Agricultural R&D Indicators Factsheet | March 2023

COSTA RICA

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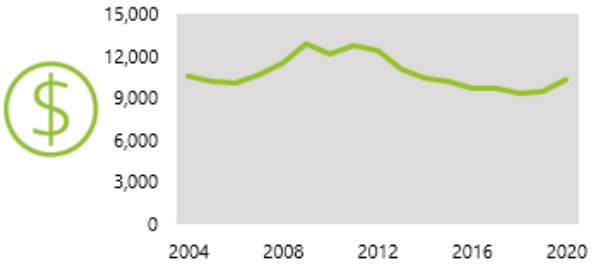
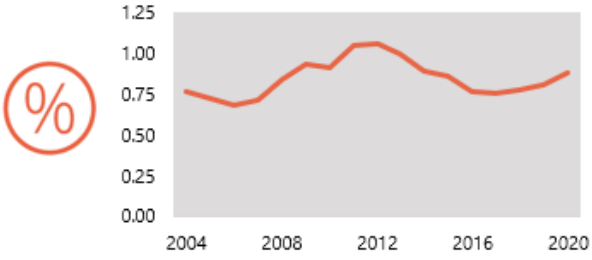
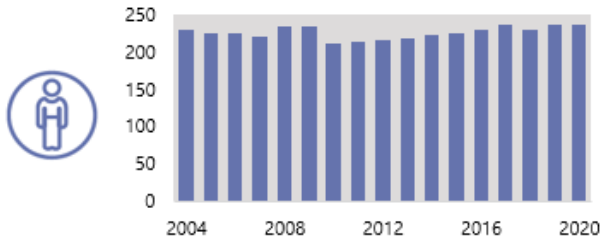
AGRICULTURAL RESEARCH SPENDING



SPENDING INTENSITY



AGRICULTURAL RESEARCHERS



	COSTA RICA	PANAMA	HONDURAS	GUATEMALA
Million colon (2017 constant prices)	12,997.7			
Million PPP dollars (2017 constant prices)	38.1	33.6	9.8	14.4
Agricultural research spending as a % of agricultural GDP	0.87%	1.12%	0.20%	0.10%
Full-time equivalents	237.7	184.3	109.1	154.3

Regional research leader

Costa Rica has the largest agricultural research system in Central America, both in terms of investment and human resource capacity. Costa Rica stands out from other Central American countries in that its higher education section plays a preponderant role in the country's agricultural research system.

Stagnant research spending

Despite spending more than other Central American on agricultural R&D in absolute terms, Costa Rica's investment levels relative to agricultural GDP rank second in the region behind Panama. In 2020, Costa Rica spent 0.87 percent of its agricultural GDP on agricultural R&D, which was lower than ratios recorded a decade earlier.

Human capacity challenges

Costa Rica's agricultural research capacity has gradually increased over the past decade. The rise in researcher numbers was largely driven by INTA, which recruited a considerable number of young, BSc-qualified researchers after a prolonged period of civil servant recruitment restrictions and the loss of senior scientists to retirement. INTA still lacks a critical mass of PhD-qualified researchers compared to the higher education sector.

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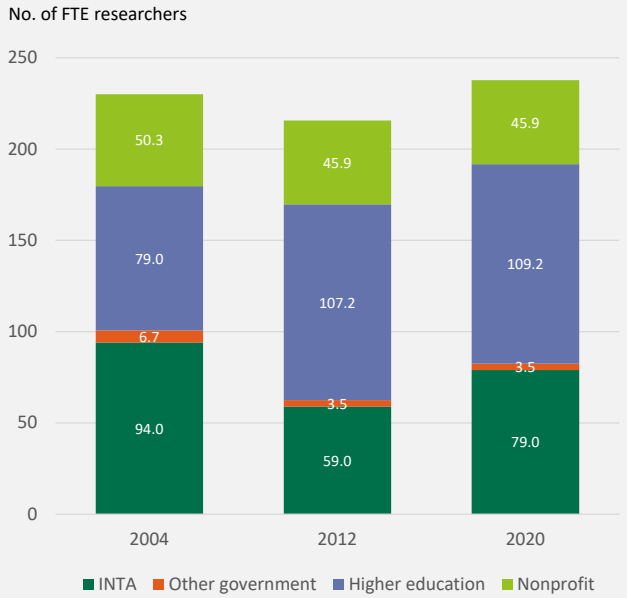
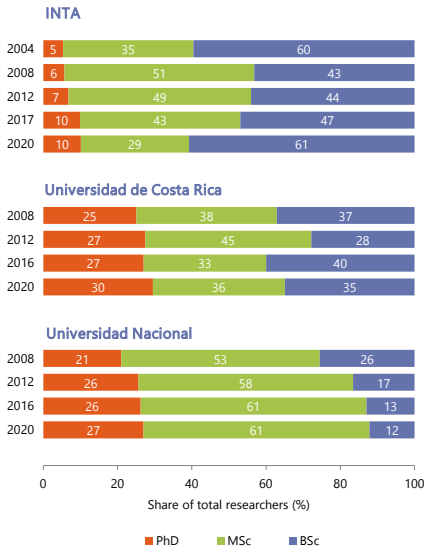
Institutional composition of agricultural research system

Unlike most countries in Central America where government research agencies dominate the national agricultural research system; universities form the largest component of the Costa Rican system. The nonprofit sector accounts for close to 20 percent of the country's total agricultural research capacity and comprises public corporations that focus on rice, banana, livestock, coffee, and sugarcane.



Costa Rica's agricultural researchers by qualification level

INTA's research capacity is relatively limited, especially at the PhD level. This is in part because experienced researchers have been reassigned to national programs promoting export commodities, to other trade-related activities, and to administrative tasks. Given that Costa Rica's higher education agencies have a significantly larger and more-qualified pool of agricultural researchers, greater coordination between university-based research centers and INTA is warranted to ensure that the country's agricultural research and training needs are met.



Costa Rica's agricultural researchers broken down by gender

In 2020, 32 percent of Costa Rican agricultural researchers were women. The overall share of female researchers is considerably lower at INTA than at the higher education agencies. Overall, female agricultural researchers are much less likely to hold PhD degrees, compared to their male colleagues.

By qualification level, 2020

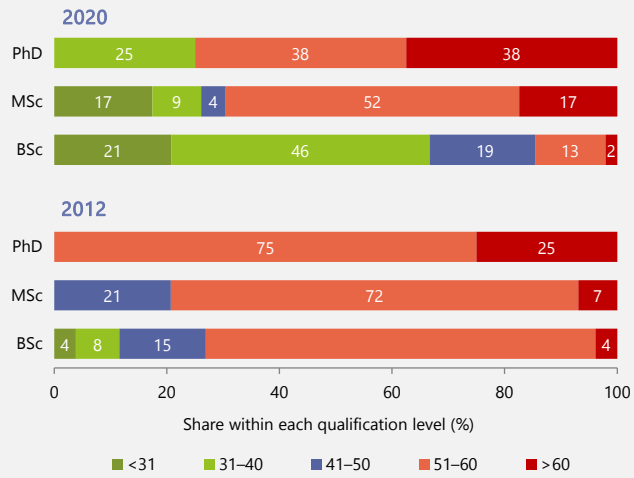
BSc **27%** MSc **32%** PhD **6%**

By main agricultural R&D agencies, 2020

INTA	**20%**
Universidad de Costa Rica	**49%**
Universidad Nacional	**32%**

INTA's researchers by qualification level and age bracket

In 2012, close to 80 percent of researchers at INTA were in their fifties or sixties. Recent recruitment efforts have considerably lowered the average age of research staff. Yet, as of 2020, 38 percent of PhD-qualified researchers at INTA were 61 years or older and are thus approaching retirement age. This makes the training of the next generation of scientists a priority.



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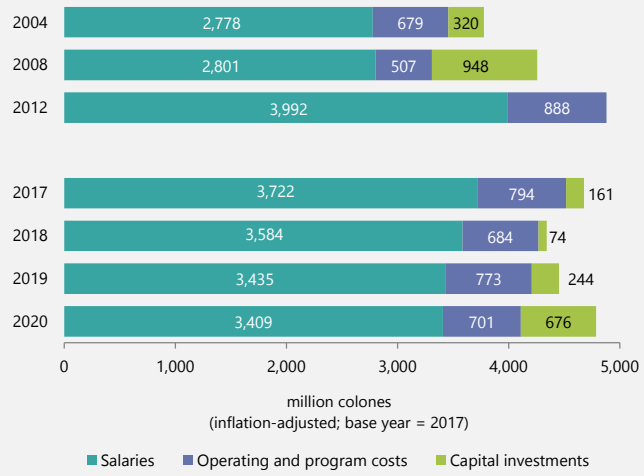
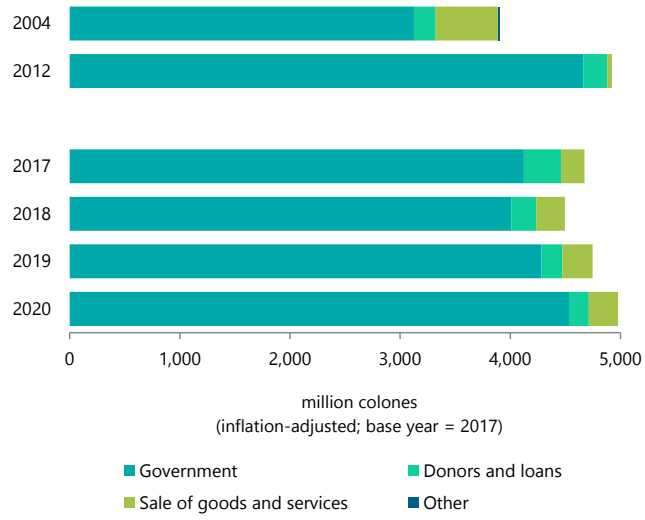
INTA's spending broken down by cost category

During 2017–2020, salary costs accounted for roughly three quarters of INTA's total expenditures, with operating and program costs accounting for 16 percent. Capital investments fluctuated considerably from one year to the next.



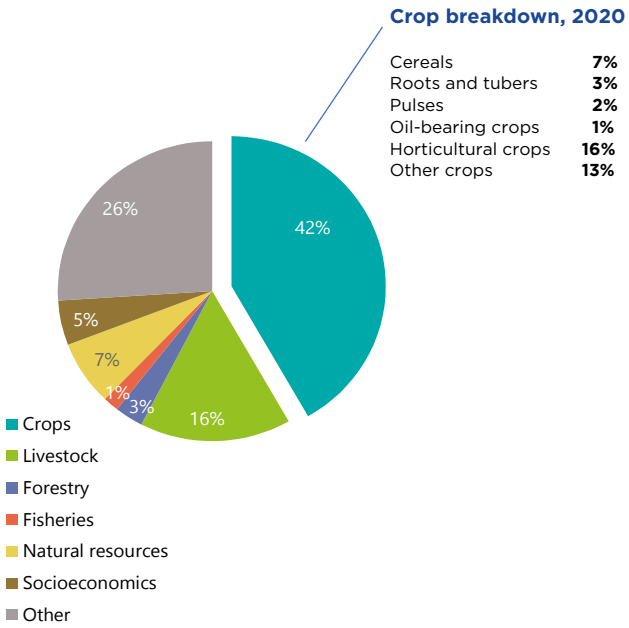
INTA's funding broken down by source

The government is the primary source of funding for agricultural R&D in Costa Rica by far. In addition to government core funding, INTA receives indirect supplementary government support through agencies like INCOPESCA and SENARA. Levels of donor support and internally generated revenues at INTA have generally been low and volatile over time. Principal donors include USAID, GRA, UNDP, and the government of South Korea.



Commodity focus of Costa Rican agricultural researchers

In 2020, 42 percent of Costa Rican agricultural scientists focused their research on crops, 16 percent on livestock, and the remainder on natural resources, socioeconomics, forestry, fisheries, and other areas. The country's most researched crops include bananas, rice, sugarcane, and coffee.



Publication record of Costa Rican agricultural researchers

On average, university-based agricultural researchers produce a considerably higher number of peer-reviewed publications than their colleagues at INTA. While INTA's researchers publish their findings mostly in national journals, the work of researchers at the Universidad de Costa Rica and the Universidad Nacional is predominantly published in international journals. Research conducted by INTA tends to be more focused on releasing technologies and varieties that directly benefit farmers. The research undertaken by university-based agricultural researchers is often more theoretical, speaking to scholarly debates.

Number of peer-reviewed publications per FTE researcher, 2017–2020 averages

	INTA	UCR–CITA	UNA–ECA
Journal articles			
International	0.00	0.89	1.39
National	0.15	0.00	0.21
Books	0.06	0.00	0.21
Book chapters	0.00	0.00	0.00
Total	**0.22**	**0.89**	**1.81**

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ASTI RESOURCES FOR COSTA RICA

This factsheet presents recent data on the agricultural research system of Costa Rica, primarily focusing on key financial, human resource, institutional, and output indicators, while also highlighting relevant trends, challenges, and institutional changes. Additional resources are available at **www.asti.cgiar.org** and include:

- ASTI's **interactive country page** for Costa Rica features national agricultural research investment and capacity data, a data exploration and download tool, as well as access to a variety of country publications.
- ASTI's **benchmarking tool** allows key agricultural research indicators to be ranked and compared across Latin American countries.
- ASTI's **data download** tool provides access to more in-depth ASTI datasets and graphs for Costa Rica and many other countries.
- ASTI's agency directory provides an overview of agencies involved in agricultural research in Costa Rica, along with their location and key agency-level indicators.

ASTI DATA PROCEDURES AND METHODOLOGY

The data underlying this factsheet were derived through detailed primary surveys from the country's principal agricultural R&D agencies. Data from smaller R&D agencies 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 incomplete data coverage.

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 (non-research) activities.

ASTI presents its financial data in 2017 local currencies and 2017 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 decimal rounding can cause totals to be one point higher or lower than the sum of their parts.

For more information on ASTI's data procedures and methodology, visit: **www.asti.cgiar.org/methodology**

ACRONYMS USED IN THIS FACTSHEET

ASTI	Agricultural Science and Technology Indicators
FTEs	full-time equivalent(s)
GDP	gross domestic product
GRA	Global Research Alliance
IDB	Inter-American Development Bank
IFPRI	International Food Policy Research Institute
INCOPESCA	Costa Rican Fisheries and Aquaculture Institute
INTA	National Institute of Agricultural Innovation and Technology Transfer
PPP	purchasing power parity (exchange rate)
R&D	research and development
SENARA	National Underground Water, Irrigation and Drainage Service
UCR-CITA	University of Costa Rica–National Center for Food Science and Technology
UNA-ECA	National University–School of Agricultural Sciences
UNDP	United Nations Development Programme
USAID	US Agency for International Development

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ABOUT ASTI and ACKNOWLEDGEMENTS

The Inter-American Development Bank would like to acknowledge the **International Food Policy Research Institute (IFPRI).**

Working through collaborative alliances with numerous national and regional R&D agencies and international institutions, ASTI is a comprehensive and trusted source of information on agricultural R&D systems across the developing world. ASTI is facilitated by the International Food Policy Research Institute (IFPRI). INTA coordinated in-country data collection. For more information on ASTI, please visit **www.asti.cgiar.org/about**

ASTI gratefully acknowledges participating agricultural R&D agencies for their contributions to the data collection and preparation of this country factsheet. They also thank the Inter-American Development Bank (IDB) for its generous support of ASTI's work in Latin America.

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