administrative changes with the departure of the Executive Secretary, Dr Compton Paul. Dr. Francis Asiedu, the CARDI Livestock Scientist in

Jamaica took over supervision of the PROCICARIBE System in May 2002. The Secretariat continued to facilitate the work of the National Coordinating Committees (NCCs) and the National Network Committees (NNCs) in member countries. A major focus of its work was resource mobilisation for projects developed in the various networks. The following major activities were accomplished:

NARS institutional development

Researchers from Barbados and Trinidad & Tobago attended an IPM-CRSP regionalisation workshop held in Trinidad in collaboration with the Ministry of Agriculture, Land and Marine Resources. Participants were trained in a stepwise approach towards the development of IPM strategies for pesticide-reliant vegetable systems, which was developed from experiences with vegetable amaranth (callaloo) in Jamaica

Network coordination and management

Activities geared towards the mobilisation of resources to carry out network activities resulted in the preparation and submission of a number of funding proposals.

Agencies/Funding	Network	Project description
Mexico/Central America	CLAWRENET	Watershed data collection
Caribbean/OAS Agreement	CLAWRENET	Pesticide use management
	CLAWRENET	Training in land and water Resources
	CAPHNET	Post harvest technology
CARICOM/Mexico	CASRUNET	Development of small Ruminant production and marketing systems
	CAPGERNET	Enhancement of the management plant genetic resources

CAMID

The Caribbean Agribusiness Marketing Intelligence and Development (CAMID) Network developed a Regional Integrated Marketing Strategy (RIMS), aimed at developing mechanisms to facilitate the integration of the major marketing services. These include marketing intelligence, trade facilitation, quality assurance and the supporting infrastructure. RIMS was presented to the Council for trade and Economic Development (COTED) of CARICOM at a meeting held May 2002 in Guyana. In June 2002, at the request of the Caribbean Agribusiness Association (CABA), the RIMS was presented in Barbados at a meeting of the Alliance for Sustainable Development.

The Secretariat coordinated the activities of nine networks during the period and improved global linkages with a number of international agencies including CIMMYT and FORAGRO.

4.3 *Agribusiness services*

CARDI has an agribusiness unit which looks for opportunities to support development of agribusinesses as an income generating activity for the Institute. These activities are not limited to member countries and projects are sometimes identified in Caribbean countries which are not CARDI member states.

The agribusiness unit promoted CARDI as a credible research and training provider under the European Union funded CARIFORUM Agricultural Research and Training Fund (CARTF). The unit also provided agribusiness advisory support in the development of industry and private enterprises.

4.4 *Corporate services*

These comprise human resource management and finance. A new human resource manager was appointed in November 2002 and she is charged with implementing a performance management system and reviewing the human resource operations procedures. Training is an important component of human resource management and, despite limited resources, the majority of CARDI staff at all levels were able to participate in some form of training activity during 2001/2.

The CARDI Finance Unit operates the necessary procedures for the management of the Institute's finances and is also responsible for the Caribbean Food Corporation (CFC) management contract. Under this contract CARDI is responsible for the winding up operations of the now defunct CFC.

Appendix 1: Highlights of CARDI technical programmes by country – 2001/2

Country	Major Activities
Antigua and Barbuda	Seed production – Hot Pepper, Corn Plant propagation - Breadfruit Sheep and Goat - Meat Production, Breeding and Marketing
Barbados	Hot Pepper Improvement for the Caribbean (cv. West Indies Red) Planting materials (including Tissue Culture Materials) Sugarcane – IPM
Belize	Cereals (Corn) and Grain Legumes, (Soyabean, Peanut, Cowpea, R.K. Bean) Hot Pepper production
Dominica	Planting materials (yam, plantain, cassava) Hot Pepper and Root Crops (Yam, Dasheen, Cassava) Post-harvest quality studies (Mango, Papaya, Pineapple)
Grenada	Fruit production and Marketing (Golden apple, Papaya) Hot Pepper production and export Hibiscus Pink Mealy Bug Project
Guyana	Rice – CRIDNET programme coordination
Jamaica	IPM Systems Root Crops, Hot Pepper and Coffee Berry Borer Hot Pepper Production Organic farming; Hillside farming systems Sheep and Goat feeding production and marketing systems (small farmers)
Montserrat	Technical assistance (IPM; Livestock development) Cassava industry development
St Kitts and Nevis	IPM Systems (Sweet Potato Weevil; Papaya Mealy Bug W.I. Cane Fly) Root Crop (Yam) development Vegetables and hot pepper production and export
St. Lucia	Planting materials (yam, plantain, passion fruit) Organic farming systems Fruit production (Citrus)
St Vincent and The Grenadines	IPM Systems Root crop production and planting materials Organic farming Traditional Crop Production (Bananas)
Trinidad and Tobago	Organic farming (Urban) Vegetable production systems Dairy production systems Sheep production and marketing

Appendix 2: Funds Reconciliation – IICA/CARDI co-operation programme of joint projects as at 30 June 2003**Expressed in US\$**

Balance at December 31 2000	549,053.68	381,156.47	167,897.21
Payment 02/01/01 - Re CD ROM Project - Barbados		23,500.00	
Deposit 15/02/01 re CAMID	7,000.00		
Reimbursement 14/03/01		33,494.00	
Payment 4/4/01 St. Clair Forde Regional Hot Pepper plan		3,750.00	
Payment 12/4/01 - IICA St. Lucia Val. Business Sys.		24,800.00	
Payment 15/5/01 - Balance CD ROM Project		16,500.00	
Reimbursement 10/07/01 (CARDI 13000; CFCS 2000)		15,000.00	
Payment 6/8/01 - Betty's Hope		4,864.00	
Payment 7/8/01 - Prod & Market Organics T & T		3,220.00	
Project Funds from IICA 18/9/01	83,370.00		
Payment 9/10/01 - CAMID		6,282.00	
Interest to 01/01/01 to 31/12/01	5,463.66		
Balance at December 31 2001	644,887.34	512,566.47	132,320.87
Payment 26/3/02 - Procicaribe Executive Committee meeting		1,389.84	
Payment 16/04/02 - Hot Pepper Barbados		3,300.00	
Payment 3/05/02 - FORAGRO Meeting - L. Francis		1,500.00	
Project Funds from IICA 15/7/02	47,610.00		
CARTF Fund Advance - F. Fletcher 23/7/02		2,500.00	
Project Funds from IICA 18/7/02	30,000.00		
Project Funds from IICA 18/7/02	17,610.00		
Morera Forage Project 16/8/02		5,335.00	
CARTF Fund Advance - F. Fletcher - Reimbursement 27/08/02	2,500.00		

Payment 13/09/02 - Proci Meeting	4,000.00		
CARTF Fund Advance - Agricultural Society of T&T 30/9/02	1,250.00		
Payment 14/11/02 - Project writing & Management W/Shop	15,135.00		
CARTF Fund Advance - ASTT reimbursement 10/12/02	1,250.00		
Interest to 01/01/02 to 31/12/02	5,458.19		
Reimbursement to CARDI as per report 17/2/03	9,488.00		
CARTF Fund Advance - Acerolla Project 6/2/03	4,000.00		
CD ROM Project 17/2/03	3,000.00		
Travel To International Potato Centre 21/2/03	4,122.00		
Support to CAMID 26/2/03	5,000.00		
Small Ruminant Project - Johne's Disease 21/5/03	23,600.00		
CARTF Fund Advance - Granma Aki Project 4/6/03	2,000.00		
Interest to 01/01/03 to 30/06/03	2,327.98		
Balance at June 30 2003	751,643.51	598,186.31	153,457.20