Agricultural R&D Indicators Factsheet | April 2016

ARGENTINA

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KEY INDICATORS, 2006–2013

Total Agricultural Research Spending	2006		2009		2013
Argentine pesos (million constant 2011 prices)	1,467.5		1,543.0		1,950.9
PPP dollars (million constant 2011 prices)	550.7		579.0		732.1
Overall Growth	|	**5%**	|	**26%**	|
Total Number of Agricultural Researchers					
Full-time equivalents (FTEs)	3,829.8		4,948.1		5,824.5
Overall Growth	|	**29%**	|	**18%**	|
Agricultural Research Intensity					
Spending as a share of agricultural GDP	1.23%		1.46%		1.29%
FTE researchers per 100,000 farmers	266.52		350.44		422.68

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.

- Knowledge and innovation became national priorities in Argentina with the 2007 establishment of the Ministry of Science and Technology, and the 2009 upgrade of the Secretariat for Agriculture, Livestock, and Fisheries into a Ministry, after which the country's agricultural research expenditures grew markedly.
- The number of agricultural researchers rose by more than half during 2006–2013; however, the majority of new recruits at INTA and higher education agencies hold BSc degrees only.
- Argentina ranks very high among Latin American countries in terms of agricultural R&D spending as a share of agricultural GDP, agricultural researchers per capita, and the share of female agricultural researchers.

FINANCIAL RESOURCES, 2013

Spending Allocation

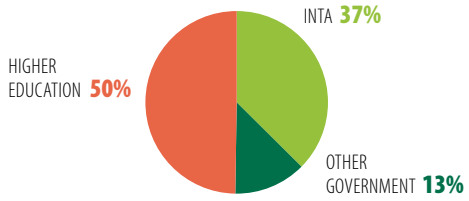
Salaries	80%
Operating and program costs	15%
Capital investments	5%

Funding Sources

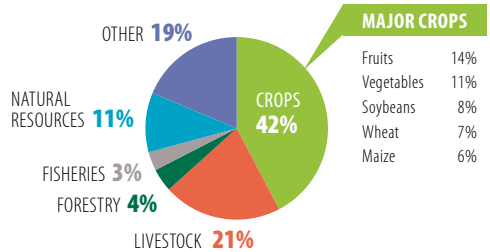
Government	95%
Donors	3%
Commodity levies	1%
Other	1%

Note: Shares are based on data for INTA only.

INSTITUTIONAL PROFILE, 2013



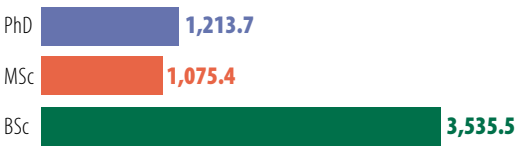
RESEARCH FOCUS, 2013



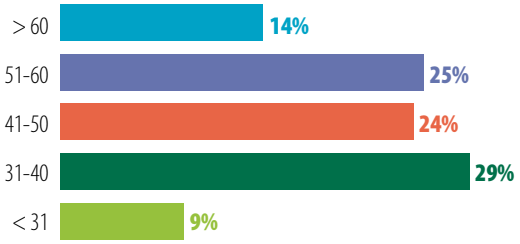
Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 53 percent of total crop researchers focused on a wide variety of other crops.

RESEARCHER PROFILE, 2013

Number by qualification (FTEs)



Share by age group (years)



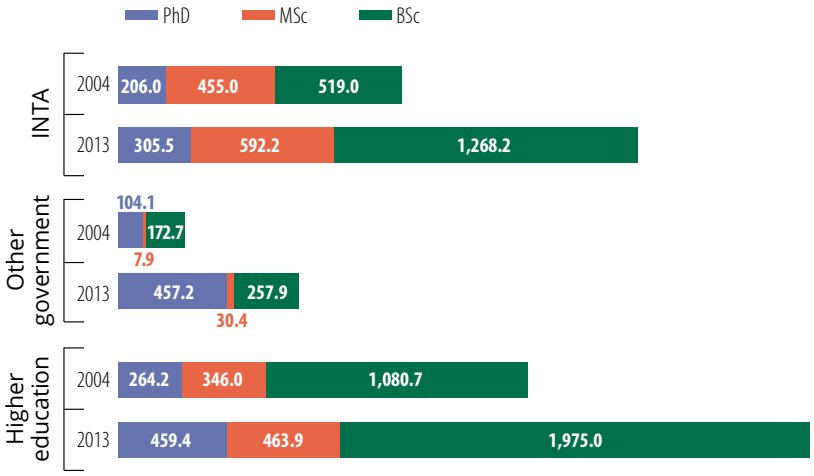
CHALLENGE

- Argentina's agricultural researcher numbers rose rapidly during 2004–2013 in response to the government's prioritization of agricultural S&T. The vast majority of these new researchers, however, only held BSc degrees and had limited research experience. Integrating them into existing structures and projects, and providing the necessary training and guidance has presented a challenge.

POLICY OPTION

- Given their qualification and experience levels, junior researchers require specialized training and mentoring if they are to develop the expertise needed to conduct effective research. Well-funded and coordinated research programs and well-equipped facilities are equally important to encourage their long-term commitment. In addition, considerable investments in PhD training are needed, especially in emerging areas such as nanotechnology, bioinformatics, and metagenomics.

Number of researchers by qualification level, 2004 and 2013 (FTEs)



Agricultural researcher numbers at INTA and the other government and higher education agencies grew rapidly between 2004 and 2013. Although most of the new researchers were only BSc-qualified, the number of researchers with PhD and MSc degrees also rose considerably. Notably, the number of PhD-qualified researchers employed at CONICET agencies increased significantly.

SWEEPING SCIENCE AND TECHNOLOGY REFORMS

In 2007, the Argentine government upgraded the Secretariat of Science and Technology to a Ministry of Science and Technology, and in 2009 the Secretariat for Agriculture, Livestock, and Fisheries was also converted to Ministry level. The intention of these changes was to promote the country's high value-added commodities on international markets, and improve and diversify the internal market. These reforms prompted the reorganization of the country's fragmented S&T system and generated significant new investment.

These changes had a positive impact on INTA, whose funding increased significantly. In addition, *Plan Raíces* of the Ministry of Science and Technology managed to incentivize a large number of Argentinean PhD-qualified researchers working abroad to return to Argentina, which benefited the institute. Also, 500 relatively inexperienced *becarios* were gradually incorporated into INTA's ranks, and a large number of temporary staff were given permanent positions.

INTA also benefited from considerable investments in infrastructure and equipment, and its project portfolio was realigned with predefined national agricultural priorities. In addition, performance criteria for researchers employed at INTA were redefined to not only include the number of publications produced, but also the types of solutions developed to address issues articulated by stakeholders. It is still too early to assess the long-term impact of all these reforms. Key remaining challenges include improving the coordination of research among agencies, enhancing the uptake of research results by stakeholders, and attracting well-qualified staff to fill vacant positions at some of the country's more remote research stations.

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
Argentina	**5,824.5**	**18%**	**21%**	**732.1**	**26%**	**1.29%**
Chile	715.7	6%	37%	186.4	–2%	1.65%
Brazil	5,869.4	12%	73%	2,704.0	8%	1.82%
Uruguay	371.9	1%	26%	77.4	20%	1.40%

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

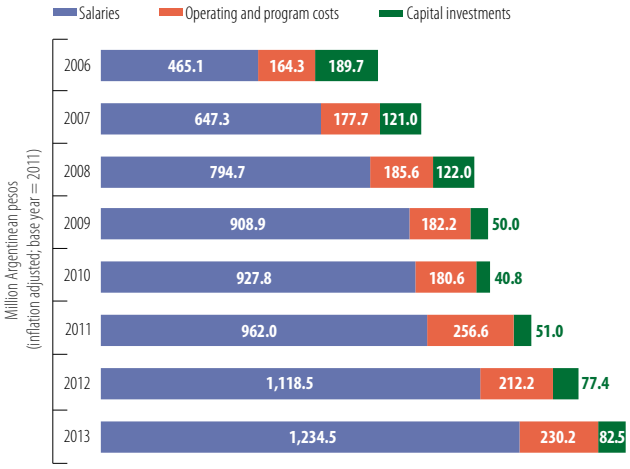
CHALLENGE

- Since the 1990s, competitive funding mechanisms have become more prevalent, both in terms of size and scope. They now play a critical role in the allocation of research funds across agencies. Despite the different mechanisms implemented, the bulk of available funds are awarded to experienced researchers based in Buenos Aires, Córdoba, Mendoza, and Santa Fe provinces. Agencies in more remote provinces are severely challenged in submitting successful proposals that fulfill all requirements, largely because such agencies lack a critical mass of PhD-qualified staff.

POLICY OPTION

- In order to avoid a widening gap in the quality of research across provinces, the government needs to strengthen specific calls for proposals that address regional research priorities with local researchers. In addition, a creative solution is needed to provide researchers with the necessary incentives to spend periods of time working in the more remote parts of the country. An example of an initial step in this direction is the recent awarding of grants to young researchers for combined work/study programs at regional centers.

INTA's spending by cost category, 2006–2013



Between 2006 and 2013, growth in INTA's expenditures was largely driven by increased salary spending based on growth in researcher numbers. Operating and program costs and capital expenses, on the other hand, changed comparatively little over time. As a result, INTA spent 80 percent of its funding on salaries in 2013, compared with 57 percent in 2006. This significant imbalance in the allocation of funding across cost categories raises concerns about the viability of the institute's research programs.

PRINCIPAL FUNDING SOURCES OF ARGENTINE AGRICULTURAL R&D

- The government is the main source of agricultural R&D funding at the country's government and higher education agencies.
- Each year, the national government allocates 0.35 percent of the value of Argentina's total (agricultural and nonagricultural) imports, as well as a 0.15 percent of the share of exports, to INTA.
- The Inter-American Development Bank and the World Bank are important donors to S&T in Argentina. This funding is disbursed through a complex system involving numerous agencies under the Ministry of Science and Technology, including ANPCyT, which oversees a number of competitive funds to promote public- and private-sector S&T.
- In 2014, FONCyT supported more than 1,400 basic and applied research projects at a total cost of 500 million pesos. Many of these projects had an agricultural focus. The fund also supported 330 *becarios*.
- FONTAR is a competitive research fund targeting the private sector. A small share of the fund is allocated to agribusinesses (about 6 percent in 2014).
- Created in 2009, FONARSEC is a competitive fund that supports public–private research projects in potentially high-impact areas, including agribusiness and biotechnology.
- FONTAGRO is a regional competitive funding source that aims to enhance cross-country collaboration in agricultural R&D. It plays an important role in funding Argentine agricultural R&D, especially in areas related to climate change.
- CONICET agencies generate a comparatively high share of their total funding internally through the sale of goods and services, but this is relatively minor source of funding for INTA and INIDEP.

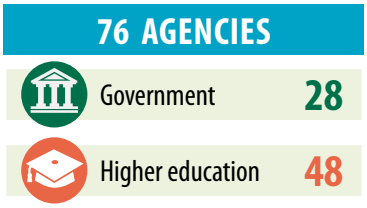
New varieties released by INTA, 2007–2013

COMMODITY	NUMBER OF VARIETIES	COMMODITY	NUMBER OF VARIETIES	COMMODITY	NUMBER OF VARIETIES
Grass (fodder)	27	Sweet potatoes	5	Chickpeas	2
Tree species	23	Barley	4	Cotton	2
Tea and mate	18	Fruit	4	Oats	2
Sunflowers	15	Garlic	4	Oil-bearing crops	2
Nuts	13	Maize	4	Peppers	2
Sorghum	12	Onions	4	Pumpkins	2
Flowers and ornamentals	11	Tomatoes	4	Rice	2
Wheat	11	Cereals	3	Sugarcane	2
Beans	7	Groundnuts	3	Potatoes	1
Medicinal and aromatic plants	5	Soybeans	3		

INTA, Argentina's main agricultural research agency focusing on crop and tree breeding, released 197 new varieties and numerous other technologies during 2007–2013.

OVERVIEW OF ARGENTINA'S AGRICULTURAL RESEARCH AGENCIES

Excluding the private sector, 76 agencies conduct agricultural research in Argentina. INTA is the country's largest agricultural R&D agency (employing 2,181 FTE researchers in 2013). The institute focuses on crops, livestock, and agro-food systems, but also plays an important role in the field of technology transfer. Headquartered in Buenos Aires, INTA comprises 51 experimental stations and 22 research institutes focusing on local production needs and interaction with local producers. CONICET, which is primarily mandated to promote S&T, operates numerous centers and institutes across the country focusing on five key areas: agriculture, engineering, and raw materials; biology and health; applied and natural sciences; social and human sciences; and technology. A small amount of agricultural research is conducted at 26 of CONICET's agencies (collectively totaling 746 FTEs in 2013). Headquartered in Mar del Plata, INIDEP is Argentina's main fisheries research agency (128 FTEs in 2013). As of 2013, 48 higher education agencies (2,898 FTEs) conducted basic and applied agricultural research. The largest of these (in terms of FTEs) were the University of Buenos Aires, the National University of La Plata, the National University of the Center of Buenos Aires Province, and the University of Mar del Plata.



Note: Excludes private for-profit agencies.

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

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 Argentina, visit* **www.asti.cgiar.org/argentina**.

ACRONYMS USED IN THIS FACTSHEET

AgGDP	Agricultural gross domestic product
ANPCYT	National Agency for the Promotion of Science and Technology
CONICET	National Scientific and Technical Research Council
FONARSEC	Argentine Agricultural Sector Fund
FONCyT	Fund for Scientific and Technological Research
FONTAR	Argentine Technology Fund
FTE(s)	Full-time equivalent (researchers)
INIDEP	National Fisheries Research and Development Institute
INTA	National Agricultural Technology Institute
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
S&T	Science and Technology

ABOUT ASTI, IFPRI, AND INTA

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 Agricultural Technology Institute (INTA)** is Argentina's principal agricultural research agency; it falls under the Ministry of Agro-Industry and predominantly focuses on crop, livestock, and agri-food research and technology transfer.

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