BOLIVIA

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KEY INDICATORS, 2009–2013

Total Agricultural Research Spending	2009		2013
Bolivianos (million constant 2011 prices)	168.5		173.5
PPP dollars (million constant 2011 prices)	57.2		58.9
Overall Growth	|	**3%** ▲	|
Total Number of Agricultural Researchers			
Full-time equivalents (FTEs)	191.6		190.3
Overall Growth	|	**–1%** ▼	|
Agricultural Research Intensity			
Spending as a share of agricultural GDP	1.00%		0.93%
FTE researchers per 100,000 farmers	9.70		8.85

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.

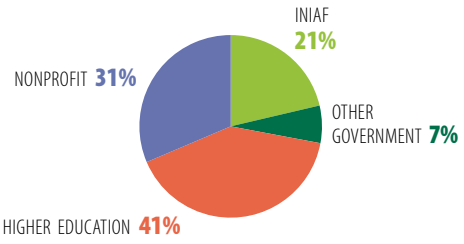
- Large spending increases at INIAF coupled with considerable decreases at most other agricultural R&D agencies caused Bolivia's agricultural research spending levels to remain stagnant in inflation-adjusted terms during 2009–2013.
- At only 11 percent, Bolivia's share of PhD-qualified agricultural researchers is among the lowest in South America.
- Compared with most countries in South America, Bolivia's agricultural R&D system is highly dependent on funding from donors and development banks.

FINANCIAL RESOURCES, 2013

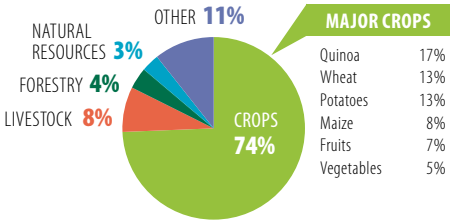
Spending Allocation	
Salaries	11%
Operating and program costs	38%
Capital investments	50%
Funding Sources	
Government	12%
Donors	5%
Development bank loans	64%
Sales of goods and services	19%

Note: Shares are based on data for INIAF only.

INSTITUTIONAL PROFILE, 2013



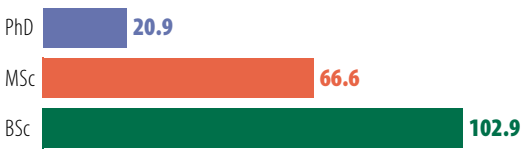
RESEARCH FOCUS, 2013



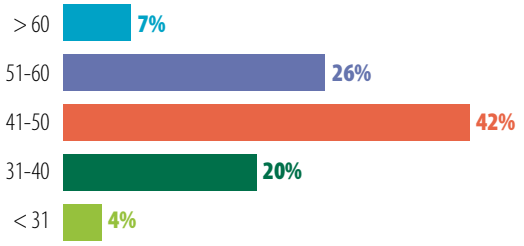
Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 37 percent of total crop researchers focused on a wide variety of other crops.

RESEARCHER PROFILE, 2013

Number by qualification (FTEs)



Share by age group (years)



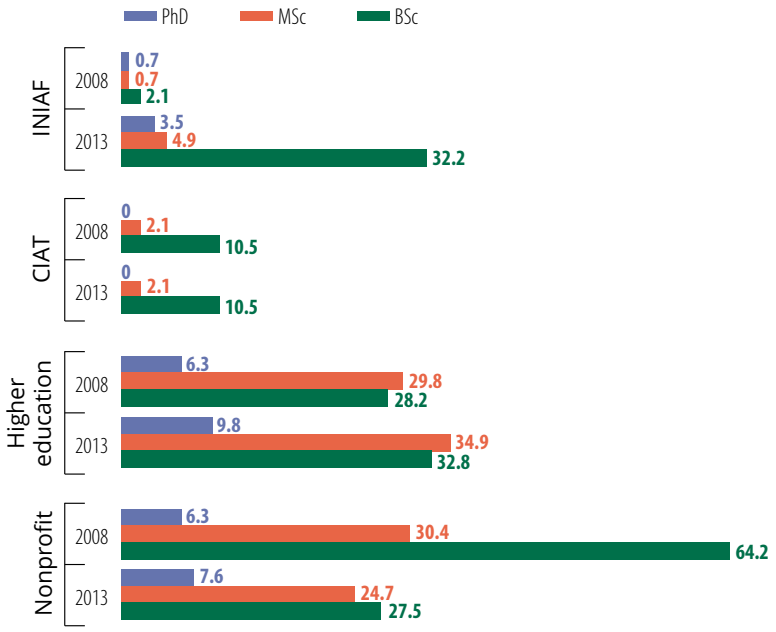
CHALLENGE

- Despite considerable achievements in a relatively short time span, INIAF remains a young institution facing a variety of institutional, technical, and financial challenges that will have to be overcome before it can establish itself as the leader of Bolivia's national agricultural R&D system. Perhaps the most fundamental challenge for INIAF is to attract and retain the skilled and highly qualified professionals needed to provide dynamic leadership and to build the institute's reputation.

POLICY RESPONSE

- The 2012–2017 PISA project—funded by the World Bank and the governments of Bolivia, Denmark, and Switzerland—is strengthening INIAF's institutional development and capacity to undertake research, technical assistance, and certified seed distribution. PISA also supports the development of an information and monitoring system, which will strengthen INIAF activities towards results and impact, and which will allow the institute, in the long term, to measure and showcase its added value in the country.

Number of researchers by qualification level, 2008 and 2013 (FTEs)



Overall agricultural researcher numbers increased during 2008–2013. Most of this growth was driven by INIAF, which recruited a considerable number of researchers after its 2008 creation. However, as of 2013, the institute still lacks a critical mass of PhD-and MS-qualified researchers. Most of Bolivia's researchers with PhDs are employed at the universities and PROINPA.

LIMITED POSTGRADUATE TRAINING OPPORTUNITIES

Currently three universities offer graduate programs in agricultural sciences in Bolivia. In the early 1980s, the University of San Simon, located in La Paz, opened the country's first faculty of agriculture with support from the University of Bern through Swiss development cooperation. The university currently offers one of the two PhD programs available in Bolivia; it focuses on traditional knowledge and endogenous development. The university also offers three MSc-level programs focusing on genetic improvement, biotechnology, and agricultural production. The Higher University of San Andrés has offered a PhD in Rural Development since 2014 through an agreement with the National Autonomous University of Mexico; five MSc-level programs are offered focusing on agricultural economics, agricultural production, agroforestry, and irrigation engineering. Finally, the Gabriel René Moreno Autonomous University, located in Santa Cruz, offers seven MSc programs mainly focusing on plant production, natural resources, forestry, and sustainable development.

PISA was launched with the intention of developing a pool of well-qualified agricultural researchers in Bolivia. One of the main goals of the project is to build capacity by offering INIAF's researchers scholarships to foreign universities. The project is intended to facilitate MSc and PhD training in key areas, such as crop genetic improvement and biostatistics, and to fill skill gaps relating to research methodologies and scientific writing. Despite these advances, further efforts are needed to improve the quality and volume of academic opportunities offered in Bolivia.

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
Bolivia	**190.3**	**–1%**	**11%**	**58.9**	**3%**	**0.93%**
Peru	339.1	14%	13%	83.4	–12%	0.35%
Paraguay	209.5	36%	5%	26.8	32%	0.26%
Ecuador	149.4	46%	10%	27.3	9%[a]	0.18%

[a] For Ecuador, this overall spending growth is based on data for the 2010–2013 period. Note: Please visit *www.asti.cgiar.org/benchmarking/lac* to benchmark Bolivia with other countries in Latin America and the Caribbean or compare the country's key indicators with regional averages.

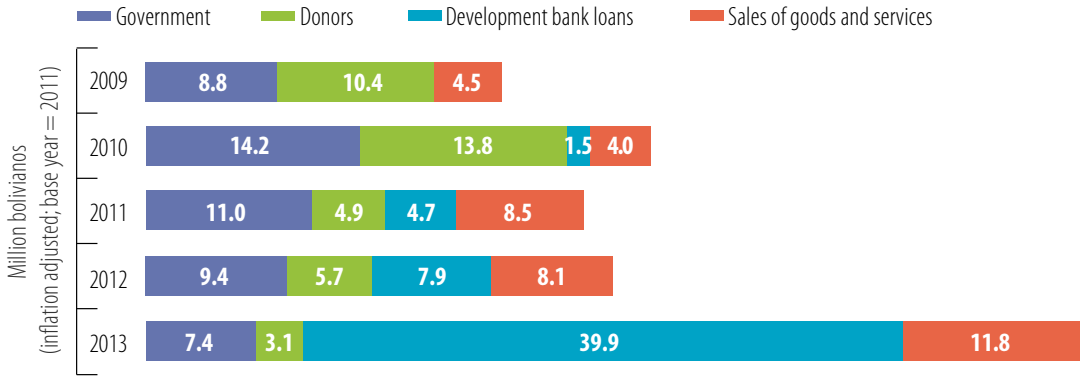
CHALLENGE

- The Bolivian government funds little more than the salary costs of agricultural research staff at government and higher education agencies. The costs of actual R&D programs, running the day-to-day operations of laboratories, and much-needed capital investments are chiefly funded by donors and development banks. Overdependence on this type of funding—which by nature is volatile and ad hoc—makes the country somewhat vulnerable to funding shocks.

POLICY OPTION

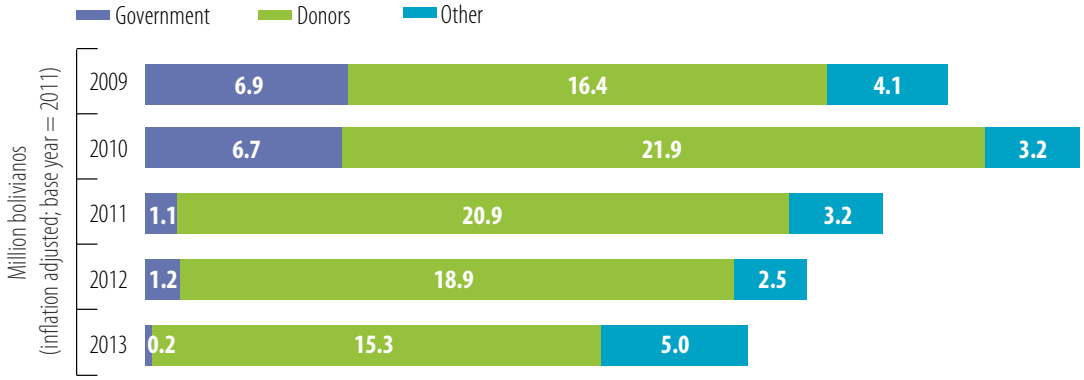
- The government needs to clearly identify long-term R&D priorities and design focused and coherent R&D programs accordingly. Donor and development bank funding needs to be closely aligned with these priorities. Sustainable levels of government funding are key, not only to secure researchers' salaries, but also to support the multitude of other costs associated with running viable research programs. More creative mechanisms also need to be explored to stimulate private funding for agricultural R&D.

INIAF's funding by source, 2009–2013



Direct government funding and direct bilateral donor support to INIAF declined in recent years. This can be explained by the 2012 launch of PISA, which consolidated government funding, and bilateral support from Denmark and Switzerland into one comprehensive World Bank loan supporting INIAF. Additionally, INIAF generates considerable funding through seed certification activities.

PROINPA's funding by source, 2009–2013



Regional government funding to PROINPA declined when the foundation was detached from SIBTA and INIAF took over its research activities on the genetics of grains and tubers. Total donor funding also declined following a decision by the Dutch government to reduce the number of partnership countries its development aid budget supports (which included Bolivia).

New varieties released by INIAF, 2007–2013

COMMODITY	NUMBER OF VARIETIES
Maize	2
Carrots	1
Onions	1
Potatoes	1
Sugar beet	1
Wheat	1

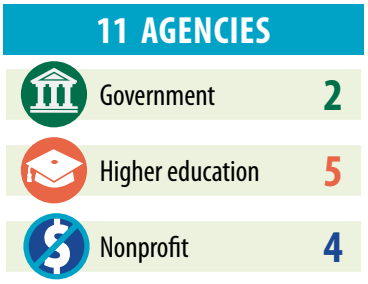
INIAF—Bolivia's main agricultural research agency involved in crop breeding in Bolivia—released seven new varieties and numerous other technologies during 2007–2013. Most of the country's new varieties are generated through alliances, either with international agricultural research centers, such as CIMMYT for maize and wheat, or with national agricultural research institutes in the region.

Knowledge transfer activities by INIAF, 2013

ACTIVITY/OUTPUT/ PARTICIPATION	NUMBER OF EVENTS/ OUTPUTS/PARTICIPANTS
Field days organized	48
Training events conducted	12
Brochures published	5
People trained	3,050

OVERVIEW OF BOLIVIA'S AGRICULTURAL RESEARCH AGENCIES

A total of 11 agencies perform agricultural R&D in Bolivia. The main government agency, INIAF (41 FTE researchers in 2013) accounts for only 21 percent of the country's agricultural researchers and focuses on crops, livestock, and forestry. In addition to its central office in La Paz, INIAF operates a research center in Cochabamba and 3 experiment stations. CIAT (13 FTEs) is the only other government agency involved in agricultural R&D. Its research is focused on crops, livestock, and natural resources. The 5 higher education agencies involved in agricultural R&D account for 41 percent of the country's total agricultural researchers (in FTEs). The Faculty of Agricultural Science and Forestry at the University of San Simon (48 FTEs) is by far the country's largest of these agencies and primarily focuses on pastures and forages, forestry, agricultural engineering, socioeconomics, and natural resources research. The Institute of Agricultural Research within the Faculty of Agricultural Science at the Gabriel René Moreno Autonomous University (5 FTEs) focuses mainly on beans, cassava, maize, sweet-potatoes, and tomatoes. Four nonprofit agencies conduct agricultural research: the Foundation for the Promotion and Research of Andean Products (39 FTEs), the Phytogenetic Research Center of Pairumani (8 FTEs), the Foundation for Technological and Agricultural Development in the Valleys (8 FTEs), and the Institute for Man, Agriculture, and Ecology (5 FTEs). Private-sector agricultural R&D in Bolivia is limited.



Note: Excludes private for-profit agencies.

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

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 Bolivia, visit* **www.asti.cgiar.org/bolivia**.

ACRONYMS USED IN THIS FACTSHEET

AgGDP	Agricultural gross domestic product
CIAT	Centre for Tropical Agricultural Research
FTE(s)	Full-time equivalent (researchers)
INIAF	National Institute for Agricultural and Forestry Research Innovation
PISA	Agricultural Innovation and Services Project
PPP(s)	Purchasing power parity (exchange rates)
PROINPA	Foundation for Promotion and Research of Andean Products
R&D	Research and development

ABOUT ASTI, IFPRI, AND INIAF

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 Agricultural and Forestry Research Innovation (INIAF)** is Bolivia's principal agricultural research agency; the institute falls under the Ministry of Rural Development and Land and focuses on crops, livestock, and forestry research.

ASTI/IFPRI and INIAF gratefully acknowledge participating agricultural R&D agencies for their contributions to the data collection and preparation of this country factsheet. ASTI also thanks the Inter-American Development Bank for its generous support of ASTI's work in South America and Mexico. This factsheet has been prepared as an ASTI output and has not been peer reviewed; any opinions are those of the authors and do not necessarily reflect the policies or opinions of IFPRI or INIAF.