MEXICO

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KEY INDICATORS, 2006–2013

Total Agricultural Research Spending	2006		2009		2013
Mexican pesos (million constant 2011 prices)	4,548.2		5,533.4		5,451.3
PPP dollars (million constant 2011 prices)	592.8	▲	721.1	▼	710.4
Overall Growth	|	**22%**	|	**–1%**	|
Total Number of Agricultural Researchers					
Full-time equivalents (FTEs)	3,723.8	▲	3,946.3	▲	3,967.4
Overall Growth	|	**6%**	|	**1%**	|
Agricultural Research Intensity					
Spending as a share of agricultural GDP	1.05%		1.23%		1.05%
FTE researchers per 100,000 farmers	43.34		48.17		50.76

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.

- Mexico's research system is one of the largest in Latin America in terms of capacity and spending. One-quarter of researchers are employed at INIFAP, the country's principal agricultural research agency.
- During 2006–2013, agricultural R&D spending rose by 20 percent due to growth in the higher education sector. Between 2009 and 2013, however, growth declined by 1 percent.
- Despite an overall decline in the number of agricultural researchers employed at INIFAP, the number of researchers with PhD degrees increased during 2006–2013. It should be noted, however, that many of these researchers will reach retirement age in the coming decade.

FINANCIAL RESOURCES, 2013

Spending Allocation

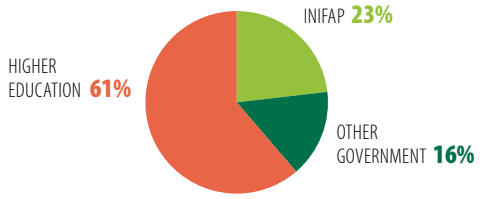
Salaries	56%
Operating and program costs	41%
Capital investments	3%

Funding Sources

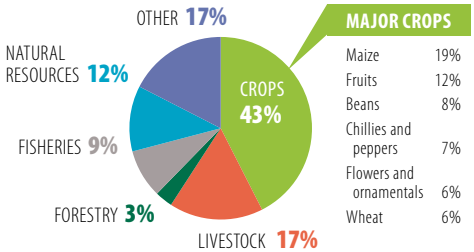
Government	82%
Sales of goods and services	10%
Other	8%

Note: Shares are based on data for INIFAP centers, excluding CENID-RASPA due to unavailability.

INSTITUTIONAL PROFILE, 2013



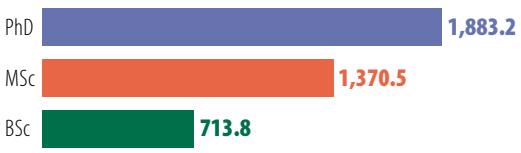
RESEARCH FOCUS, 2013



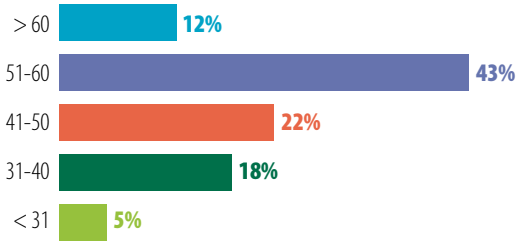
Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 46 percent of total crop researchers focused on a wide variety of other crops.

RESEARCHER PROFILE, 2013

Number by qualification (FTEs)



Share by age group (years)



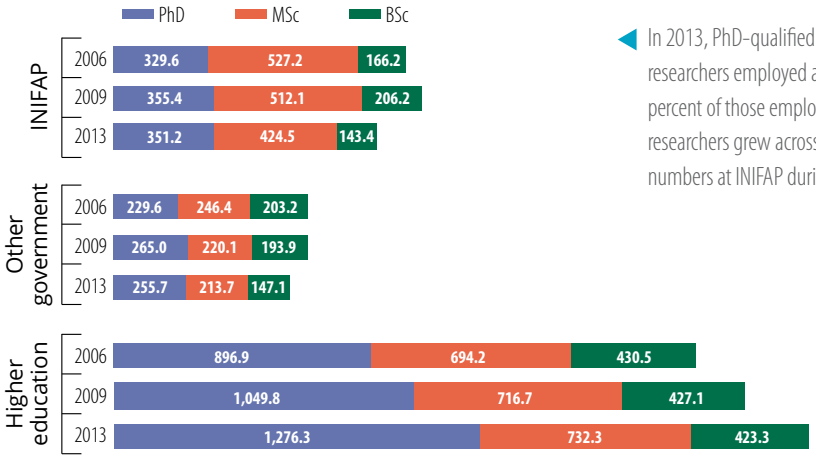
CHALLENGE

- The combination of a hiring freeze and an early retirement scheme has constrained INIFAP's research capacity since 2007. Over half of INIFAP's researchers are more than 50 years old, posing a challenge to the viability of the institution in the coming years. Moreover, the proposal of an additional early retirement scheme is likely to accelerate the loss of senior staff. In addition, turnover among younger researchers is high due to uncertainty of temporary employment contracts and the draw of better remuneration within the higher education and private sectors.

POLICY OPTIONS

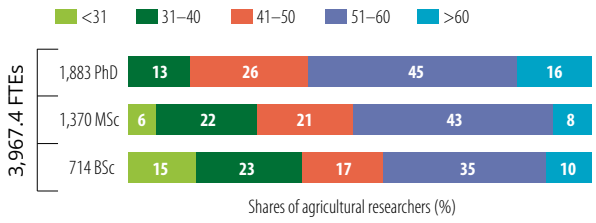
- Actions are needed to mitigate capacity losses, primarily by mobilizing financial resources in order to remove recruitment barriers, improve salary and benefit packages compared with other sectors, and provide postgraduate training programs for researchers. Greater coordination in decisionmaking processes between INIFAP and its administrative body, SAGARPA, could improve the prioritization of research needs.

Number of researchers by qualification level, 2006, 2009, and 2013 (FTEs)



In 2013, PhD-qualified researchers represented 38 percent of the total number of agricultural researchers employed at INIFAP, 41 percent of those employed at other government agencies, and 52 percent of those employed within the higher education sector. The number and share of PhD-qualified researchers grew across all institutional categories during 2006–2013. The decline in researcher numbers at INIFAP during this timeframe was primarily among those qualified to the MSc level.

Distribution of agricultural researchers by age bracket, 2013 (FTEs)



In 2013, more than half of PhD- and MSc-qualified agricultural researchers employed in Mexico were more than 50 years old. Younger researchers were most commonly qualified to the BSc level only, especially at INIFAP.

STRONG LINK BETWEEN AGRICULTURAL RESEARCH AND EDUCATION

Mexico is unique in the region in that many of its agricultural researchers are employed in the higher education sector. During 2006–2013, the number of researchers employed at higher education agencies grew by 20 percent, whereas the number employed at government agencies fell by 10 percent. Many universities in Mexico have affiliated centers dedicated to agricultural research or employ faculty staff who spend more of their time conducting research than teaching. Correspondingly, many government research agencies offer education and training programs, and their staff are engaged in both research and teaching. INIFAP has a strong educational mandate that promotes linkages with universities, such as COLPOS, IPN, UNAM, UAAAN, and UACh, among others, by involving students in research projects.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS

	Total number of researchers, 2013 (FTEs)	Growth in number of researchers, 2009–2013	Share of PhD researchers, 2013 (FTEs)	Total spending, 2013 (million 2011 PPP dollars)	Overall spending growth, 2009–2013	Spending as a share of AgGDP, 2013
Mexico	**3,967.4**	**1%**	**47%**	**710.4**	**–1%**	**1.05%**
Argentina	5,824.5	18%	21%	732.1	26%	1.29%
Brazil	5,869.4	12%	73%	2,704.0	8%	1.82%
Colombia	1,102.9	3%	23%	253.7	33%	0.79%

Note: Please visit *www.asti.cgiar.org/benchmarking/lac* to benchmark Mexico with other countries in Latin America and the Caribbean or compare the country's key indicators with regional averages.

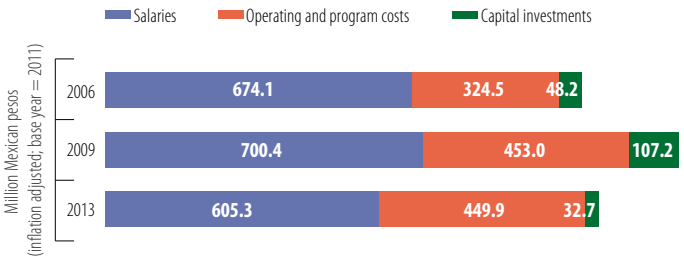
CHALLENGE

- Government budget cuts have constrained financial resources to INIFAP in recent years. Furthermore, competitive grant funding has become difficult to access for many researchers. Financial pressure and uncertainty have led to capacity losses that have limited important emerging research areas, such as climate change, nanotechnology, and environmental sustainability, among others.

POLICY OPTION

- While agricultural R&D is relatively well-staffed and funded in Mexico compared with other countries in the region, the country's principal research institution, INIFAP, continues to lose ground each year without a clear sign of support from the government. Strong funding commitments from SAGARPA, CONACyt, COFUPRO, and the regional producer organizations and well-defined guidelines for accessing competitive grants would strengthen INIFAP's ability to achieve its mandate.

INIFAP's spending by cost category, 2006, 2009, and 2013



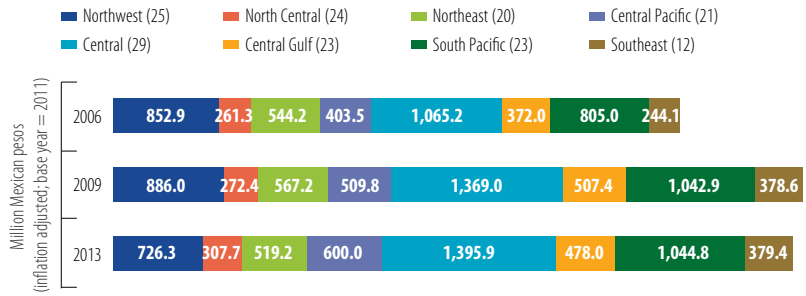
Note: The figure excludes CENID-RASPA due to lack of available data.

Government funding during 2006–2013 primarily supported salary-related expenditures. The remaining costs of conducting research and maintaining facilities and equipment were supported by the sale of goods and services, such as contract research for the private and nonprofit sectors, and by funding from donors.

AGRICULTURAL RESEARCH FUNDING

Funding sources vary considerably among INIFAP's research centers. Government funding is derived from sources such as CONACyt, SAGARPA, and CONAFOR, as well as regional producer foundations. These foundations, grouped under the coordinating body COFUPRO, serve as a bridge between farmers and government research agencies. The government allocates funds to the foundations, which in turn can grant funds to INIFAP's research centers. Government funding generally accounted for at least half of all spending at the centers, with the exception of CENID-F, where it represented only 22 percent of total funding.

Spending by region, 2006, 2009, and 2013



Agricultural research spending is highest in the Central region, which encompasses Mexico City and is the location of the largest number of agencies (and researchers), including four INIFAP centers and the main campuses of COLPOS, UACh, IPN, and UNAM. In contrast, the Southeast region, which comprises three states and only 12 agricultural R&D agencies, is the smallest both in terms of capacity and spending. Spending within all regions except the Northeast and Northwest rose between 2006 and 2013.

Number of publications by INIFAP research centers, 2013

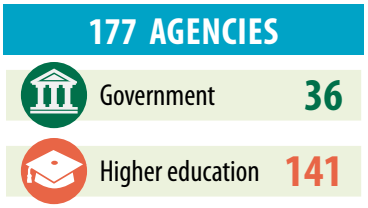
	INTER-NATIONAL JOURNALS	NATIONAL JOURNALS	BOOKS	CHAPTERS	RESEARCH REPORTS	OTHER	TOTAL
CENID-COMEF	5	6	0	6	4	46	**67**
CENID-F	9	27	3	8	17	149	**213**
CENID-M	2	2	2	3	0	60	**69**
CIRCE	70	379	33	0	136	62	**680**
CIRGOC	28	301	1	9	7	42	**388**
CIRNE	13	17	0	6	34	208	**278**
CIRNO	9	9	0	4	3	134	**159**
CIRNOC	18	28	7	4	17	153	**227**
CIRPAC	7	24	6	7	0	5	**49**
CIRPAS	11	37	10	12	0	183	**253**
CIRSE	5	1	0	6	0	55	**67**
TOTAL	**177**	**831**	**62**	**65**	**218**	**1,097**	**2,450**

Notes: The table excludes CENID-RASPA and CENID-PAVET due to lack of available data. "Other" includes publications such as conference papers and popular articles.

Located in the Central region and one of the largest of the INIFAP centers, CIRCE accounted for the highest share of publications produced by INIFAP in 2013 (28 percent). CIRGOC also published widely in both national and international journals (accounting for 16 percent).

OVERVIEW OF MEXICO'S AGRICULTURAL RESEARCH AGENCIES

As of 2013, 177 agencies were identified as conducting agricultural R&D in Mexico. INIFAP (employing 919 FTE researchers in 2013) accounts for close to a quarter of the country's agricultural researchers (in FTEs) across 8 regional centers, 5 disciplinary-based centers, and a number of experiment fields and laboratories located throughout the country. In 2013, INIFAP's researchers predominantly focused on crops (mostly maize, wheat, and fruit). Other large government agencies include the National Fisheries Institute (171 FTEs), the Center for Research and Applied Technology in Jalisco (106 FTEs), and the Mexican Water Technology Institute (159 FTEs). The higher education sector in Mexico includes 141 universities, colleges, university research centers, agricultural faculties, and smaller agencies. Of these, the two largest are COLPOS (380 FTEs) and IPN (356 FTEs). Other important universities include UNAM (193 FTEs), UAAAN (143 FTEs), and UACh (90 FTEs). Nonprofit agencies play a small role in agricultural research in Mexico, typically outsourcing their research to the government and higher education agencies. Research at private for profit agencies is limited, generally focusing on seed production only.



Note: Excludes private for-profit agencies.

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

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 Mexico, visit* **www.asti.cgiar.org/mexico**.

ACRONYMS USED IN THIS FACTSHEET

CENID-COMEF	National Research Center – Conservation and Forest Ecosystem Improvement
CENID-F	National Research Center – Animal Physiology
CENID-M	National Research Center – Animal Microbiology
CENID-PAVET	National Research Center – Veterinary Parasitology
CENID-RASPA	National Research Center – Water, Soil, Plant, and Atmosphere
CIRCE	Regional Research Center – Central
CIRGOC	Regional Research Center – Central Gulf
CIRNE	Regional Research Center – Northeast
CIRNO	Regional Research Center – Northwest
CIRNOC	Regional Research Center – North Central
CIRPAC	Regional Research Center – Central Pacific
CIRPAS	Regional Research Center – South Pacific
CIRSE	Regional Research Center – Southeast
COFUPRO	National Association of Producer Organizations
COLPOS	Postgraduate College
CONACyt	National Science and Technology Council
CONAFOR	National Forestry Commission
FTE(s)	Full-time equivalent (researchers)
INIFAP	National Institute for Forestry, Agricultural, and Livestock Research
IPN	National Polytechnic Institute
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
SAGARPA	Secretariat for Agriculture, Livestock, Rural Development, Fisheries, and Food
UAAAN	Antonio Narro Agrarian Autonomous University
UACh	Chapingo Autonomous University
UNAM	National Autonomous University of Mexico

ABOUT ASTI, IFPRI, AND INIFAP

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 **National Institute for Forestry, Agricultural, and Livestock Research (INIFAP)** is Mexico's principal agricultural research agency; the institute falls under the Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food and focuses on crop, livestock, natural resources, and forestry research.

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