

2014-2015 Report of the Caribbean Agricultural Research and Development Institute (CARDI)

presented by

Barton Clarke

Executive Director - CARDI

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INTRODUCTION

Since 1989, IICA and CARDI have signed five institutional technical cooperation agreements that have sought to support the goal of agricultural research and technological innovations to contribute to the development of the regional agricultural and rural milieu. Through these agreements, IICA has provided US\$200,000 per annum to CARDI for the implementation of joint projects in furtherance of the goal of the technical cooperation agreements.

The last of such technical cooperation agreements with the disbursement of funds was signed in 2010 for the quadrennial 2011-2014. This Cooperative Agreement re-aligned and expanded the focus of the previous agreements into six collaborative component areas, viz.: 1. Facilitate CARDI –Latin Institutional Linkages, 2. Establish Network System for Science, Technology and Innovation, 3. Develop synergies with ongoing Projects, 4. DG's Competitive Fund for Technical Cooperation (Fon TC), 5. Current IICA/CARDI Agreement and 6. Access External Resources for Joint Projects. The report of CARDI to the Thirty-fifth Regular Meeting of the Executive Committee of IICA in July 2015 presented the results achieved under these six components.

This last Cooperative Agreement (2011-2014) technically terminated on 31st December 2014. On 14th November 2015, IICA and CARDI signed a new General Technical Cooperation Agreement in cognisance of the contemporary collaborative and programming arrangements now in force.

GENERAL TECHNICAL COOPERATION AGREEMENT

BACKGROUND

This General Technical Cooperation Agreement (GTCA) is set within the context that IICA and CARDI have similar interests in the areas agricultural research for development. They both aim to contribute to the development of a sustainable regional agricultural sector that is resilient to climate change impacts, supports vibrant rural economies and livelihoods and contributes to the achievement of food and nutrition security. Both institutions further recognise that their collaborative efforts can lead to a more effective support and impacts in agricultural research, technology and innovation in their common Member States than could otherwise be achieved by separate and independent actions of each party.

In furtherance of the stated aim, they:

- a. both play key roles as members of regional coordinating mechanisms in agriculture – specifically (i) the Secretariat of The Alliance for the Sustainable Development of Agriculture and the Rural Milieu in the Caribbean (referred to as The Alliance), and (ii) the CARICOM Agriculture, Food and Nutrition Cluster (AFNC) chaired by CARDI and which CARDI has invited IICA to participate;
- b. have signed a Partnership Agreement under the CARIFORUM Programme entitled Agriculture Policy Programme (APP) with focus on the Caribbean and Pacific under the 10th European Development Fund designating CARDI as an Implementing Partner responsible for Component 2- Improving the transfer and adoption of applied agricultural production and processing research

results and technologies and where appropriate, generate new technologies for target commodities.

OBJECTIVES

The broad objectives of the GTCA are to consolidate the expanded institutional collaboration between IICA and CARDI and provide a framework and legal basis for both institutions to jointly address the specific priorities and challenges of regional agriculture and support identified Member States to achieve sustainable development of the agriculture sector and the enhancement of rural prosperity in general, and the economic viability of selected agricultural sub-sectors and enterprises.

AREAS OF COOPERATION

In the present GTCA, the six components of the previous IICA-CARDI Collaboration Programme 2011-2014 are collapsed into three areas of cooperation: (i) Direct Technical Cooperation, (ii) Internal Institutional Capacity and (iii) Mobilisation of Resources

A. Direct Technical Cooperation

The scope for technical cooperation under this GTCA shall be all aspects related to the identification, acquisition, transfer and facilitation on adoption/adaptation of applied and appropriate research, technologies and innovation systems and best practices based on judicious use of natural resources and that support improvements in resilience and productivity of agricultural production systems for enhanced competitiveness, market access and food and nutrition security access in identified Member States.

B. Internal Institutional Capacity

As the lead institute for agricultural Research for Development in CARICOM, CARDI has been adversely impacted by declining investment. In this regard, under this GTCA, IICA in collaboration with CARDI, will mobilise and harness the benefits of IICA's technical expertise and their PROCI's in the hemisphere to enhance both the organisational and institutional capacity of CARDI.

C. Mobilisation of Resources

Given the limited resources of both institutions and the need to work jointly to address some priorities of the Region's agricultural sector, IICA and CARDI recognise the need to mobilise additional resources. Both Institutions will collaborate in the:

- a. identification, preparation and approval of specific projects, inclusive of joint projects with other organisations to be funded from resources external to that provided in this GTCA but which are consistent with the General Objectives of this GTCA;
- b. implementation of technical cooperation projects and activities financed either with resources from IICA and/ or CARDI or with resources provided by third parties, or on the basis of mutually agreed upon agreements between the two institutions.

TERRITORIES/ MEMBER STATES COVERED

This GTCA has broader territorial coverage than previous cooperation agreements and includes three groups/ categories of territories:

- a. Countries in the Caribbean that are Members of both IICA and CARDI

Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines and Trinidad and Tobago

- b. Countries in the Caribbean that are Members of IICA but not Members of CARDI

The Bahamas, Dominican Republic, Haiti and Suriname

- c. Countries in the Caribbean that are Members of CARDI but not Members of IICA

Cayman Islands and Montserrat

The composite beneficiaries of the results and outputs of this GTCA in the respective territories include actors along the various value chains (e.g. producers, processors, inputs suppliers, credit providers, marketers, etc.) and policy makers in the appropriate government ministries and institutions.

DURATION AND IMPLEMENTATION

The present GTCA lasts from 1st January 2015 to 31st December 2017 but because it was signed on 14th November 2015 it was not ready for operationalisation in 2015. Therefore, **Direct Technical Cooperation** and **Mobilisation of Resources** are the main areas of cooperation in which activities could be accounted for. This was done by bringing forward on-going activities and residual funds under the 2011-2014 Cooperative Agreement. Additionally, in order to foster synergies and consolidate the gains made under the APP, projects under the IICA-CARDI 2011-2014 Cooperative Agreement with similar scope and objectives as those of the APP were subsumed under the latter. The Fon TC project on the assessment of suitability of roots and tubers varieties for value addition was also completed as part of the Mobilisation of Resources effort.

RESULTS AND CONTRIBUTIONS

The following are the highlights of the results achieved within the scope of the limited funds available in the reporting period. For this report the same Thematic Areas have been maintained as in the previous CARDI reports.

AREA OF COOPERATION: *DIRECT TECHNICAL COOPERATION*

Herbs, Condiments and Beverages

St Lucia: Value Chain Approach to Revitalising Hot Pepper Industry

Jamaica: Technical Manual of Agronomic and Post-harvest Practices of Five Herbal Crops

St Lucia: Increasing Ginger Production

Results/ Achievements

- The St. Lucia Hot Pepper Producers Cluster established within the framework of hot pepper value chain in 2014 remained operational
 - Two value chain meetings were held in 2015 to ensure that production issues and factors were addressed. Twenty-six farmers and four Extension Officers attended the meetings
 - Production was coordinated to ensure that Baron Foods St. Lucia was supplied with their requirement of 5,000 lb. of berries weekly throughout 2015.
 - Two ¼ ac plots were established to demonstrate to the cluster CARDI's Risk Mitigating Production System.
- In Jamaica, the revisions to the manuscript of the Technical Manual of Agronomic and Post-harvest Practices of Five Herbal Crops was completed and desktop publishing elements were being applied as at the end of the year before uploading to the IICA and CARDI websites.
- Data from production and marketing survey conducted in November 2014 in the main ginger producing area (Extension Region 4) in St Lucia on 14 ginger farmers (71% males; 29% females) were analysed. Some of the key findings were:
 - Farm sizes were: <1 ac (22%), 1-3 ac (57%), >3-5 ac (14%) and >5 ac (7%)
 - The majority of farmers (86 %) did not know the yields obtained from their crop
 - All farmers harvested their crop manually, with 57 % not storing the crop whilst the rest stored in shed on the farm or in the ground for replanting
 - Farmers sold their ginger mainly to the supermarkets and processors with a small number (7 %) selling at the farm gate

- Major constraints to production were pests, inadequate technical information and unavailability of planting material
- Improved production Tech Pack was developed and distributed to farmers and extension officers and formed the basis of a demonstration plot that was established at the CARDI Station
- One improved production and post-harvest training workshop was conducted
- On-farm demonstration of the Tech Pack and production of planting materials are scheduled for 2016

Protected Agriculture

Guyana and St Kitts/Nevis: Protected Agricultural Systems Development and Stakeholder Capacity Building

Results/ Achievements

- In Guyana and St Kitts and Nevis demonstration of vegetable production/ productivity under protected agriculture systems (PA) was started. The test crops were: lettuce, celery, parsley, pakchoi and poi/ callaloo in Guyana and tomatoes and sweet peppers in St Kitts and Nevis.
- Construction and fitting of the PA structure was complete in St Kitts and Nevis, first crop established and one training workshop conducted in September 2015 using CARDI PA Manual. In Guyana, construction and fitting were approximately 80% complete

Livestock (Small Ruminants)

Suriname: Model Biogas System on Small Ruminants Farms

Results/ Achievements

- The basic construction of the bio-digesters on the two farms (Sewdien and Leidingen) was completed and the equipment to be powered by the gas (e.g. stoves, lamps, generator, etc.) was placed on order from China
- The digesters would be filled with sheep and goat manure and inoculated with the probiotics (*Lactobacillus* and *Bifidobacterium*) for the production of gas in 2016.

AREA OF COOPERATION: *MOBILISATION OF RESOURCES*

The implementation of the Intra-ACP Agriculture Policy Programme – Caribbean Action (APP) offered IICA, CARDI and the CARICOM Secretariat a great opportunity in 2015 to cooperate on joint actions, and this, notwithstanding the fact that the APP was suspended during June – September 2015. Also, as mentioned earlier, the Fon TC Project on Roots and Tubers Varieties for Value Addition jointly implemented by IICA and CARDI was successfully concluded in 2015.

The key results and achievements under this area of cooperation are highlighted below.

Herbs, Condiments and Beverages

Barbados and Jamaica: Hot Pepper Seed Production Capacity

Results/ Achievements

- The ability of the CARDI Breeder Seed Unit in Barbados to produce quality hot pepper breeder seeds was boosted with the acquisition of infrared thermometer and forced air oven. The infrared thermometer would help in the screening/ selection of the mother plants for drought tolerance while the oven would facilitate the drying of samples for tissue analysis.
- In Jamaica, the knowledge on hot pepper seed production and management was increased in 29 individuals from the Ministry of Agriculture and Fisheries and the Ebony Park Heart Academy through training by the CARDI Plant Breeder from Trinidad and Tobago. Additionally, a report on the audit of the facilities and processes for seed production was submitted to the Ministry of Agriculture and Fisheries by the CARDI Plant Breeder. The audit recommended (i) the insulation of the seedroom, (ii) the setting up of a Seed Quality Control Laboratory, (iii) installation of back-up power supply and quality water supply system

Root Crops (including Starches)

Guyana and Jamaica: Mechanisation of Cassava Production

Regional/ Multi-country: Building Capacity in Germplasm Management

Grenada and St Lucia: Farmer Groups Capacity to Produce and Share Planting Material

Regional/ Multi-country: Development of Harmonised Standards for Movement of Crops Germplasm across the Region

Dominica, Grenada and St Vincent and the Grenadines: Value Added Product Development

Fon TC Project: Roots and Tubers Varieties for Value Addition

Results/ Achievements

- Two cassava planters, one each for Guyana and Jamaica, were procured to demonstrate mechanised cassava production
- The capacity to efficiently produce root and tuber crops germplasm was strengthened as follows:
 - Region-wide germplasm production capacity in general –
 - Propagation units in Antigua and Barbuda, Barbados, Belize, Grenada, St Lucia, St Vincent and the Grenadines and Trinidad and Tobago were refurbished and/or their operations enhanced by purchasing and installing multiplication bins and small tools and equipment and supplies
 - The skills in tissue culture protocols and management of quality germplasm were honed in 15 technicians from nine CARIFORUM countries - Antigua and Barbuda (2), Bahamas (1) Belize (2), Dominica (2) Grenada (2), St Kitts and Nevis (2), Saint Lucia (1), St. Vincent and the Grenadines (2), Trinidad and Tobago (1) - representing scientists and technicians from CARDI, various Ministries of Agriculture and the University of Belize.
 - Farmer Groups capacity to produce and share planting material –
 - Small farmer producer groups, which included the North East Farmers Organisation of Grenada, and Network of Rural Women Producers, Babonneau Rural Women Agro Producers and Trinity Lutheran Church Youth Group Agriculture Project all of St Lucia, were empowered to successfully produce, manage and share sweet potato and cassava planting materials
- The development of harmonised standards for the movement of crops germplasm across the Region was pursued through a service contract. The draft standards for seven crops, including bean, corn, hot pepper, pigeon pea, sweet potato, yam and cassava (with support from FAO) were received by CARDI for review
- Capacity in making composite bread and other bakery products from local starchy foods (cassava, sweet potato, dasheen, plantain) was built in 48 bakers and hoteliers in Dominica, Grenada and St Vincent and the Grenadines. The Caribbean Agri-Business Association (CABA) facilitated the process.
- The Fon TC Project on the determination of the suitability of roots and tubers varieties for value addition was completed in 2014. In 2015, the main output, the publication titled, “Cassava and Sweet Potato – Suitability of Popular Caribbean Varieties for Value Added Product Development” was published. Five hundred hard copies were printed and distributed across the Region. In addition, the electronic pdf file was made available on the Institutes’ websites, <http://www.iica.int> and <http://www.cardi.org>

Livestock (Small Ruminants)

Barbados, Jamaica and Trinidad and Tobago: Forage-based Feeding Systems

Jamaica and Trinidad and Tobago: Breed Improvement

Regional/ Multi-country: Development of Harmonised Standards for Movement of Livestock Germplasm across the Region

Results/ Achievements

- In Barbados, Jamaica and Trinidad and Tobago:
 - Plots were established with shrub legumes and multi-purpose trees to provide forage-based feeding for the small ruminants.
 - Also, in Jamaica, pasture development materials (fencing wire, forage seeds) and small husbandry tools were distributed to the Network of Women for Food Security and the Carey Park Farmers Group, which were being developed as community-based improved breeding stock providers.
 - Several pieces of equipment and hand tools necessary for the development of small ruminants improved feeds and feeding systems in Barbados, Jamaica and Trinidad and Tobago were purchased. These included a chipper shredder, hammer mill, pellet mill and forced air oven
- The capacity to produce quality small ruminant stock in Jamaica and Trinidad and Tobago was undertaken as follows:
 - At the CARDI Sam Motta Demonstration and Training Centre in Jamaica quality breeding stock production was augmented with five new purebred female Boer stock.
 - In Trinidad and Tobago the capacity of the Trinidad and Tobago Goat and Sheep Society was similarly improved with the provision of forced air oven for forage quality determination and ultrasound machine for pregnancy detection
- The development of harmonised standards for the movement of livestock germplasm, including live animals, semen and embryos across the Region was pursued through a service contract. The draft standards were being reviewed by CARDI as at the end of the reporting period.

Climate Resilience, Knowledge Sharing, Coordination and Management

Regional/ Multi-country: Capacity Building in “Climate Readiness”

Belize, St Vincent and the Grenadines and Trinidad and Tobago: Assessment of Introduced Crop Varieties for “Climate Readiness”

All CARIFORUM countries: Traditional Knowledge and Innovative Farming Practices

Dominica, Haiti and St Lucia: Farmer Group Formation/ Strengthening

IICA and CARDI representation on Regional Coordination Mechanisms: PSC and TAC (APP) and AFNC

Results/ Achievements

- The process of developing the capacities of the Caribbean for ‘climate readiness’, within the context of the APP, was started.
 - The increased knowledge and skills for root crop germplasm selection and evaluation for ‘climate readiness’ in three Caribbean scientists - Trevorne Douglas (Dominica), Aldaine Gordon (Jamaica) and Ruthvin Harper (St Vincent and the Grenadines) was facilitated by the Secretariat of the Pacific Community (SPC) Land Resources Division in Fiji through an 8-week training attachment.
 - The air fare and tuition fees to train one scientist (Kistian Flemming) in UK to M.Sc. level on Climate Change and International Development were paid for.
- Plots were established for a number of introduced corn and beans varieties (Belize), taro/ dasheen (St. Vincent and the Grenadines) and hot pepper (Trinidad and Tobago) for evaluation for tolerance to extremes of weather conditions
- A number of traditional knowledge and innovations in local farming practices were identified from benchmark surveys of 675 individuals, including 166 females, in all participating 15 CARIFORUM countries. The results would be further augmented with desktop-researched materials in order to have a more comprehensive dossier on farmer traditional knowledge and innovative practices which would then be validated in a regional workshop and disseminated
- An important finding from the benchmark surveys was that there was a recorded only 34% membership in Groups suggesting a tendency towards individual action within CARIFORUM agricultural communities, therefore, capacity-building exercises were started:
 - Group development/strengthening started in Dominica and Haiti for roots and tubers producer groups. Parallel training sessions empowered them to become aware in Good Agricultural Practices
 - In St Lucia, the knowledge of the Bellevue Farmers' Cooperative on agricultural methodologies related to issues of risk and climate change for roots and tubers and on

improved vegetable production under Protected Agriculture systems was heightened. Resilience in production was also assisted with the provision of inputs.

- In Haiti, stakeholders were informed of climate change and its potential consequences for agriculture through emails and flyers
- As part of the regional coordination mechanism, both IICA and CARDI are represented on the Programme Steering Committee and the Technical Advisory Committee of the APP. IICA is also an invited participant in the CARICOM Agriculture, Food and Nutrition Cluster (AFNC) which is chaired by CARDI.

GOING FORWARD

There are three main factors to be considered in 2016 and beyond as we implement actions in the IICA-CARDI cooperation agreements. These are the 2016 Work Plan under the current GTCA, the CARICOM Agriculture Agenda and CARDI – The Future we Want.

1. 2016 Work Plan under GTCA

It was noted earlier that the GTCA 2015-2017 was signed by IICA and CARDI on 14th November 2015. Following that, institutional arrangements to activate it were initiated in February 2016 and the approval of 2016 Work Plan (2016 WP) and first drawdown of funds occurred in July 2016. The 2016 WP covers two areas of cooperation, with project deliverables, as follows:

Area of Cooperation: Direct Technical Cooperation

- PROJECT DELIVERABLE: First Generation seed of yellow hot pepper land races produced
- PROJECT DELIVERABLE: Elite seed lines of Pimento (Trinidad Seasoning Peppers) land races for commencement of stabilization developed
- PROJECT DELIVERABLE: An App for buyer/seller exchanges and training modules for Small Ruminant production developed
- PROJECT DELIVERABLE: Climate Change communal training programme developed and conducted

Area of Cooperation: Internal Institutional Capacity

- PROJECT DELIVERABLE: Institutional Review and Strengthening of CARDI
- PROJECT DELIVERABLE: Strengthening the capacity of CARDI staff in Public relations and Communications

- PROJECT DELIVERABLE: CARDI staff and stakeholders trained in Project Management

2. CARICOM Agriculture Agenda and CARDI – The Future we Want

The signing of the GTCA 2015-2017 has converged with other important developments in the Region's policy arena, the most fundamental one related to agriculture being the Strategic Plan for the Caribbean Community 2015-2019 (SPCC 2015-2019). The SPCC 2015-2019 comprises seven pillars or cluster. All have relevance for agriculture but the one with the most implications for agricultural development is the pillar/cluster, "Building Economic Resilience – Stabilization and Sustainable Economic Growth and Development." It provides the policy framework and space for the functioning of AFNC.

CARICOM Agriculture Agenda

The AFNC in fulfilling its leadership role in promoting policy guidelines on the Region's agriculture and food systems prepared the Concept Note, CARICOM Agriculture Agenda (CAA), in May 2016 for the consideration of the President of Guyana and the Lead Head for CARICOM Agriculture, David Granger. He undertook to present it to the CARICOM Heads of Government for endorsement following consultations with the Ministers responsible for Agriculture.

The vision enshrined in the CAA is that of "A dynamic, green and resilient food and agriculture system that sustainably meets the food needs of Caribbean citizens at all times."

The CAA is conceptualised around three goals:

- (i) Food and health needs of the CARICOM citizens.
- (ii) Current and future resources and opportunities for agriculture to contribute to the growth of the regional economy.
- (iii) Concept of development and policies that the Region embraces, including the lessons from the past experiences at promoting development of the food and agricultural sector.

CARDI - The Future we Want

The coming into force of the new GTCA coincided with development of CARDI's new paradigm and attendant Concept Note which, ultimately will lead to the development of a Strategic Plan and Medium Term Plan 2017-2019.

The components of the Concept Note, CARDI – The Future we Want, have approximate alignment and congruence with areas of cooperation under the current GTCA. The alignment is presented below.

*GTCA Areas of Cooperation**Elements of CARDI – The Future we Want*

Direct Technical Cooperation

- Climate change mitigation and adaptation
- Advancing productivity and sustainable development of selected technologies, commodities, products and services

Internal Institutional Capacity

- Institutional reform
- Engaging, retaining and promoting youth and gender in the sector
- Improving CARDI's advocacy, outreach and communication and supporting the diffusion and application of knowledge
- Accountability framework

Mobilisation of Resources

- Building and expanding partnerships
 - Enabling services
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It is expected that the 2017 WP in the current GTCA and successive cooperation agreements to the GTCA 2015-2017 will be developed taking into consideration the specific objectives of GTCA 2015-2017, as well as the relevant elements of the CARICOM Agriculture Agenda and CARDI – The Future we Want.