

ANGLOPHONE CARIBBEAN

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KEY INDICATORS, 2007–2012

Total Agricultural Research Spending	2007		2009		2012
East Caribbean dollars (million constant 2011 prices)	65.2		71.8		72.3
PPP dollars (million constant 2011 prices)	36.5		40.2		40.5
Overall Growth		10%		1%	
Total Number of Agricultural Researchers					
Full-time equivalents (FTEs)	203.5		194.4		216.1
Overall Growth		-4%		11%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	1.96%		1.85%		1.77%
FTE researchers per 100,000 farmers	56.37		54.61		61.92

Notes: Research conducted by the private for-profit sector is excluded from this factsheet due to lack of available data. Acronyms, definitions, and an overview of agricultural R&D agencies are provided on page 4. The data includes national spending and researcher capacity for Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago as well as spending and researcher capacity of regional organizations such as CARDI.

- ▶ As of 2012, most Anglophone Caribbean countries employed fewer than 10 agricultural FTE researchers and spent less than \$2 million PPP dollars on agricultural R&D (in constant 2011 prices). Agricultural research in the region is primarily conducted in Jamaica and Trinidad and Tobago and by the regional agency CARDI.
- ▶ Average agricultural R&D spending as a share of agricultural GDP is relatively high in the region but actually reflects the small scale of the countries' agricultural sectors; this is a common phenomenon in small countries, where higher shares of total funding are required to establish and maintain basic research infrastructure and staffing due to the inability to achieve economies of scale.
- ▶ In general, government allocations to agricultural R&D are quite limited in most of the region's countries due to the global financial crisis, the occurrence of natural disasters, and the end of preferential trade agreements, among other challenges. Consequently, agricultural R&D agencies have relied on external donor resources—which tend to follow volatile trends over time—to fund research activities.

FINANCIAL RESOURCES, 2012

Spending Allocation

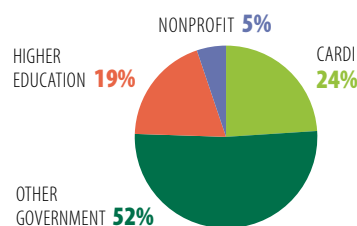
Salaries	52%
Operating and program costs	43%
Capital investments	5%

Funding Sources

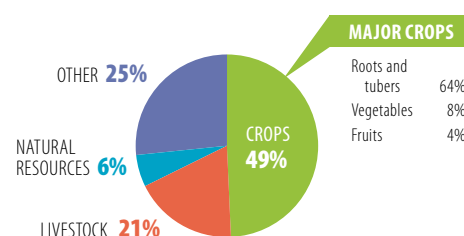
Government	51%
Donors	44%
Sales of goods and services	5%

Note: Shares are based on data for CARDI only. Excludes spending for research stations in Guyana, Haiti, and Montserrat.

INSTITUTIONAL PROFILE, 2012



RESEARCH FOCUS, 2012

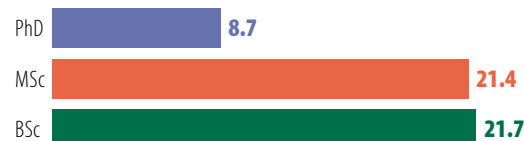


Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 23 percent of total crop researchers focused on a wide variety of other crops. Shares are based on data for CARDI only.

RESEARCHER PROFILE, 2012



Number by qualification (FTEs)



Note: Researcher data are for CARDI only.

CHALLENGE

- Agricultural research agencies in the Anglophone Caribbean employ very few researchers with PhD degrees. Dwindling research resources, the limited size and scope of research activities undertaken, lack of staff mobility and incentives, and hiring constraints are all factors, as is low interest in agricultural science as a profession more generally. The lack of newly trained scientists has further constrained staff recruitment and forced many of agencies to continue to employ staff members well beyond the official retirement age or to engage staff on a contract basis. This situation also acts as a disincentive for the region's students to pursue careers in agricultural science and technology, and instead to choose emerging fields like agribusiness, which are perceived to be more attractive.

POLICY OPTIONS

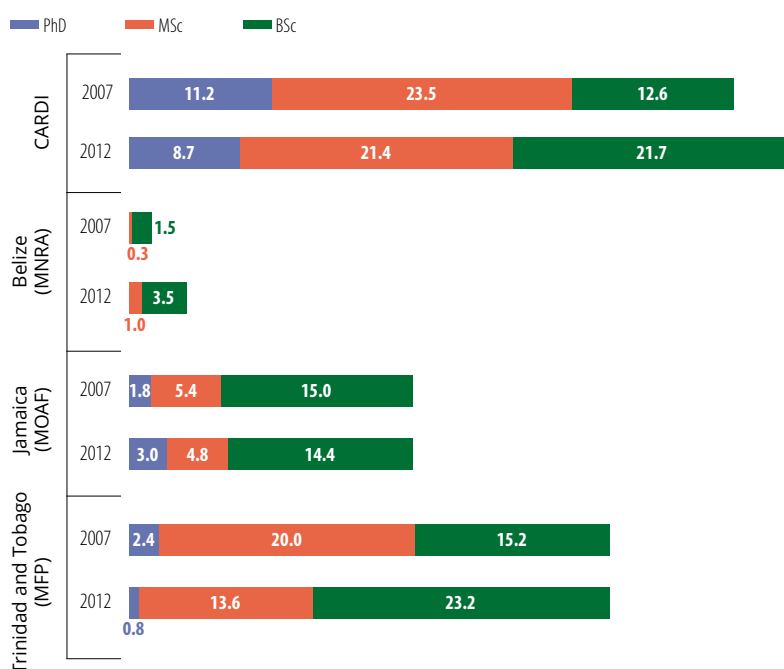
- In response both to pressure from stakeholders and growing demand for graduates, Trinidad's UWI recently created a standalone Faculty of Food and Agriculture from what was previously part of the Faculty of Natural Sciences. Despite this recognition of the need for more qualified graduates, other capacity constraints still need to be addressed, including improving conditions of service, providing training opportunities, and opening paths for career advancement, as well as more generally improving the coordination of resource use. While regional cooperation can help mitigate some of these challenges, CARDI is also challenged by resource constraints.

Number of researchers by country and at regional agencies, 2012

	REGIONAL		NATIONAL			TOTAL
	CARDI	UWI	GOVERNMENT	HIGHER EDUCATION	NONPROFIT	
	Full-time equivalents					
Antigua and Barbuda	0.5	—	7.0	—	—	7.5
Barbados	0.7	2.2	7.0	—	—	9.9
Belize	1.0	—	4.5	0.5	6.6	12.6
Dominica	3.0	—	—	—	—	3.0
Grenada	0.3	—	1.5	—	—	1.8
Jamaica	16.0	5.0	41.1	—	—	62.1
St. Kitts and Nevis	1.0	—	0.1	3.4	—	4.5
St. Lucia	1.4	—	—	0.8	—	2.2
St. Vincent and the Grenadines	0.5	—	2.0	—	—	2.5
Trinidad and Tobago	5.0	29.2	48.2	0.6	—	83.0
Regional	22.4	—	—	—	4.6	27.0
TOTAL	51.8	36.4	111.4	5.3	11.2	216.1

While the number of researchers employed at CARDI's headquarters doubled during 2007–2012, the majority of this increase represented a shift in the distribution of existing researchers, not an increase in the overall number of researchers employed by CARDI.

Agricultural researchers by degree at CARDI and selected ministries, 2007 and 2012 (FTEs)



- ◀ CARDI employs the highest number of PhD-qualified researchers (in FTEs), although the majority of its researchers are only qualified to the BSc and MSc levels. As of 2012, the largest national government agencies in the region (in Belize, Jamaica, and Trinidad and Tobago) employed between 0 and 3 FTE researchers with PhD degrees; more than half the researchers at these agencies only held BSc degrees. Most of these countries' and CARDI's PhD-qualified researchers were over 60 years of age as of 2012 and hence are nearing retirement age.

CHALLENGE

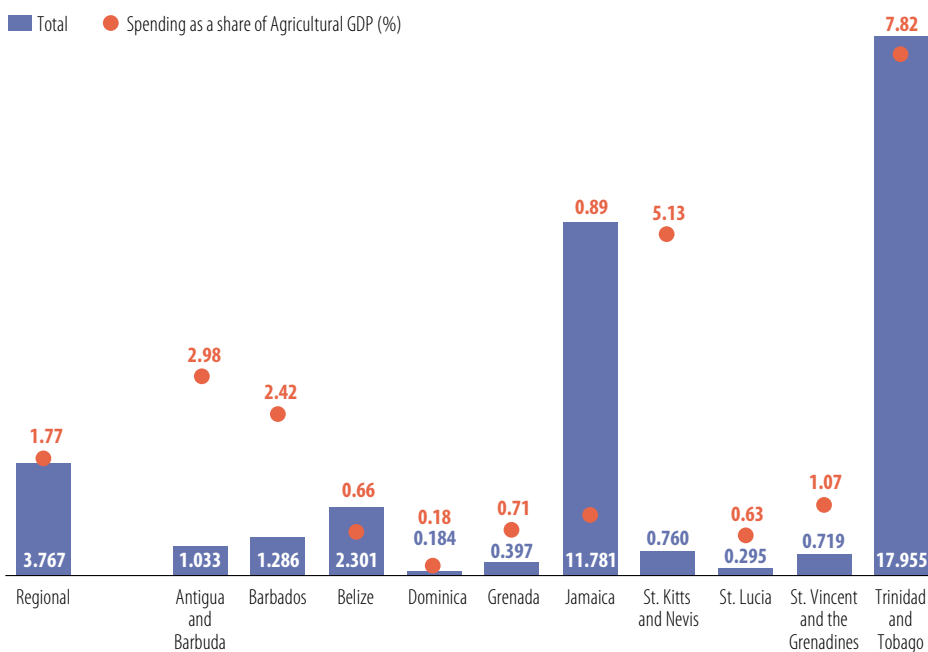
- In the past, many Anglophone Caribbean countries' economies depended on the strength of their major agricultural exports, such as sugar and bananas. More recently, however, natural disasters and the end of preferential trade agreements have eroded the profitability of these export crops and prompted a shift away from agriculture toward tourism. Compounded by the recent global financial crisis, the limited government funding available for agricultural R&D is allocated to salaries rather than operating costs or capital investments; consequently, a number of laboratory facilities are in disrepair.

POLICY OPTIONS

- A combination of policy actions are needed to address both the lack of resources and the fragmentation of research across the region. These include (1) coordinating agricultural R&D activities across government, higher education, and regional agencies to ensure that limited resources are used effectively and that additional funding is sought from available international sources; (2) committing to a fixed financial allocation of agricultural GDP to agricultural research; and (3) providing incentives for patent applications and ICT-led innovation in agricultural R&D.

Agricultural R&D spending as a share of agricultural GDP, regionally and by national governments, 2012

■ Total ● Spending as a share of Agricultural GDP (%)



Million PPP dollars (inflation adjusted; base year = 2011)

Note: Regional total includes CARDI Headquarters and two other regional nonprofit agencies. CARDI country research stations are included in each country's national spending. UWI campuses are included under national spending rather than regional. Regional spending as a share of agricultural GDP represents total regional spending as a share of total regional agricultural GDP.

- ◀ Despite accounting for a quarter of the region's total researchers, CARDI's share of the region's agricultural research spending, including both headquarters and country research stations, was only 18 percent in 2012. Spending on agricultural R&D by government agencies was highest in Jamaica and Trinidad and Tobago. The share of agricultural GDP spent on R&D illustrates the relative sizes of the agricultural sectors in the countries of the region. The high intensity ratios for the countries of Antigua and Barbuda, Barbados, St. Kitts and Nevis, and Trinidad and Tobago are not unusual given their high-income status and the small size of their agricultural sector. It is interesting to note that, although Jamaica's agricultural GDP was almost six times larger than Trinidad and Tobago's in 2012, it spent considerably less on agricultural R&D. Furthermore, Jamaica's agricultural sector accounted for 6 percent of total GDP for the country in 2012, while Trinidad and Tobago's share was less than 1 percent.

► AGRICULTURAL R&D FUNDING IN SELECTED ANGLOPHONE CARIBBEAN COUNTRIES

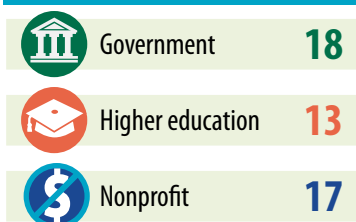
- Between 2007 and 2012, bilateral and multilateral donor funding to CARDI grew from 11 to 44 percent, primarily due to a substantial increase in funding from IICA. Natural disasters and the global economic crisis caused some member countries to fall behind in their financial contributions to CARDI.
- In Belize, the Agricultural Research Unit under the MNRA depends on donors and development banks to fund expenses related to operating research programs and developing and maintaining infrastructure.
- In Jamaica, donors only contribute 10 percent of overall funding to the Research and Development Division of the Ministry of Agriculture and Fisheries.
- Agricultural research agencies in Trinidad and Tobago have benefited from upgrades to their infrastructure through the Public Sector Improvement Program, an ongoing large-scale capital improvement program that funds sustainable development projects.

OVERVIEW OF AGRICULTURAL RESEARCH AGENCIES IN ANGLOPHONE CARIBBEAN

Forty-eight national and regional agencies conduct agricultural R&D in the Caribbean countries of Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago. CARDI (employing 52 FTE researchers in 2012) is the region's largest agency, accounting for a quarter of all agricultural researchers and focusing on research relating to crops, livestock, and natural resources management. In addition to CARDI's headquarters in Trinidad (22 FTEs in 2012), CARDI operates at least one research station in each country. Jamaica's Kingston station is the largest of these (13 FTEs); the other national stations generally employ 4 or fewer FTEs. Other regional agencies include the government-funded CRFM (0.6 FTEs) and the nonprofit West Indies Central Sugar Cane Breeding Station (4 FTEs). UWI is the region's predominant higher education agency. Its main campuses are located in Barbados, Jamaica, and Trinidad and Tobago.

At the national level, each country's ministry or department of agriculture conducts some agricultural research, although in some cases only on an ad hoc basis using contract staff. The research departments of Trinidad and Tobago's MFP (38 FTEs) and Jamaica's MOAF (22 FTEs), both focusing on a wide variety of crops and livestock commodities, are the largest entities in this category. Four small, higher education agencies located in Belize, St. Lucia, St. Kitts and Nevis, and Trinidad and Tobago employed and two nonprofit agencies in Belize are also involved in agricultural research (between 1 to 5 FTEs each). Private for-profit companies—the principal of these being the Caribbean Chemicals and Agencies Limited (11 FTEs), in Trinidad—conduct some agricultural research in the region; however, given that data are incomplete, these companies are excluded from analysis in this factsheet.

48 AGENCIES



 For a complete list of the agencies included in ASTI's dataset for Anglophone Caribbean, visit www.asti.cgiar.org/caribbean.

ASTI DATA PROCEDURES AND METHODOLOGIES

- ▶ The **data underlying this factsheet** were predominantly derived through primary surveys, although some data were drawn from secondary sources or were estimated.
- ▶ **Agricultural research** includes research conducted by the government, higher education, and nonprofit sectors; research conducted by the private for-profit sector is excluded due to lack of available data.
- ▶ ASTI bases its calculations of human resource and financial data on **full-time equivalent (FTE) researchers**, which take into account the proportion of time staff actually spend on research compared with other activities.
- ▶ ASTI presents its financial data in 2011 local currencies and **2011 purchasing power parity (PPP) dollars**. PPPs reflect the relative purchasing power of currencies more effectively than do standard exchange rates because they compare prices of a broader range of local—as opposed to internationally traded—goods and services.
- ▶ ASTI estimates the **higher education sector's research expenditures** because it is not possible to isolate them from the sector's other expenditures.
- ▶ Note that, due to **decimal rounding**, the percentages presented can sum to more than 100.



For more information on ASTI's data procedures and methodology, visit www.asti.cgiar.org/methodology; for more information on agricultural R&D in Anglophone Caribbean, visit www.asti.cgiar.org/caribbean.

ACRONYMS USED IN THIS FACTSHEET

CARDI	Caribbean Agricultural Research and Development Institute
CRFM	Caribbean Regional Fisheries Mechanism
FTE(s)	Full-time equivalent (researchers)
MFP	Ministry of Food Production (Trinidad and Tobago)
MNRA	Ministry of Natural Resources and Agriculture (Belize)
MOAF	Ministry of Agriculture and Fisheries (Jamaica)
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
UWI	University of the West Indies

ABOUT ASTI, IFPRI, AND CARDI

Working through collaborative alliances with numerous national and regional R&D agencies and international institutions, **Agricultural Science and Technology Indicators (ASTI)** is a comprehensive and trusted source of information on agricultural R&D systems across the developing world. ASTI is led by the **International Food Policy Research Institute (IFPRI)**, which—as a CGIAR member—provides evidence-based policy solutions to sustainably end hunger and malnutrition and reduce poverty. The **Caribbean Agricultural Research and Development Institute (CARDI)** serves the member countries of the Caribbean Community (CARICOM) and is the region's principal agricultural research agency. The institute focuses on research relating to crops, livestock, and natural resources management.

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