

GUATEMALA

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KEY INDICATORS, 2006–2012

Total Agricultural Research Spending	2006		2009		2012
Quetzal (million constant 2011 prices)	51.0		43.6		56.5
PPP dollars (million constant 2011 prices)	14.1		12.0		15.6
Overall Growth		-15%		30%	
Total Number of Agricultural Researchers					
Full-time equivalents (FTEs)	119.8		112.1		141.8
Overall Growth		-6%		27%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.14%		0.11%		0.14%
FTE researchers per 100,000 farmers	6.24		5.56		6.63

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.

▶ Agricultural R&D spending grew moderately during 2009–2012, in inflation adjusted terms, due to growth in the overall number of researchers employed in the higher education and nonprofit sectors, and increased salary levels and sales revenues at the country's main agricultural agency, ICTA.

▶ Nonprofit producer organizations play an important role in funding sugarcane and coffee research in Guatemala; in 2012, these activities accounted for a quarter of the country's total agricultural R&D spending.

▶ Agricultural researcher numbers grew by 20 percent during 2006–2012, but most of the new recruits only held BSc degrees; consequently, the share of PhD-qualified researchers fell from 28 to 17 percent during this timeframe.

FINANCIAL RESOURCES, 2012

Spending Allocation

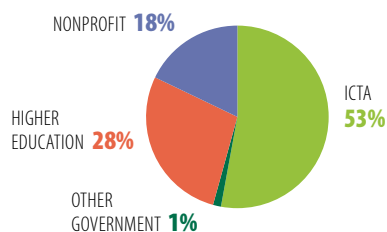
Salaries	72%
Operating and program costs	26%
Capital investments	2%

Funding Sources

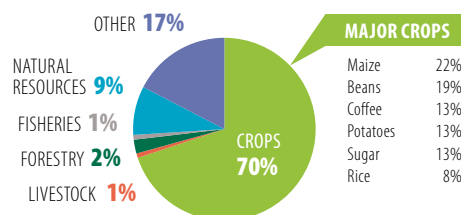
Government	75%
Donors	6%
Sales of goods and services	19%

Note: Shares are based on data for ICTA only.

INSTITUTIONAL PROFILE, 2012



RESEARCH FOCUS, 2012

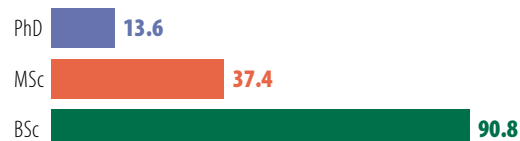


Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 12 percent of total crop researchers focused on a wide variety of other crops.

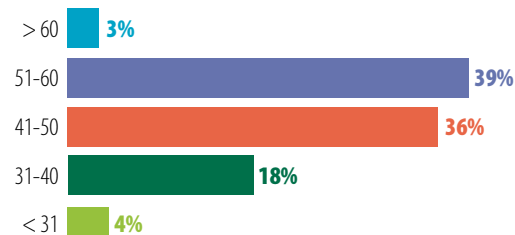
RESEARCHER PROFILE, 2012



Number by qualification (FTEs)



Share by age group (years)



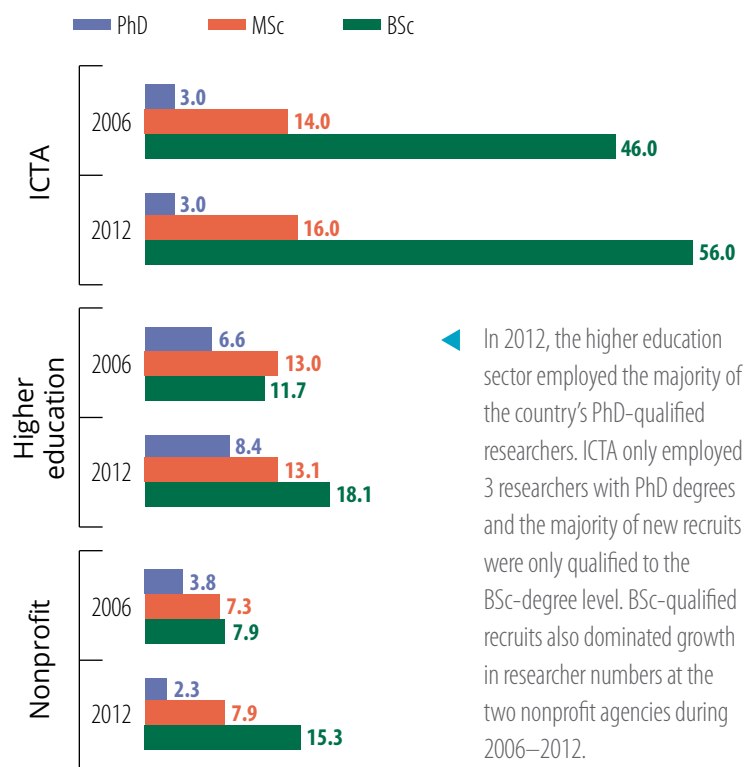
CHALLENGE

▶ Limited numbers of PhD-qualified researchers and the inability to recruit new ones—due to a lack of funding and a lack of competitive salary and benefit packages—have constrained ICTA’s human resource capacity and, ultimately, its ability to fulfill its mandate. The need for highly qualified researchers will become even more critical over time because a significant number of senior researchers are set to retire in the next decade. The influx of young agricultural scientists is expected to decline in response to a shift in interest away from agriculture toward training in agribusiness, which is thought to offer better overall career opportunities.

POLICY OPTION

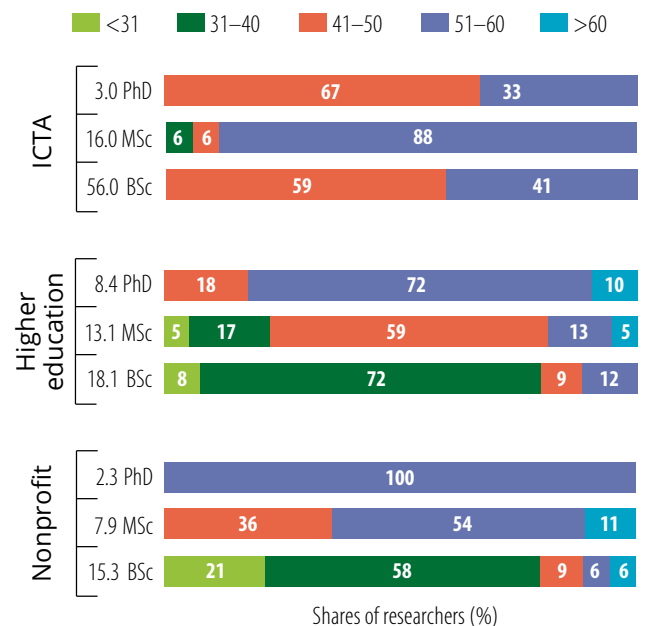
▶ Strengthening human resource capacity at ICTA is imperative and will depend on the institute’s ability to attract and retain well-qualified researchers by offering more competitive salary and benefits packages. In the short term, collaborative alliances with the higher education sector could be a strategic way forward given that the universities have better human and infrastructural research capacities. Such alliances would also support the universities in strengthening their research programs alongside their teaching mandates. Longer term, declining interest in agriculture as a career path will need to be addressed by developing strong incentives to attract students into the field.

Total number of researchers by qualification level, 2006 and 2012 (FTEs)



In 2012, two-thirds of the country’s PhD-qualified agricultural researchers were aged 50 years or older. ICTA’s MSc- and BSc-qualified researchers are also comparatively older; in 2012, only 1 of 75 researchers employed at ICTA was under 41 years of age, whereas 44 percent of researchers in the higher education and 48 percent of those in the nonprofit sector were in their 20s and 30s.

Distribution of researchers by age bracket, 2012



CROSS-COUNTRY COMPARISONS OF KEY INDICATORS

	Total number of researchers, 2012 (FTEs)	Growth in number of researchers, 2009–2012	Share of PhD researchers, 2012 (FTEs)
Guatemala	141.8	27%	10%
Honduras	87.6	31%	6%
Dominican Republic	199.6	3%	10%
Panama	133.0	1%	8%

CHALLENGE

- ▶ ICTA's funding, which is primarily derived from the government, declined considerably during 2006–2011. Funding did spike in 2012, but this was mostly the result of improved salary levels, which nevertheless were insufficient to institute parity with levels offered by the higher education sector and elsewhere. Lack of funding prevents ICTA from building its human resource capacity, offering competitive salaries, or providing adequate research facilities and equipment.

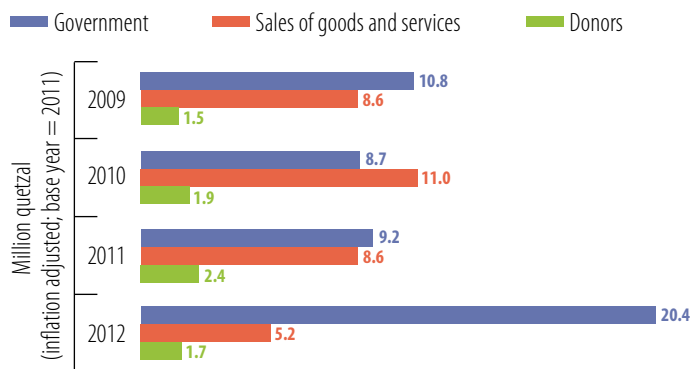
POLICY OPTIONS

- ▶ The government has identified a number of priorities for improving agricultural productivity and reducing malnutrition, to which ICTA has already made a demonstrable contribution. Nevertheless, these priorities need to be accompanied by comprehensive agricultural research strategies, with sufficient funding to enable ICTA to contribute effectively. Generating such funding will require major donor support and international collaboration aligned with national research priorities.

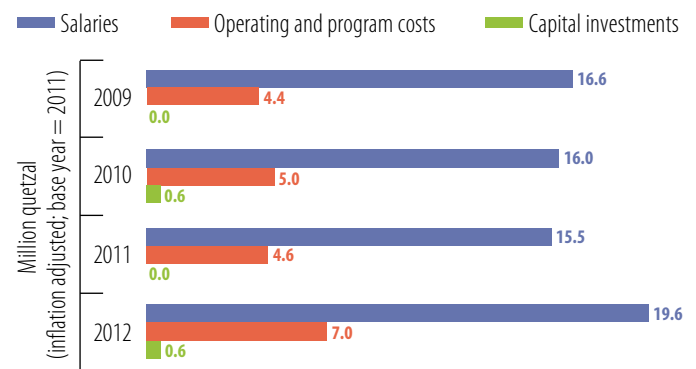
In 2012, a labor dispute prompted an increase in salary levels at ICTA, and hence the level of government funding increased; nevertheless, the government was unable to fund the full cost of the resulting salary bill. ICTA was successful in increasing its sales of seeds through the Zero Hunger Plan (see box) to cover the shortfall. Resources, however, continued to be limited to maintain and upgrade the institute's R&D infrastructure and fund actual research programs.



ICTA's funding sources, 2009–2012



ICTA's spending by cost category, 2009–2012



Note: Salaries for contract workers are included in operating and program costs.

▶ GOVERNMENT OVERLOOKS ICTA IN RECENT POLICY DEVELOPMENTS

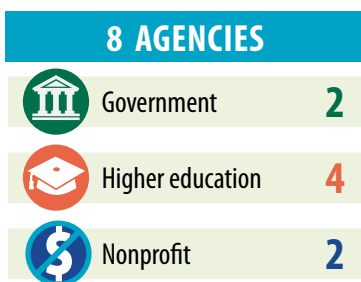
The 2012 launch of Guatemala's Zero Hunger Plan—which aims to reduce chronic childhood malnutrition by 10 percent by 2015—was considered an opportunity to strengthen the country's agricultural sector. Through the implementation of this plan, ICTA successfully developed improved varieties of corn and beans containing high levels of protein. This increased ICTA's profile, allowed the institute to raise a greater share of its own funding through the sale of the new varieties, and led to expectations of increased government funding. In 2013 the Ministry of Agriculture approved a plan to implement a new national agricultural policy (launched in 2009) for short- and medium-term development the country's rural sector. Contrary to expectations, however, the new plan did not consolidate ICTA's role, nor did it provide mechanisms to strengthen the institute's funding, research capacity, or infrastructure. ICTA's role is limited to that of a seed provider.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*


	Total spending, 2012 (million 2011 PPP dollars)	Overall spending growth, 2009–2012	Spending as a share of AgGDP, 2012
Guatemala	15.6	30%	0.14%
Honduras	8.0	11%	0.17%
Dominican Republic	20.4	4%	0.30%
Panama	15.5	-3%	0.74%

OVERVIEW OF GUATEMALA'S AGRICULTURAL RESEARCH AGENCIES

Eight agencies conduct agricultural R&D in Guatemala. The main government agency, ICTA (employing 75 FTEs in 2012) is by far the largest, accounting for more than half the country's agricultural researchers. ICTA operates 13 research stations located across the country and is responsible for crop, natural resources, and socioeconomics research. Guatemala's other government agency, INAB (2 FTEs in 2012) focuses on forestry and natural resources research. Four higher education agencies conduct agricultural research: the Center of Agriculture and Food Studies at the University of the Valley of Guatemala (17 FTEs); the Institute of Agriculture, Natural Resources, and Environment (12 FTEs) at the University Rafael Landivar; and the faculties of agriculture (10 FTEs) and veterinary medicine (1 FTE) of the University of San Carlos de Guatemala. Two nonprofit agencies conduct agricultural research: the National Coffee Association (13 FTEs) and the Guatemalan Sugarcane Center for Research and Training (13 FTEs). Research conducted by private for-profit sector in Guatemala is minimal.



Note: Excludes private for-profit agencies.

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

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 Guatemala, visit www.asti.cgiar.org/guatemala.

ACRONYMS USED IN THIS FACTSHEET

FTE(s)	Full-time equivalent (researchers)
ICTA	Institute of Agricultural Science and Technology
INAB	National Forestry Institute
MALF	Ministry of Agriculture, Livestock, and Food
PIPNDRI	Plan for the Implementation of the National Policy on Integrated Rural Development
PNDRI	National Policy on Integrated Rural Development
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development

ABOUT ASTI, IFPRI, AND ICTA

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. Guatemala's principal agricultural research agency, the **Institute of Agricultural Science and Technology (ICTA)**, falls under the Ministry of Agriculture, Livestock and Food; ICTA focuses on crop, natural resources, and socioeconomics research.

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