



Policies, programmes and activities related to biodiversity for food and agriculture

Reports from international instruments and organizations

1. Contact information

Name and position of respondent

Mr Barton Clarke, Executive Director

Name of organization

Caribbean Agricultural Research and Development Institute

E-mail of organization

executive@cardi.org; infocentre@cardi.org

Geographical coverage of your organization

The Caribbean Community *

2. Components of biodiversity for food and agriculture covered by your organization

Note: For a complete definition refer to Annex 1 of: <http://www.fao.org/nr/cgrfa/biodiversity/guidelines/en/>

Sectoral genetic resources for food and agriculture

Animal genetic resources

Aquatic genetic resources

Forest genetic resources

Plant genetic resources

Associated biodiversity of relevance to food and agriculture

Micro-organisms (including bacteria, viruses, protists and fungi)

Invertebrates (including insects, spiders, worms)

Vertebrates (including amphibians, reptiles and non-domesticated birds and mammals)

Wild and cultivated terrestrial and aquatic plants other than crop wild relatives

Please provide details on the components of biodiversity for food and agriculture involved (species, breeds, varieties):

Animal genetic resources.

CARDI's livestock programme is based on small ruminants (sheep and goats). The principal focal points of the CARDI livestock programme are

In Jamaica –

- Sheep -The local St Elizabeth type, Katahdin, Dorper, small amounts of Barbados Blackbelly (not purebred), remnants of Suffolk and breeds such as Merino, Rambouillet. A Romanov ram was introduced some 4 years ago and there are some offspring (not pure) on the ground.
- With regards to goat there is the "Native" goat which is a composite of the breeds introduced over the year. The introduced breeds that now make up the population are the Anglo Nubian, Nubian (from USA), Boer, Alpines, Toggenburg (small amount). A set of Spanish bucks were introduced in mid-2000 but the breed has somewhat got lost in the population and cannot be readily identified.
- The majority sheep and goats that are present at CARDI managed facilities would be several combinations of the breeds introduced since 1992.

In Barbados

- Sheep – Barbados Black Belly – The Institute has made contributions towards the development of a data base of purebred Barbados Black Belly Sheep in collaboration with the Barbados Agricultural Society, the Ministry of Agriculture, the University of the West Indies and the recently established Barbados Black Belly Sheep Breed Society.

In Tobago (Trinidad and Tobago)

- Sheep – West African, Barbados Black Belly, Katahdin, Persian Black Head
- Goat – Anglo Nubian, Boer, Saanen

The programme generally has not targeted any specific breeds but is more focussed on the provision of value chain services in the areas of: forage based feeding, breed management of genetics, improvements in housing design, optimising animal health and facilitating increased value addition. In Mandeville, Jamaica, CARDI has a dedicated small ruminant DTC station. At other focal points, CARDI more often than not, develops and executes research on breeds already procured by private and state stakeholders (private and state; when requested, as often with start-up operations, recommendations on appropriate breeds are given)

Plant genetic resources – the Institute's crops of interest are:

Cassava (*Manihot esculenta* Crantz); sweet potato (*Ipomoea batatas*); taro *Colocasia esculenta* (L.) Schott var. *esculenta*; yam (*Dioscorea* spp , *D. alata*), *D. rotundata* , *D. cayenensis*; hot pepper (*Capsicum chinensis*); corn (*Zea mays*); rice (*Oryza sativa*), coconut (*Cocos nucifera*); banana and plantain (*Musa* spp). soybean (*Glycine max*), black-eye pea (*Vigna unguicalata* subsp *unguicalata*) and three *Phaseolus vulgaris* cultivars - red kidney bean, black bean and small red bean

The Institute's technical programme has included varietal evaluation on these crops primarily for high yield potential, usefulness to value addition, pest and disease resistance and more lately, adaptation to climate change. As a result, very many varieties of the above crops have been subjects of CARDI's research activities.

Associated biodiversity of relevance to food and agriculture

Jamaica - Invertebrates – California red worm (*Eisenia fetida*) – Jamaica

Tobago - Leguminous shrubs - *Leuceana leucocephala* (Lam.) De Wit, 'Cummingham' variety; *Glyricida sepium* (local, Tobago) at pilot organic farm, Goldsborough, Tobago

PRIORITY AREA 1: ASSESSMENT AND MONITORING

1. Does your organization implement or support the implementation of projects or programmes that contribute to the assessment of the status of biodiversity for food and agriculture?

Yes

No

If yes, please provide details on the countries and species involved and indicate whether the population trends of these species are monitored:

2. Is your organization involved in surveying and monitoring population sizes of and/or threats to associated biodiversity species that are known to contribute to regulating or supporting ecosystem services in and around agricultural and food production systems?

Yes

No

If yes, please provide details on the countries and species and ecosystem services involved:

3. Is your organization involved in surveying and monitoring population sizes of and/or threats to wild food species?

Yes

No

If yes, please provide details on the countries and species involved:

4. Has your organization identified major obstacles to assessing and monitoring components of biodiversity for food and agriculture that are part of its mandate?

Yes

No

If yes, please list these obstacles, being as specific as possible regarding the species involved:

- Limited and inconsistent record keeping
- Food production systems dominated by numerous small holder systems (some of which are seasonal in nature) are difficult to monitor and audit.

5. What are the priority measures that need to be taken to address these obstacles?

- Training in record keeping for small holder farming systems
- Development and implementing of programmes linking state support to certifiable/ verified record keeping of farming systems

6. Please describe any additional activities relevant to the implementation of Priority area 1: Assessment and monitoring

Nil

PRIORITY AREA 2: CONSERVATION AND SUSTAINABLE USE

Conservation

1. Does your organization take or support actions to protect components of biodiversity for food and agriculture that are at risk from climate change, invasive alien species and natural or human-induced disasters?

Yes

No

If yes, please provide details on the countries and species involved, the actions taken, the impacts and the lessons learned:

Re- climate change, approaches

i) Identification of varietal tolerance to extreme weather conditions in sweet potato, cassava, yams, taro, hot pepper, corn, beans and pigeon pea ,including investigations of indigenous and naturalised material for selection, conservation, propagation and dissemination programmes

- current activities in Barbados, Belize, St Kitts and Nevis, Trinidad and Tobago, St Lucia, St Vincent and the Grenadines

Re- Invasive species, approaches

Identification of resistant germplasm ; identification of biological and cultural control regimens ; participation in the Caribbean Plant Health Directors Forum meeting

- activities related to a wide range of plant commodities
- activities related to impacts/ threats in all member states

Re- Natural and human-induced disasters, approaches

Identification of hardy, productive and early maturing varieties of select staple crops for rapid post-disaster re-establishment of food production activities ; generation and maintenance of commercial supplies of planting material

- Reservoirs of seed material principally in Antigua (various cucurbit vegetables and open pollinated corn; landraces known as 'Local' pumpkin, (*Cucurbita argyrosperma*), 'Local' table squash, (*Cucurbita pepo*), 'Local' cucumber (*Cucumis sativus*) all quick maturing and highly productive under Antigua conditions and ICTA-FM corn (*Zea mays*) and Belize (open pollinated yellow corn, YC 001).

2. Does your organization implement or support the implementation of conservation measures for associated biodiversity and/or wild food species?

In situ

Yes

No

Ex situ

Yes

No

If yes, please provide details on the countries, measures and species involved:

In situ

Barbados –field gene bank conservation of cassava (10 cultivars) and sweet potato (20 cultivars)

St Kitts - field bank conservation of sweet potato and pigeon pea – field banks

Trinidad – field gene bank conservation of cassava (10 cultivars) of cassava submitted for inclusion of cassava gene bank at Ministry of Agriculture, Central Experimental Station, Centeno, Trinidad

Tobago – field gene bank conservation of 11 reputed Tobago landraces of pigeon pea, *Cajanus cajan*) at Goldsborough, Tobago

3. If your organization maintains *ex situ* collections of biodiversity for food and agriculture components could you please provide further information on these collections?

Ex situ

Barbados – i) seed conservation of hot pepper (73 accessions from CARICOM member states) maintained at the CARDI seed storage facility, ii) provision of technical services in germplasm management to Min of Agriculture.

St Vincent –i) funding and construction of new state-managed tissue culture facility dedicated to root crops with an annual capacity of 600,000 plantlets at Orange Hill, St Vincent. The facility conserves and propagates sweet potato, cassava, taro or dasheen (*Colocasia esculenta* (L) Schott) and tania (*Xanthosoma sagittifolium* (L.) Schott)

Tobago – i)conservation of sweet potato, cassava in field banks and ii) collaboration with Tobago House of Assembly tissue culture facility for the conservation of sweet potato and cassava accessions

4. Has your organization identified major obstacles to enhancing the conservation of biodiversity for food and agriculture, and in particular of associated biodiversity and wild foods?

Yes

No

If yes, please provide details:

5. What are the priority measures that need to be taken to address these obstacles?

not applicable

Sustainable use

6. Does your organization promote management practices that support the maintenance and use of biodiversity for food and agriculture?

Note: For examples of such practices, please refer to Annexes 5 and 6 of <http://www.fao.org/nr/cgrfa/biodiversity/guidelines/en/>

Yes

No

If yes, please provide details on the countries and practices involved:

• Development and promotion methodologies in crop and animal production are based on suitability of the agro-ecological zone (AEZ). This approach includes research and development activities in Integrated Crop Management, Integrated Pest Management and germplasm conservation

7. Does your organization promote the application of ecosystem, landscape and/or seascape approaches?

Yes

No

If yes, please provide details on the countries and approaches involved:

- Support for a NGO managed project in appropriate methodologies for hillside conservation in Trinidad and Tobago
- Participation on meetings of the Caribbean Plant Health Directors Forum and the CARICOM Agriculture Food and Nutrition Cluster
- Development of AEZ- based crop scheduling for pineapple production – Dominica ; sweet potato – St Vincent and the Grenadines and Antigua
- Establishment and maintenance of an organic farming system – Tobago, W.I
- Establishment and maintenance of soil rehabilitation methodologies in mined out bauxitic soils through integrated mixed farming system in San Motta, Jamaica

8. Does your organization implement or support the implementation of projects or programmes on the use of biodiversity for food and agriculture to cope with climate change, invasive alien species, or natural or human-made disasters?

Yes

No

If yes, please provide details:

Over the last six years, the Institute has executed several activities under a Climate Change for Agriculture programme which seeks to facilitate sustainable means for maintaining and increasing agricultural outputs in the face of various climate change scenarios. To this end, the Institute has implemented several projects with the objectives of i) establishment of management systems for plant genetic resources for food and agriculture, ii) development of human resource capacity in the management of PGRFA iii) transfer of PGRFA management systems, iii) distribution to farmers of climate ready cereal, grain and root crop germplasm, iv) strengthening of coconut production groups and support to coconut producers to address risks associated with natural disasters; risk management plan for small coconut producers, v) determination and availability of drought tolerant varieties of Taro (Dasheen) to regional producers

9. Does your organization implement or support the implementation of projects or programmes on the maintenance and use of traditional knowledge of associated biodiversity and wild foods?

Yes

No

If yes, please provide details:

Identification and documentation and traditional knowledge and innovative practices including climate mitigation and adaptation related to small ruminants, roots and tubers, vegetables (Protected Agriculture) and hot peppers

10. Has your organization identified any major obstacles to improving the sustainable use of biodiversity for food and agriculture, and in particular of associated biodiversity and wild foods?

Yes

No

If yes, please list and describe them:

Increasing consumer demands and responding production methodologies that do not support conservation of biodiversity and associated biodiversity

- Increasing trend of single-crop, input intensive commercial production systems
- Changing trends of consumer tastes generating demand towards consumption of plant and animal species that are not regionally produced and a narrowing of range of food products consumed

11. What are the priority measures that need to be taken to address these obstacles?

- Development and implementation of environmental policies safeguarding biodiversity for food and agriculture and ecological services
 - Consumer sensitisation on the benefits of diversity in food consumption
- Policy and legislative changes to support sustainable utilisation of biodiversity for food and agriculture

Access and benefit-sharing

12. Does your organization contribute to the development of mechanisms to improve access to and ensure the fair and equitable sharing of benefits arising from the utilization of biodiversity for food and agriculture?

Yes

No

If yes, please provide details on the countries, mechanisms and species involved:

Widespread consultation with farmers groups in the conceptualisation, design, development and execution of many projects with mechanisms for sharing of research results.

Sharing of research results and generated information on websites of collaborating organisations with general public availability

13. Please describe any additional activities relevant to the implementation of Priority area 2: Conservation and sustainable use.

CARDI chairs the CARICOM Agricultural Food and Nutrition Cluster which considers the conservation and sustainable use of the regional natural resources in its decisions

Under the new MTP (2017 - 2019) the Institute is reactivating research and development activities in organic farming and other agro-ecological approaches to agricultural production

PRIORITY AREA 3: POLICIES, INSTITUTIONS AND CAPACITY

1. Does your organization support countries in developing, reviewing and adjusting their national policies affecting the conservation and sustainable use of biodiversity for food and agriculture, and in particular of associated biodiversity and wild foods?

Yes

No

If yes, please provide details and specify the countries involved:

The Institute's work programme under the MTP 2014-2016 is not directly involved in national policy development related to the CARICOM individual member states, however, CARDI hosts and participates in national consultations within its geographic coverage to share relevant research results and information on drivers and challenges that impact on agricultural productivity towards the development of sound policy decisions. With regard to regional agricultural policies, CARDI has contributed to both the drafting of the CARICOM Strategic Plan 2015-2019 and the Operational Plan of the Strategic Plan and continues to impact on regional agricultural policy through its participation in the CARICOM Agricultural Food and Nutrition Cluster of CARICOM of which CARDI is the chair.

2. Does your organization contribute to the development of regulatory frameworks or legislation for biodiversity for food and agriculture, and in particular for associated biodiversity, wild foods and ecosystem services?

Yes

No

If yes, please provide details and specify the countries or regions involved:

CARDI was the lead agency in regional policy development related to management of Pink hibiscus Mealybug, (*Maconellicoccus hirsutus* (Green) which was first recorded in the Caribbean in 1994. A systems approach was used to develop appropriate production and post-harvest protocols which included the identification and use of exotic coccinellids as biological controls. These protocols were developed to facilitate the resumption of inter-regional trade.

CARDI has collaborated with the Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) for the publication and circulation of several policy briefs in relation to managing climate change impacts on agricultural productivity to guided appropriate policy development.

- In 2011, the impacts on water availability for agriculture were considered in i) Soil water management for sustainable agricultural production in a drier Caribbean, ii) Climate Change and Water Availability and iii) Enhancing Water Resource Management.

- In 2012, the impacts on biodiversity for agriculture were presented in i) Biodiversity Assessment and Conservation: Safeguarding the Region's Food and Nutrition Security Resources under Climate Change, ii) Facilitating the Exchange of Climate Resilient Food Crop Diversity among Caribbean States: How Can the Right Policies Help, and iii) Climate Change, Agrobiodiversity and Socio-Economic Development: Improving Lives by Strengthening the Links

CARDI, in collaboration with CTA hosted a workshop titled, 'Improving the Policy Framework for Developing Climate Change Resilient Agriculture Systems in the Caribbean: The Role of Plant Genetic Resources' at the Caribbean Week of Agriculture held in Antigua in October 2012. Participants were selected policy makers, agriculturalists, extensionists and farmers.

3. Does your organization collaborate with other stakeholders involved in the management of biodiversity for food and agriculture (e.g. farmers, fisher folk, forest dwellers, the breeding industry, government agencies, research institutes and civil society organizations)?

Yes

No

If yes, please provide details:

Yes - particularly in projects involving the identification, introduction and testing/evaluation of germplasm(both crops and livestock); CARDI engages with key national producer groups related to commodities of interest and regional farmer groups.

4. Does your organization implement or support the implementation of programmes to increase public awareness on the roles and values of associated biodiversity and ecosystem services in and around food and agriculture production systems?

Yes

No

If yes, please provide details:

5. Does your organization implement or support the implementation of training or capacity-building programmes for the management of associated biodiversity and ecosystem services in and around food and agriculture production systems?

Yes

No

If yes, please provide details and specify countries involved:

6. Has your organization identified priorities for future capacity-building and education on associated biodiversity and ecosystem services in and around food and agriculture production systems?

Yes

No

If yes, please provide details:

7. Please describe any additional activities relevant to the implementation of Priority area 3: Policies, institutions and capacity.

PRIORITY AREA 4: REGIONAL AND INTERNATIONAL COOPERATION

1. Has your organization contributed to the establishment or strengthening of regional and international research and/or education programmes to assist countries to better manage biodiversity for food and agriculture?

Yes

No

Please provide details:

2. Has your organization contributed to the establishment or strengthening of regional and international programmes to assist countries to obtain training and technologies or develop information systems related to biodiversity for food and agriculture and related ecosystem services?

Yes

No

Please provide details:

A key objective of CARDI's mandate is to act as a major broker of agricultural technology, personnel and finances from extra – regional sources, improve the quality and quantity of plant and animal genetic material to satisfy the increased crop and livestock production needed by the Region to meet its Food and Nutrition Security target. CARDI has developed and/or maintained working relationships with key Strategic Partners (Universities, Research Institutions, Development Agencies, and Integration Agencies) for agricultural research, development programmes, stakeholder training and financing. Recent collaborations include:

- Inter-American Institute for Cooperation on Agriculture, IICA – CARDI has a long standing collaboration with IICA . The current agreement funds work on hot pepper (yield enhancement); ginger (yield enhancement); IPM in roots and tubers and varietal trials in Protected Agriculture.
- Food and Agriculture Organization of the United Nations (FAO). The current projects include varietal evaluation of coconut and cassava germplasm and technical package development specific to small- and large-scale cassava production (includes info on descriptors of target improved and landrace germplasm)
- International Center for Tropical Agriculture (CIAT) has provide training for regional stakeholders in root crop production
- International Institute of Tropical Agriculture (IITA) has collaborated with CARDI to provide access to Musa spp resistant to Black Sigatoka Disease
- Bioversity International has collaborated with CARDI to provide access to Musa spp resistant to Black Sigatoka Disease
- Latin America and Caribbean Consortium to Support Cassava Research and Development, CLAYUCA has collaborated with CARDI to provide information and subject matter experts as trainers related to best practices and mechanisation in cassava production.
- Secretariat for the Pacific Community's (SPC) Centre for Pacific Crops and Trees (CePaCT) collaborated with CARDI to develop and facilitate training in tissue culture propagation and sensitisation to key issues in coordinating germplasm conservation of regional biodiversity to Caribbean scientists
- International Potato Center (CIP) has collaborated with CARDI to provide access to improved germplasm and train Caribbean scientists in sweet potato production

3. Please describe any additional activities relevant to the implementation of Priority area 4: Regional and international cooperation

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