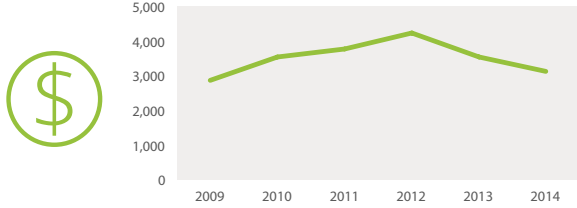




CHAD

Gert-Jan Stads, Allarangaye Moundibaye, and Léa Vicky Magne Domgho

AGRICULTURAL RESEARCH SPENDING



Million CFA francs
(2011 constant prices)

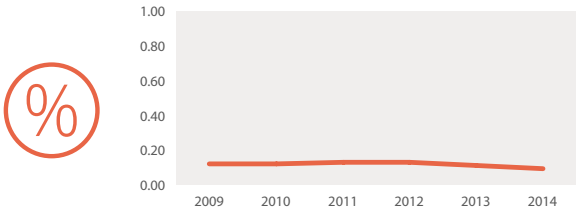
3,136.8

Million PPP dollars
(2011 constant prices)

12.5

	CHAD	BURKINA FASO	MALI	NIGER
Million CFA francs (2011 constant prices)	3,136.8			
Million PPP dollars (2011 constant prices)	12.5	48.5	37.9	14.5

SPENDING INTENSITY

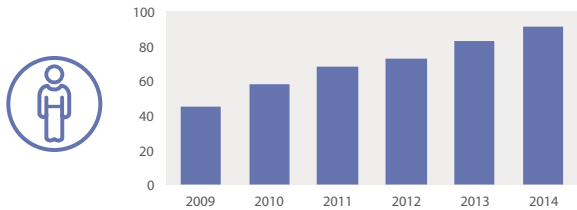


Agricultural research
spending as a share
of AgGDP

0.09%

	CHAD	BURKINA FASO	MALI	NIGER
Agricultural research spending as a share of AgGDP	0.09%	1.01%	0.38%	0.23%

AGRICULTURAL RESEARCHERS



Full-time
equivalents

90.7

Share of researchers with
MSc and PhD degrees

98%

	CHAD	BURKINA FASO	MALI	NIGER
Full-time equivalents	90.7	310.8	285.7	182.0
Share of researchers with MSc and PhD degrees	98%	99%	96%	89%

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/Chad/directory for an overview of Chad's agricultural R&D agencies.



Funding fluctuations

Government funding to public institutes, including agricultural research agencies, is heavily dependent on the country's oil revenues, which fell sharply between 2012 and 2014. During that time, Chad's agricultural research expenditures contracted by about 25 percent. In order to mitigate future funding shocks, it is important that research agencies continue to diversify their funding base, in particular by generating income internally through the sale of goods and services.



Serious underinvestment

In 2014, Chad invested just 0.09 percent of its AgGDP in agricultural research—a fraction of the 1 percent minimum level recommended by the African Union and the United Nations. If agricultural research in Chad is to become more productive and efficient, higher levels of funding must be secured. The government needs to clearly identify its long-term agricultural research priorities and secure stable and sustainable funding for R&D programs. Creative mechanisms to stimulate private-sector research funding should also be explored.



Training the next generation

The number of agricultural researchers employed in Chad doubled during 2009–2014, but this growth almost entirely occurred among researchers qualified to the MSc-degree level. As of 2014, ITRAD employed just 7 PhD-qualified researchers, all of whom are approaching retirement age. The institute particularly lacks breeders and soil scientists. France and the European Union have funded PhD training for five researchers at ITRAD and MSc training for two researchers at universities in West and Central Africa and France.



Enhanced livestock research

Chad's main livestock research agency, IRED, was established from a former laboratory in 2012. This reform effected important administrative changes, including higher salary levels for researchers, and led to substantial staff recruitment, causing researcher numbers at IRED to double between 2011 and 2014.

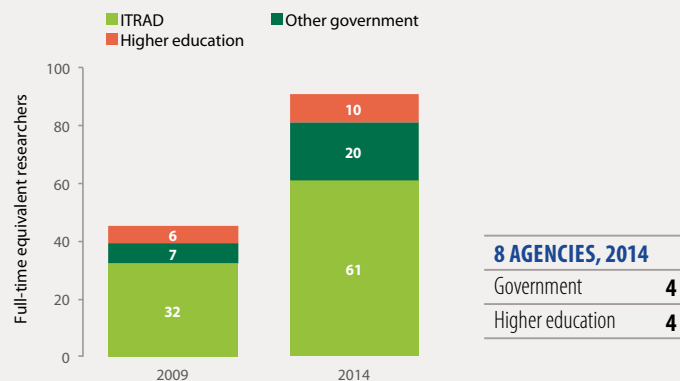
Distribution of Chad's agricultural researchers across agencies

Eight agencies are involved in agricultural research in Chad: four are government agencies, and four are higher education agencies. ITRAD is by far the largest agency, accounting for two-thirds of the country's FTE researchers in 2014. IRED—the main livestock research agency—is the second largest, employing 14 FTEs in 2014.

Agricultural researchers, 2014	FTEs
Government agencies	
ITRAD	61
IRED	14
National Research Support Center	3
National Nutrition and Food Technology Center	3
Higher education agencies	
Sarh University; Institute of Agricultural and Environmental Sciences	3
Adam Barka University; Biology Department	3
University of N'Djaména; Faculty of Exact and Applied Sciences	3
University of Doba; Department of Chemistry, Biology, and Geology	1
Total	91

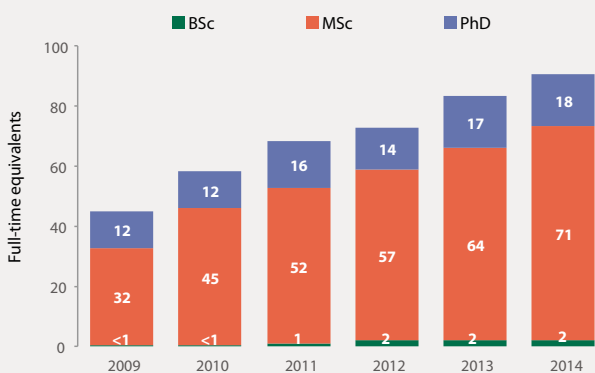
Institutional composition of Chad's agricultural research

Chad's total number of agricultural researchers doubled between 2009 and 2014, from 45 to 91 FTEs. Growth was strong among both government and higher education agencies. In 2014, ITRAD accounted for two-thirds of the country's FTE agricultural researchers.



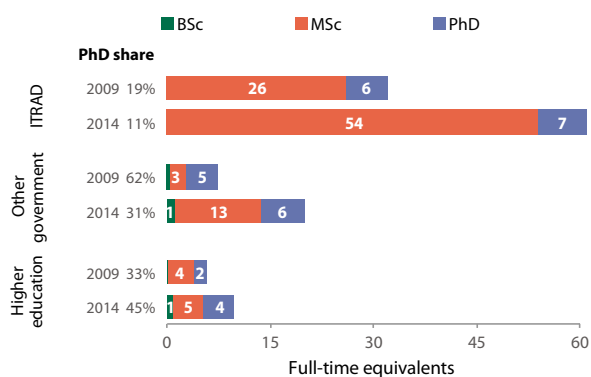
Chad's agricultural researchers by qualification level

Growth in the number of agricultural researchers in Chad during 2009–2014 was largely driven by an influx of MSc-qualified researchers. The number of PhD-qualified agricultural researchers also rose substantially during this timeframe, from 12 to 18 FTEs. Very few BSc-qualified scientists are officially classified as researchers; most are categorized as support staff.



Agricultural researchers by sector and qualification level

In 2014, only 7 of the 61 agricultural researchers employed at ITRAD held PhD degrees, a marginal increase from the institute's 2009 level. Chad's seven other government and higher education agencies combined employed 11 FTE researchers with PhD degrees, 6 of whom were employed at IRED.



Chad's share of female researchers

In 2014, only 6 percent of Chad's agricultural researchers were female, up from 5 percent in 2011. This proportion is extremely low considering the large share of women in the country's agricultural labor force. Female participation was higher among BSc-qualified researchers and among those in the lower age brackets.



By qualification level, 2014

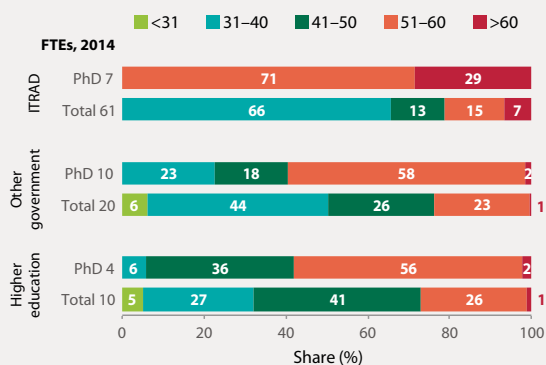
BSc	18%	MSc	7%	PhD	0%
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By age bracket, 2014

< 41	9%	41–50	7%	> 50	3%
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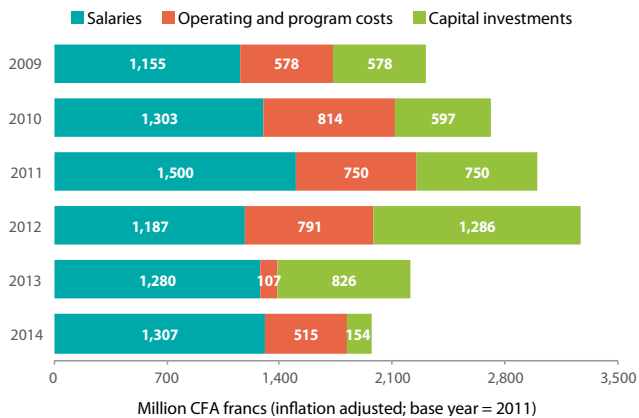
Chad's agricultural researchers by age bracket

The vast majority of Chad's agricultural researchers with PhD degrees are in their 50s or 60s, and approaching the mandatory retirement age of 65 years. This situation is particularly severe at ITRAD. It is therefore crucial that younger MSc-qualified researchers are given the opportunity to undertake PhD training.



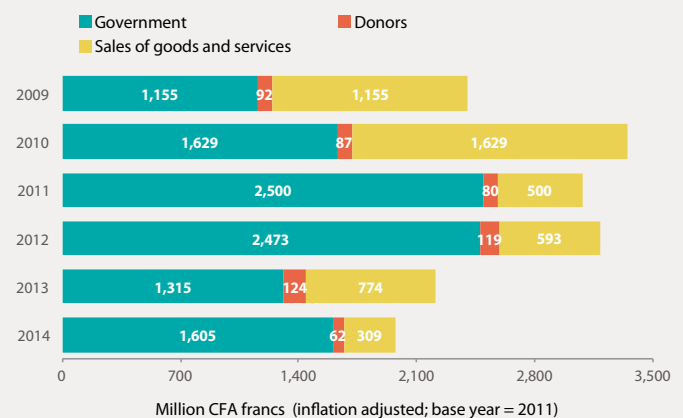
ITRAD's spending by cost category

After years of steady growth, ITRAD's spending fell sharply during 2013–2014 following a severe decline in the country's oil revenues. The institute's salary-related expenditures remained relatively stable, but its spending on day-to-day operations, research programs, and capital infrastructure were significantly reduced.



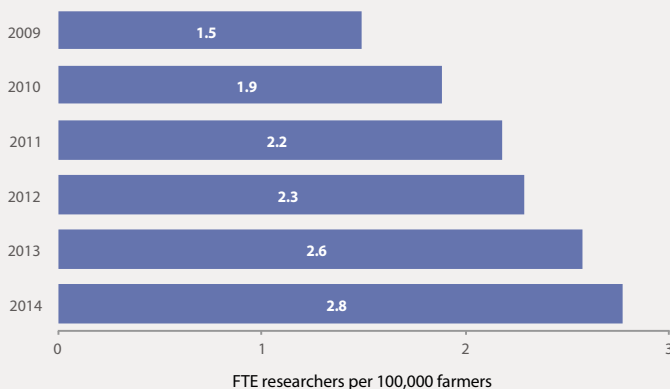
ITRAD's funding sources

Two-thirds of ITRAD's funding during 2009–2014 was derived from the government, although fluctuations in the country's oil revenues caused funding contractions in 2013 and 2014. Seed sales are another important (but declining) source of ITRAD's funding, and donors—mostly through CORAF/WECARD and AfricaRice—also contribute a small share.



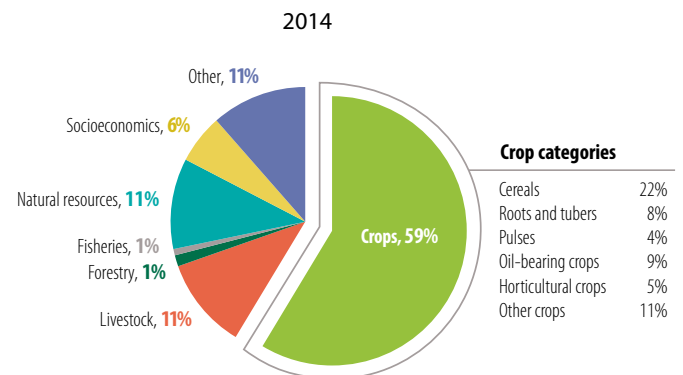
Agricultural researchers per 100,000 farmers

The number of agricultural researchers per 100,000 farmers in Chad rose gradually during 2009–2014, from 1.5 to 2.8. Despite this increase, the ratio is still very low compared with most African countries, especially considering the importance of agriculture and livestock to the national economy and as a source of employment.



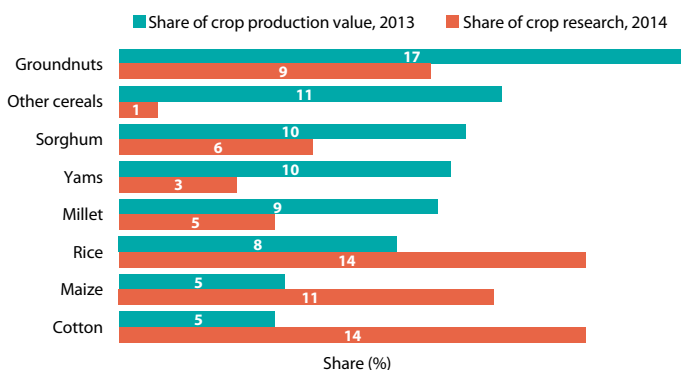
Distribution of researchers by area of focus

In 2014, 59 percent of agricultural researchers in Chad conducted crop research, while livestock and natural resources research each accounted for 11 percent. The most researched crops include the cereals rice, maize, sorghum, and millet, along with groundnuts, cassava, cotton, and fruits.



Alignment of research focus with production value, selected crops

While groundnuts represented 17 percent of Chad's crop production value in 2013, only 9 percent of crop researchers conducted groundnut-related research in 2014. Similarly, yams, sorghum, millet, and other cereals report lower levels of research than their crop values would indicate. In contrast, high levels of research are conducted on rice, maize, and cotton based on their production values.



ITRAD's recent peer-reviewed publications

ITRAD published an average of 1.7 journal articles per year during 2012–2014, primarily in international journals. Publications per researcher averaged 0.03 per year, which is extremely low compared with most other African countries.

Type	Number of publications, 2012–2014 annual average	Per FTE researcher
Journal articles		
International	1.0	0.019
Regional	0.3	0.006
National	0.3	0.006
Books	–	–
Book chapters	–	–
Total	1.7	0.032

Resources for Chad

This factsheet presents recent data on the performance of agricultural research in Chad, 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 Chad 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 Chad and many other countries.



ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Chad, 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
CORAF/ WECARD	West and Central African Council for Agricultural Research and Development
FTE(s)	full-time equivalent(s)
IREC	Livestock Development Research Institute
ITRAD	Chadian Institute of Agricultural Research for Development
PPP(s)	purchasing power parity (exchange rates)
R&D	research and development

ABOUT ASTI, IFPRI, AND ITRAD

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 **Chadian Institute of Agricultural Research for Development (ITRAD)** is Chad's principal agricultural research agency. It falls under the Ministry of Agriculture and the Environment and carries out research on crops, forestry, fisheries, and natural resources.

ASTI/IFPRI and ITRAD 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 ITRAD.