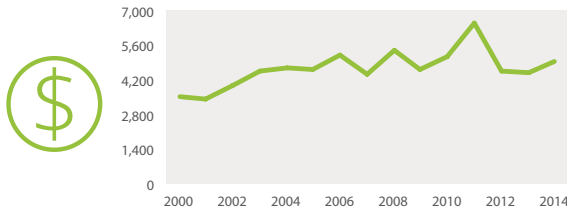


BENIN

Léa Vicky Magne Domgho, Marcellin Allagbé, and Gert-Jan Stads

AGRICULTURAL RESEARCH SPENDING



Million CFA francs
(2011 constant prices)

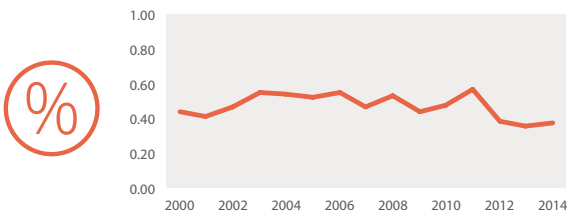
4,965.4

Million PPP dollars
(2011 constant prices)

23.2

	BENIN	BURKINA FASO	GHANA	TOGO
Million CFA francs (2011 constant prices)	4,965.4			
Million PPP dollars (2011 constant prices)	23.2	48.5	197.4	6.9

SPENDING INTENSITY

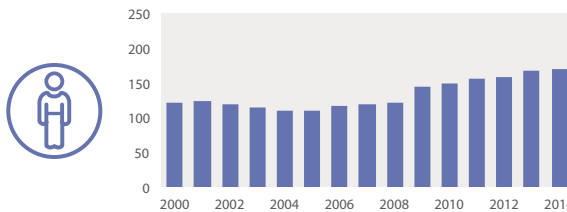


Agricultural research
spending as a share
of AgGDP

0.38%

	BENIN	BURKINA FASO	GHANA	TOGO
Agricultural research spending as a share of AgGDP	0.38%	1.01%	0.99%	0.17%

AGRICULTURAL RESEARCHERS



Full-time
equivalents

170.4

Share of researchers with
MSc and PhD degrees

99%

	BENIN	BURKINA FASO	GHANA	TOGO
Full-time equivalents	170.4	310.8	575.0	125.1
Share of researchers with MSc and PhD degrees	99%	99%	95%	96%

Notes: Data above are for 2014. Research conducted by the private for-profit sector is excluded from this factsheet due to lack of available data. Information on access to further resources, data procedures and methodologies, and acronyms and definitions are provided on Page 4. See www.asti.cgiar.org/Benin/directory for an overview of Benin's agricultural R&D agencies.



Erratic expenditures

Agricultural research expenditures rose by 41 percent between 2000 and 2014, largely driven by greater involvement in agricultural research by UAC and growth in INRAB's internally generated revenues. Yearly spending levels were highly variable over time, however. Government funding barely covered INRAB's salary bill, leaving the institute dependent on short-term donor-funded projects and revenues from seed sales. More recently, the situation has improved based on the government's 2016 approval of special funding for INRAB.



Aging pool of researchers

Civil service recruitment restrictions were in effect from 1986 until very recently. During this time, INRAB could only appoint contract-based researchers, but lack of project funding made this problematic. Consequently, INRAB currently lacks a critical mass of researchers in a number of key disciplines. As a side effect of the recruitment ban, more than 80 percent of INRAB's researchers are now over 50 years old and approaching the official retirement age of 60 years. Recruitment and training of young researchers is an urgent priority.



Inequitable remuneration

Unlike their university-based colleagues, INRAB's scientists are classified as public servants, not researchers, so their salaries are much lower. This, combined with universities' benefits associated with membership in CAMES (francophone Africa's higher education council), make it hard for INRAB to compete for qualified staff. However, based on their academic focus, universities have much weaker linkages with farmers, whereas INRAB conducts applied research relevant to farmers' specific needs. A decree to institute parity across sectors is expected to be approved in the near future.

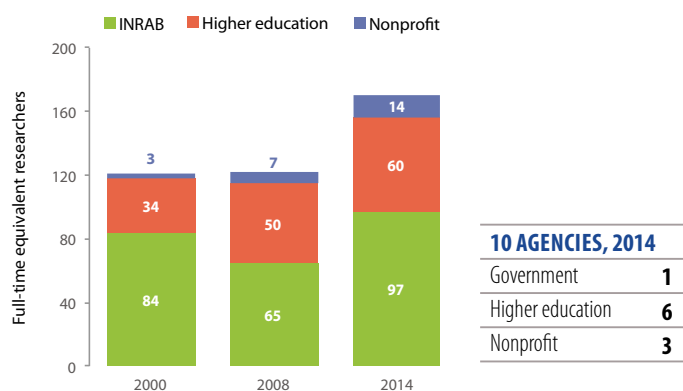


Capital investment needed

Most of INRAB's laboratories lack up-to-date research equipment and facilities, and the number of vehicles is inadequate. With low levels of capital investment, research infrastructure has deteriorated over time, understandably having negative impacts on the quality and quantity of research outputs. Investment in the rehabilitation of research centers (other than those currently being rehabilitated under WAAPP) is crucial to the effective conduct of research, to retaining and motivating researchers, and to the development of high-quality outputs.

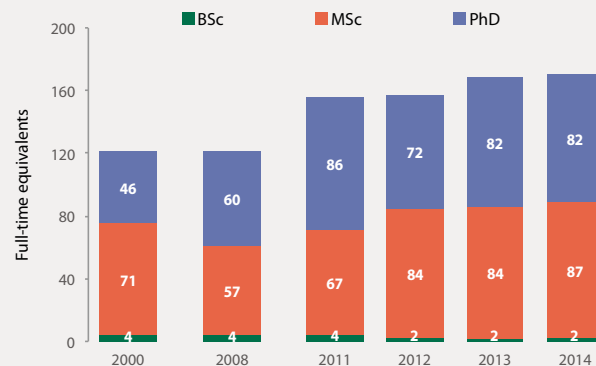
Institutional composition of Benin's agricultural research

INRAB's researcher numbers declined substantially during 2000–2008 in response to long-term recruitment restrictions, but they have rebounded in more recent years. As of 2014, INRAB employed 57 percent of Benin's agricultural researchers. The role of the higher education and nonprofit sectors in agricultural research has grown over time.



Benin's agricultural researchers by qualification level

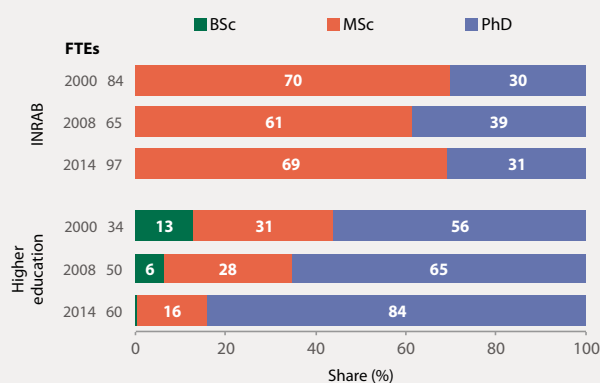
Benin's total number of agricultural researchers rose by 40 percent between 2008 and 2014. Growth was stronger among researchers qualified to the MSc level than among those qualified to the PhD level. As of 2014, 48 percent of Benin's researchers held PhD degrees, 51 percent held MSc degrees, and just 1 percent held BSc degrees.



Note: Data exclude BSc-qualified support staff who do not hold official researcher status.

Benin's agricultural researchers by sector and qualification level

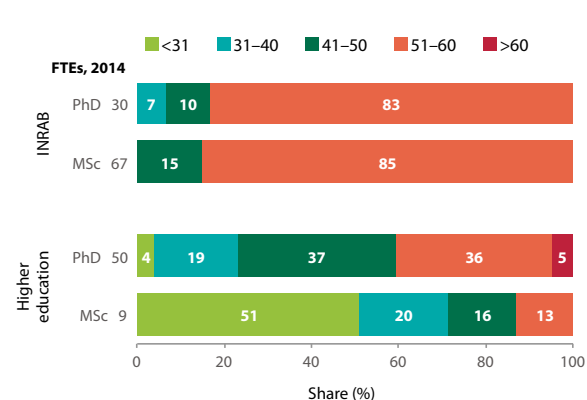
As of 2014, only 31 percent of INRAB's researchers held PhD degrees compared with 84 percent of researchers employed in the higher-education sector. Because INRAB's scientists are classified as public servants, not researchers, their salary levels are much lower. As a result, INRAB has difficulty attracting and retaining well-qualified researchers.



Note: Data exclude BSc-qualified support staff who do not hold official researcher status.

Benin's agricultural researchers by age bracket

Due to long-term recruitment restrictions, more than 80 percent of INRAB's agricultural researchers are over 50 years old. This situation is compounded by the institute's official retirement age of 60 years. In contrast, the retirement age at UAC is 65 years, and the university has strengthened its capacity with a continuous influx of young graduates.



Benin's MSc- and PhD-qualified agricultural researchers by discipline

Plant breeding, socioeconomics, zoology/entomology, and soil sciences constitute the most important disciplines among agricultural researchers in Benin. Given INRAB's aging pool of researchers, capacity gaps are imminent in a number of key disciplines. Future recruitment and training should therefore be based on a thorough skills gap analysis.

Agricultural researchers, 2014	FTEs		Share (%)	
	MSc	PhD	MSc	PhD
Plant breeding/genetics (incl. biotechnology)	13	7	15	8
Plant pathology	–	1	–	2
Plant physiology	1	1	1	2
Botany	–	2	–	2
Seed science and technology	2	1	2	1
Other crop sciences	0.5	2	1	2
Animal breeding/genetics	–	1	–	1
Animal husbandry	–	3	–	4
Animal nutrition	–	1	–	1
Poultry	–	0.3	–	0.4
Veterinary medicine	4	2	5	2
Zoology/entomology	5	9	6	11
Other animal and livestock	–	1	–	1

Agricultural researchers, 2014	FTEs		Share (%)	
	MSc	PhD	MSc	PhD
Forestry and agroforestry	4	1	5	1
Fisheries and aquatic resources	–	2	–	2
Soil sciences	7	6	8	8
Natural resources management	3	4	3	5
Water and irrigation management	–	0.3	–	0.4
Ecology	–	1	–	1
Biodiversity conservation	0.3	7	0.3	8
Food sciences and nutrition	3	6	3	8
Socioeconomics (incl. agricultural economics)	9	11	10	14
Extension and education	1	3	1	4
Other sciences	34	8	40	10
Total	87	82	100	100

Note: Data are estimates based on an agency sample representing 92 percent of the total number of FTE researchers

Benin's share of female researchers

As of 2014, 15 percent of Benin's agricultural researchers were female, a marked increase over the extremely low level of 5 percent recorded in 2008. Despite the country's aging pool of agricultural researchers, about one-third of those in their 20s and 30s are female.



By qualification level, 2014

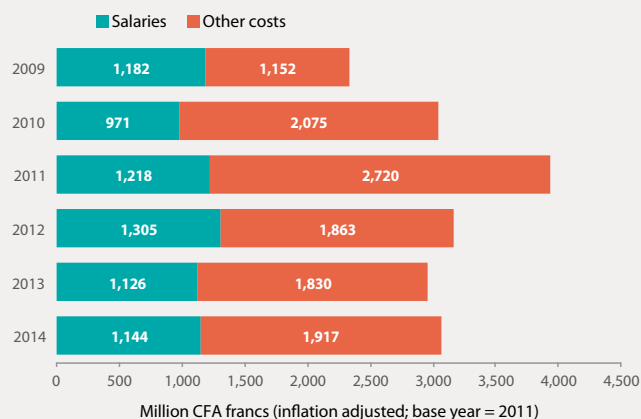
MSc	15%	PhD	15%
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By age bracket, 2014

< 41	32%	41–50	15%	> 50	7%
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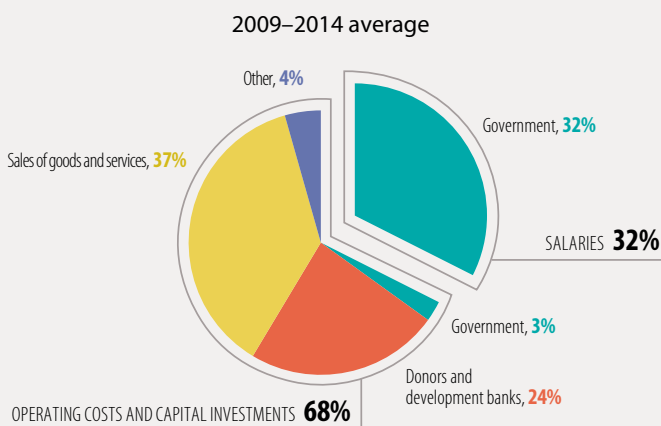
INRAB's spending by cost category

During 2009–2014, salaries accounted for about one-third of INRAB's expenditures. The institute's nonsalary expenditures (that is, operating and program costs, as well as capital investments) fluctuated considerably from year to year based on variations in donor funding and revenues generated through the sale of goods and services.



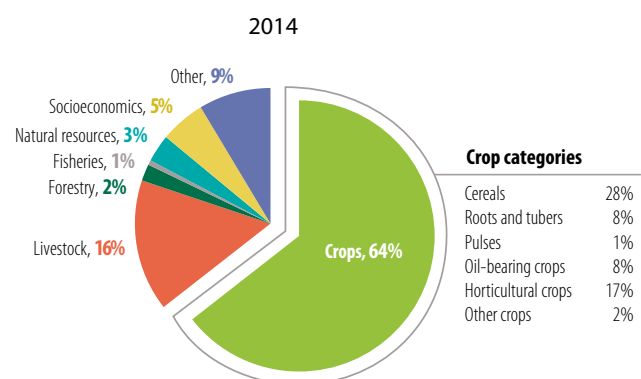
INRAB's funding and spending compared

During 2009–2014, government funding covered INRAB's salary bill, but little else (payments to contract-based researchers are derived from the institute's operating budget). INRAB generated 37 percent of its funding through the sale of rice, maize, cowpea, and palm oil seed. Donor and development bank funding averaged 24 percent of the total.



Benin's agricultural researchers by area of focus

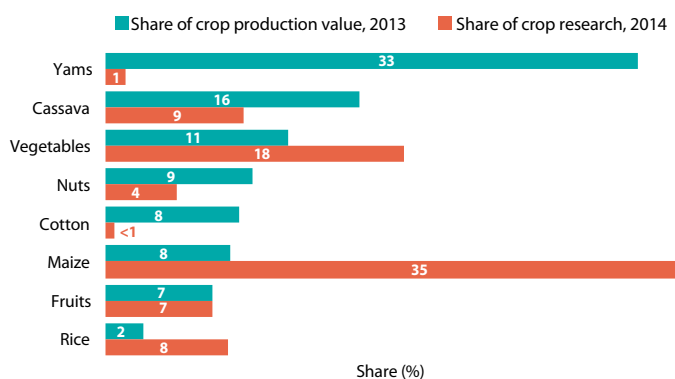
In 2014, close to two-thirds of Benin's agricultural researchers focused on crops. Livestock research represented 16 percent, and socioeconomics 5 percent. Maize is the most researched crop, which is not surprising given that Benin specializes in maize research under WAAPP. Other important commodities include vegetables, cassava, rice, and fruits.



Crop categories	
Cereals	28%
Roots and tubers	8%
Pulses	1%
Oil-bearing crops	8%
Horticultural crops	17%
Other crops	2%

Alignment of research focus with production value, selected crops

Even though yams account for a third of Benin's total value of crop production, just 1 percent of crop researchers conduct research on yams. Similarly, cotton and cassava are researched less intensively than their crop values would indicate. Maize, rice, and vegetables, in contrast, are researched more than production values alone would warrant.



INRAB's recently released crop varieties

INRAB released 17 new crop varieties during 2012–2014, including 11 maize varieties, 3 cotton varieties, and 3 horticultural varieties. Most of these were developed by CGIAR centers and adapted to local conditions by INRAB. Lack of farmer access to seed and poor dissemination practices have contributed to low adoption rates for these new varieties.

Crop	Number of varieties, 2012–2014
Maize	11
Cotton	3
Tomato	2
Gboma (African eggplant)	1
Total	17

Resources for Benin

This factsheet presents recent data on the performance of agricultural research in Benin, 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 Benin 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 African countries.



ASTI's **data download tool** provides access to more in-depth ASTI datasets and graphs for Benin and many other countries.



ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Benin, along with their locations and key agency-level indicators.



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 **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

- AgGDP** agricultural gross domestic product
- CAMES** African and Malagasy Council for Higher Education
- FTE(s)** full-time equivalent(s)
- INRAB** National Agricultural Research Institute of Benin
- PPP(s)** purchasing power parity (exchange rates)
- R&D** research and development
- UAC** University of Abomey Calavi
- WAAPP** West Africa Agricultural Productivity Program

ABOUT ASTI, IFPRI, AND INRAB

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 Research Institute of Benin (INRAB)** is the country's principal agricultural research agency. It falls under the Ministry of Agriculture, Livestock, and Fisheries and conducts research on crops, livestock, postharvest technology, socioeconomics, forestry, agricultural engineering, and natural resources.

ASTI/IFPRI and INRAB gratefully acknowledge participating agricultural R&D agencies for their contributions to the data collection and preparation of this factsheet. ASTI also acknowledges the Bill & Melinda Gates Foundation and CGIAR Research Program on Policies, Institutions, and Markets for their generous support of ASTI's work in Africa south of the Sahara. 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 INRAB.

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