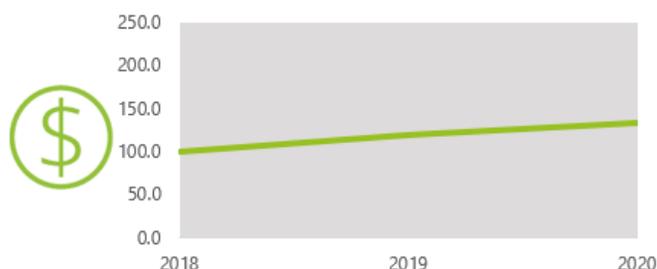


# NICARAGUA

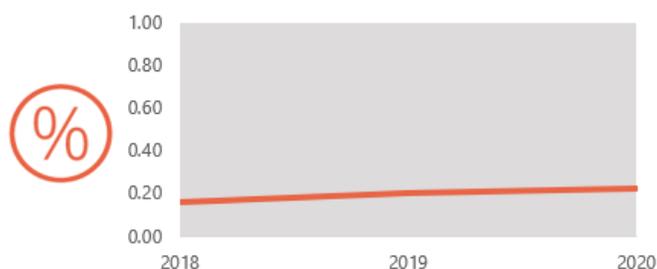
Gert-Jan Stads and Luis de los Santos

## AGRICULTURAL RESEARCH SPENDING



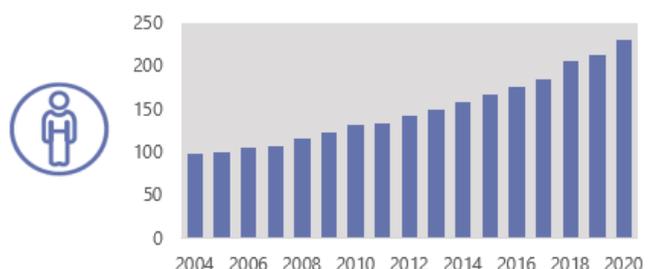
	NICARAGUA	HONDURAS	COSTA RICA	GUATEMALA
Million cordobas (2017 constant prices)	<b>133.0</b>			
Million PPP dollars (2017 constant prices)	<b>12.3</b>	9.8	38.1	14.4

## SPENDING INTENSITY



	NICARAGUA	HONDURAS	COSTA RICA	GUATEMALA
Agricultural research spending as a % of agricultural GDP	<b>0.22%</b>	0.20%	0.87%	0.10%

## AGRICULTURAL RESEARCHERS



	NICARAGUA	HONDURAS	COSTA RICA	GUATEMALA
Full-time equivalents	<b>230.4</b>	109.1	237.7	154.3

### PFPAS strengthened Nicaragua's agricultural R&D

The IDB-funded PFPAS program has provided an important financial injection into Nicaragua's agricultural research system during 2013–2018. The program has made important strides in rehabilitating some of INTA's run-down research infrastructure, in offering degree and short-term training to research staff, and in strengthening linkages between agricultural research and producers.

### Yet underinvestment persists

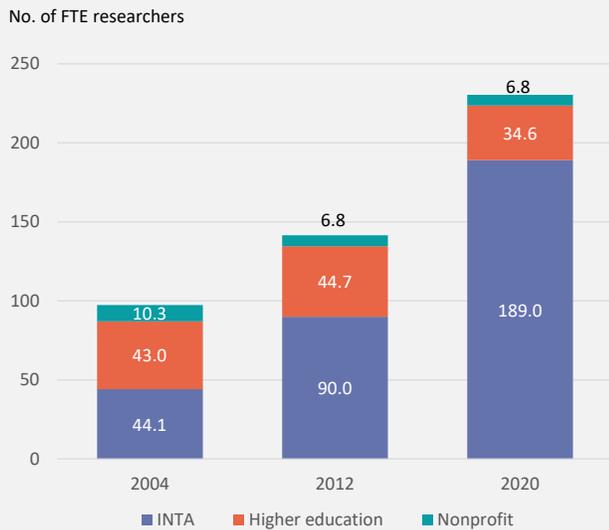
Notwithstanding the important achievements of PFPAS, Nicaragua's agricultural R&D investment levels remain too low to provide the necessary technological solutions to enhance agricultural productivity and reduce rural poverty. As of 2020, the country invested just 0.22 percent of its agricultural GDP in agricultural research, which is insufficient to effectively address the many challenges the agricultural sector is facing.

### Capacity challenges

Nicaragua lacks a critical mass of highly qualified agricultural researchers. Building on the achievements of PFPAS, continued and accelerated training of young researchers to the MSc and PhD level remains critical. In addition, local university programs in agricultural sciences need to be strengthened so that more scientists have the opportunity to pursue higher level degrees in-country.

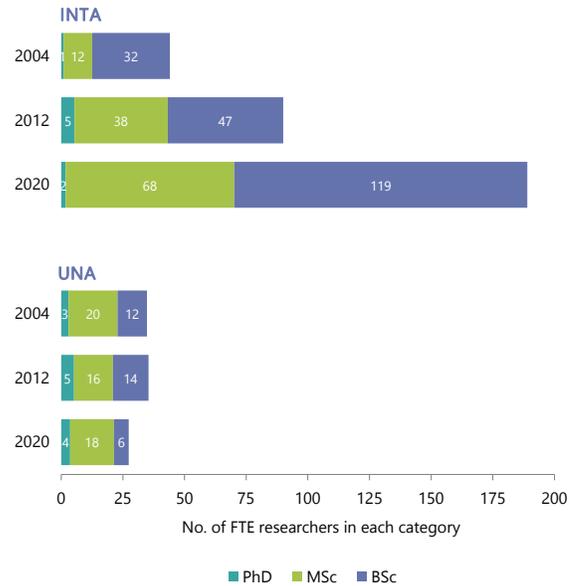
### Institutional composition of Nicaragua's agricultural research

Nicaragua's agricultural research system is dominated by INTA, which accounted for more than 80 percent of the country's agricultural researchers in 2020. INTA's researcher numbers have seen tremendous growth over the past decade, not in the least as a result of PFPAS. The relative importance of the country's higher education and nonprofit sectors have declined somewhat over time. UNA is the principal R&D agency in the higher education sector.



### Nicaragua's agricultural researchers by qualification level

Nicaragua lacks a critical mass of PhD-qualified agricultural researchers. Even though PFPAS had originally earmarked considerable funding for PhD training of INTA researchers at foreign universities, the bulk of these funds were ultimately used for MSc-level training. INTA's number of MSc-qualified researchers has rapidly increased as a result. On average, qualification levels were higher at UNA than at INTA.



### Nicaragua's agricultural researchers broken down by gender

Gender balance in agricultural research is still far from being achieved in Nicaragua. As of 2020, 28 percent of the country's agricultural researchers were women—both at INTA and UNA—representing a small decline over the 30-percent share recorded in 2012. Female researchers are still less likely to be PhD-qualified than their male colleagues.



#### By degree level, 2020

PhD	20%
MSc	25%
BSc	30%

#### By main agricultural R&D agencies, 2020

INTA	28%
UNA	28%

### INTA's researchers by qualification level and age bracket

Compared to many other Central American countries, Nicaragua is less challenged with an aging pool of agricultural researchers, not in the least because of the recruitment of a large number of young researchers in recent years. As of 2020, 36 percent of INTA's agricultural researchers were over fifty years of age.



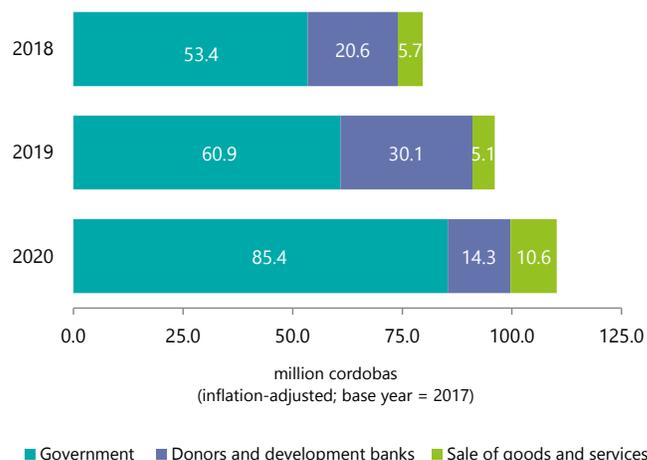
### INTA's spending broken down by cost category

INTA's spending rose by 38 percent between 2018 and 2020. This large upsurge was primarily driven by increased spending on actual research programs, rather than salary or capital costs. Overall, during 2018-2020, salary costs represented 52 percent of INTA's total expenditures; operating and program costs accounted for 40 percent; and capital investments for the remaining 8 percent.



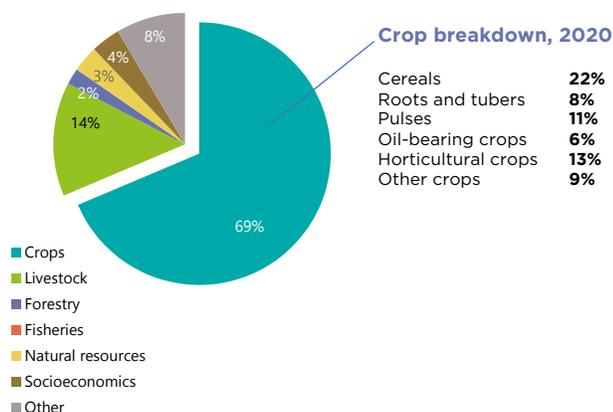
### INTA's funding broken down by source

During 2018-2020, 70 percent of INTA's funding was provided by the national government; 23 percent by donors and development banks; and 7 percent was generated internally through the sale of goods and services. The principal donors to INTA include IDB, South Korea, Japan, the European Union, and various international organizations.



### Commodity focus of Nicaragua's agricultural researchers

In 2020, 69 percent of Nicaraguan agricultural researchers concentrated their research on crops. Fourteen percent focused on livestock, with the remainder conducting research on forestry, natural resources, socioeconomics, and other areas. The country's most researched crops include beans, rice, maize, sorghum, tomato, cassava, and coffee.



### Crop varieties released by INTA (2017-2020)

During 2017-2020, INTA released 11 new crop varieties, which included legume, cereal, root and tuber, and horticultural varieties. All newly released varieties have been formally registered with the country's Institute of Agricultural Protection and Health (IPSA).

Variety name	Crop type	Year of release	Protection mechanism
CIR - 09	Sorghum	2017	Registered with IPSA
INTA Productivo Sequia	Beans	2017	Registered with IPSA
Pacayita	Cocoa	2017	Registered with IPSA
INTA Miraflores	Potato	2018	Registered with IPSA
INTA Rendidor	Tomato	2018	Registered with IPSA
FORTINICA	Maize	2018	Registered with IPSA
Las Minas	Rice	2019	Registered with IPSA
Amaranto Nutritivo sequia	Amaranth	2019	Registered with IPSA
Bioapante	Beans	2019	Registered with IPSA
INTA Harinera	Cassava	2020	Registered with IPSA
Gigante	Dragon fruit	2020	Registered with IPSA

## ASTI RESOURCES FOR NICARAGUA

This factsheet presents recent data on the agricultural research system of Nicaragua, 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](http://www.asti.cgiar.org) and include:

- ASTI's **interactive country page** for Nicaragua 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 Nicaragua and many other countries.
- ASTI's **agency directory** provides an overview of agencies involved in agricultural research in Nicaragua, 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](http://www.asti.cgiar.org/methodology)

## ACRONYMS USED IN THIS FACTSHEET

<b>ASTI</b>	Agricultural Science and Technology Indicators
<b>FTEs</b>	full-time equivalent(s)
<b>GDP</b>	gross domestic product
<b>IDB</b>	Inter-American Development Bank
<b>IFPRI</b>	International Food Policy Research Institute
<b>INTA</b>	Nicaraguan Institute of Agricultural Technology
<b>IPSA</b>	Institute of Agricultural Production and Health
<b>PPPAS</b>	Program for the Promotion of Sustainable Agricultural Productivity
<b>PPP</b>	purchasing power parity (exchange rates)

<b>R&amp;D</b>	research and development
<b>UNA</b>	National Agricultural University

## 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](http://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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