



CHAD

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

KEY INDICATORS, 2009–2011

Total Public Agricultural Research Spending	2009		2011
CFA francs (million constant 2005 prices)	2,485.9		2,711.6
PPP dollars (million constant 2005 prices)	12.0		13.0
Overall Growth		9%	
Total Number of Public Agricultural Researchers			
Full-time equivalents (FTEs)	93.3		123.3
Overall Growth		32%	
Agricultural Research Intensity			
Spending as a share of agricultural GDP	0.95%		0.90%
FTE researchers per 100,000 farmers	3.19		4.11

Note: Acronyms, definitions, and an overview of agricultural R&D agencies are available on page 4.

▶ Chad's government is highly committed to funding agricultural R&D, such that the country's research intensity ratio is close to the 1-percent target recommended by NEPAD and the United Nations. Unlike most West and Central African countries, donor funding is negligible.

▶ The number of researchers employed at ITRAD, the main agricultural research agency in the country, increased rapidly in recent years, although this growth was largely among researchers qualified to the MSc- and BS-degree levels.

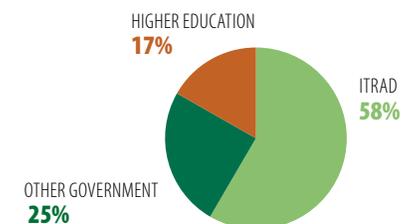
▶ The bulk of Chad's PhD-qualified agricultural scientists are employed at the University of N'Djamena; they conduct very little research because most of their time is taken up with teaching.

FINANCIAL RESOURCES, 2011

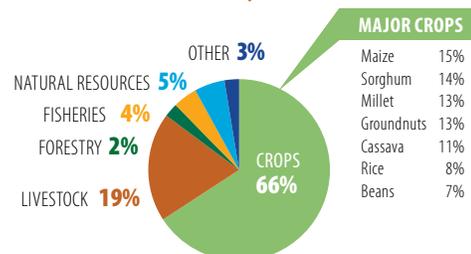
Spending Allocation	
Salaries	46%
Operating and program costs	30%
Capital investments	24%
Funding Sources	
Government	79%
Donors	4%
Sales of goods/services	17%

Note: Shares are based on data from ITRAD and LRVZ.

INSTITUTIONAL PROFILE, 2011



RESEARCH FOCUS, 2011



MAJOR CROPS

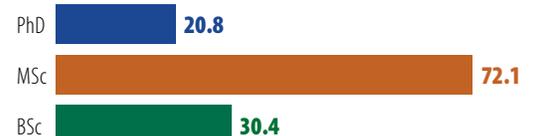
Maize	15%
Sorghum	14%
Millet	13%
Groundnuts	13%
Cassava	11%
Rice	8%
Beans	7%

Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 20 percent of total crop researchers focused on a wide variety of other crops.

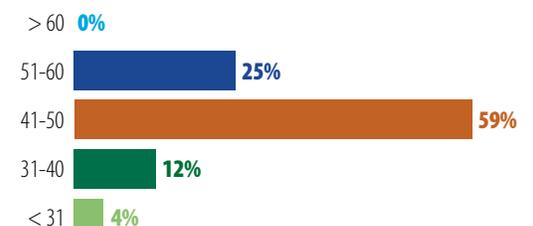
RESEARCHER PROFILE, 2011



Number by qualification (FTEs)



Share by age group (years)



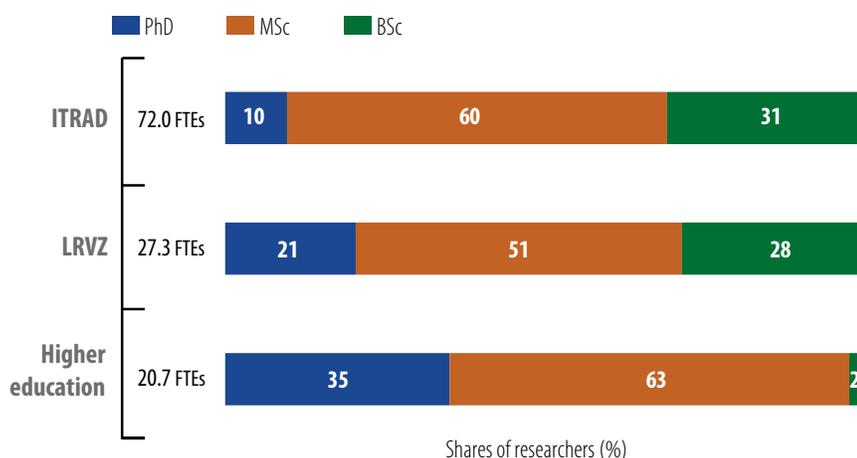
CHALLENGE

- Over the past decade, ITRAD has lost a large number of PhD-qualified researchers who either passed away, retired, or left the institute for better paying positions elsewhere. In 2012, ITRAD employed just 7 PhD-qualified researchers. The number of current researchers, together with their mix of skills, is insufficient for the institute to effectively fulfill its mandate, as is reflected by the relatively low number of research outputs the institute produces.

POLICY RESPONSE

- In 2012, ITRAD launched a government-funded training plan based on a thorough skills gap analysis, and the first set of ITRAD researchers are currently pursuing MSc and PhD training abroad. It will be crucial that the appropriate conditions and incentives are established to encourage the long-term commitment of these researchers to ITRAD upon their return. Bridging the existing salary gap between government and university-based researchers would be a necessary first step.

Distribution of agricultural researchers by degree, 2011



ITRAD's pool of researchers is the least highly qualified among Chad's agricultural R&D agencies, and its share of PhD-qualified researchers (10 percent) is relatively low compared with most other national agricultural research institutes across Africa. In contrast, more than one-third of faculty staff at Chad's three agriculture-related higher education agencies hold PhD degrees. Given their primary focus on teaching, they only spend a limited amount of their time on agricultural R&D, however.

TRAINING AND EXPANDING ITRAD'S POOL OF RESEARCHERS

Although ITRAD employs a large number of crop scientists, it lacks highly qualified specialists in a number of key commodities and thematic areas, including soil science, biometrics, and socioeconomics. The majority of ITRAD's current pool of PhD-qualified researchers is between 45 and 55 years old, and given the mandatory retirement age of 65 years, ITRAD is already making the necessary recruitment and training arrangements to address current and future skills gaps. Given the relatively high salaries offered to ITRAD researchers compared with other national agricultural research institutes in francophone countries in the region, ITRAD hopes to fill some of its most critical vacancies with foreign researchers.

Currently, Chad's universities do not offer PhD training in agricultural sciences, so researchers who want to further their career have no choice but to travel abroad. Another aspect that sets ITRAD apart from many national agricultural research institutes in West and Central Africa is the fact that ITRAD has a substantial training budget, allowing young scientists to undertake long- and short-term training as the institute sees fit. Currently, ITRAD is supporting PhD training for two scientists at universities in Algeria and Burkina Faso, and MSc training for an agroeconomist and a soil scientist at universities in France and Senegal, respectively. In addition to internally funded training, two other ITRAD researchers are currently undertaking PhD training in Cameroon and France with financial support from the French government.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS

	Total number of researchers, 2011 (FTEs)	Growth in number of researchers, 2008–2011	Share of PhD researchers, 2011 (FTEs)
Chad	123.3	32% ^a	17%
Sudan ^b	932.8	-3%	37%
Burkina Faso	218.0	-12%	48%
Mali	307.0	-4%	33%

^a For Chad, this growth is based on the 2009–2011 period. ^b Sudan data refer to 2012 or the 2008–2012 period.

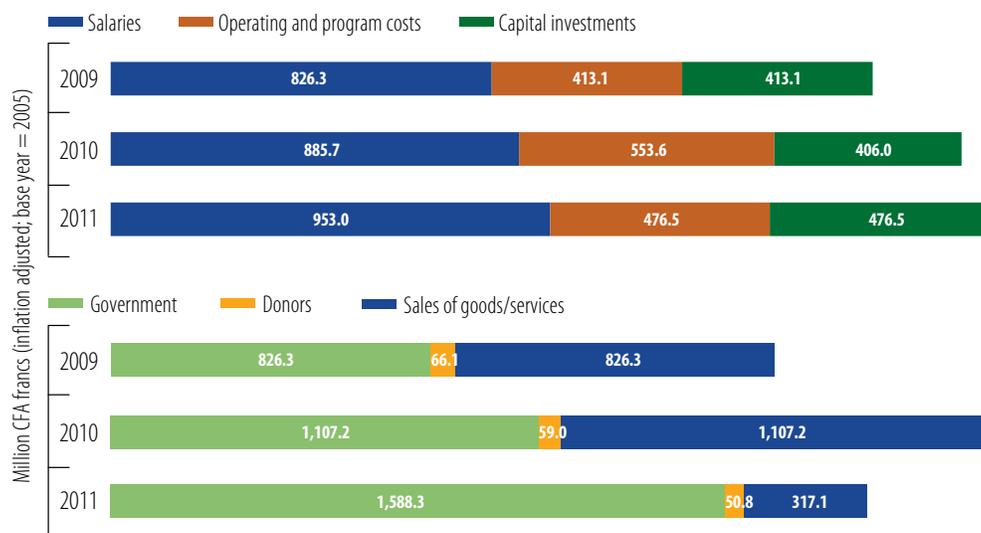
OBSERVATION

- ▶ Unlike most countries in West and Central Africa, agricultural R&D in Chad receives considerable government funding, not only for salaries, but also for expenses related to running R&D programs and investing in infrastructure. Chad's recent oil boom, in addition to the President's personal commitment to funding agricultural R&D, are the drivers of this trend.

POLICY OPTION

- ▶ Despite sustained funding from the national government, further investment is needed in specific areas to address the country's challenges in terms of malnutrition, rapid population growth, and climate change. In addition to staff training, capital investments in a number of key areas are urgently needed, including rehabilitation of ITRAD's existing laboratories, the establishment of a new biotechnology laboratory, and improving the institute's Internet access and web presence.

ITRAD's spending by cost category and funding by source, 2009–2011



Large inflows of foreign currencies following Chad's oil boom have allowed a rapid increase in government funding for agricultural R&D over time. In addition to solid government support, ITRAD differs from most agricultural research agencies across West and Central Africa in two more key ways: the institute generates a relatively large share of funding through the sale of goods and services, but donor funding (mostly through CORAF/WECARD and AfricaRice) does not play a significant role.

▶ FUNDING DIVERSIFICATION TO ABSORB POTENTIAL SHOCKS IN FUTURE OIL REVENUE

As recent examples such as Gabon and Sudan have shown, an overreliance on oil revenues to finance agricultural R&D can cause abrupt shocks in overall funding levels. In these countries, falling production levels and fluctuations in global oil prices have necessitated extensive government budget cuts across all public institutes, including agricultural R&D agencies. In order to prevent ITRAD from experiencing similar potential funding shocks in the future, it is important that the institute continues the trend of diversifying its funding base, in particular by generating funding internally through the sale of goods and services. In 2013, the institute succeeded in generating more than a billion CFA francs through the sale of cereal and horticulture seeds and by providing on-demand research and tests for Cotontchad, the state-owned cotton company.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*

	Total spending, 2011 (million 2005 PPP dollars)	Overall spending growth, 2008–2011	Spending as a share of AgGDP, 2011
Chad	13.0	9%^c	0.90%
Sudan ^d	30.0	-40%	0.19%
Burkina Faso	25.4	29%	0.42%
Mali	33.6	33%	0.61%

^c For Chad, this growth is based on the 2009–2011 period. ^d Sudan data refer to 2012 or the 2008–2012 period.

OVERVIEW OF CHAD'S AGRICULTURAL RESEARCH AGENCIES

Seven public agencies conduct agricultural R&D in Chad. ITRAD (employing 72 FTE researchers in 2011) is the largest by far and accounted for close to 60 percent of Chad's agricultural FTE researchers in 2011. ITRAD is headquartered in N'Djamena and operates three regional centers in Faya (Sahara), Chagoua (Sahelian savanna), and Bébédjia (Sudanian savanna). ITRAD's researchers focus on crops, forestry, fisheries, and natural resources. Also headquartered in N'Djamena, LRVZ (27 FTEs in 2011) is the country's principal agency for livestock and veterinary research. Two other government agencies conduct (limited) agricultural research: CNAR (3 FTEs) focuses on a variety of crops, and CNNTA (1 FTE) focuses on food processing and food safety. The Faculty of Applied Sciences of the University of N'Djamena (14 FTEs) is the largest higher education agency involved in agricultural R&D in Chad. It focuses on a range of research themes including natural resources, poultry, fisheries, and oil-bearing crops. Two other higher education agencies—the Department of Biology of the University Adam Barka d'Abeché (2 FTEs) and the University Institute of Agricultural and Environmental Sciences of Sarh (5 FTEs)—conduct limited crop research. There are no nonprofit agencies or private-sector companies involved in agricultural research in Chad.



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

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.
- ▶ **Public agricultural research** includes research conducted by government agencies, higher education agencies, and nonprofit institutions.
- ▶ 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 2005 local currencies and **2005 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 Chad, visit www.asti.cgiar.org/chad.

ACRONYMS USED IN THIS FACTSHEET

CNAR	National Research Support Center
CNNTA	National Center of Nutrition and Food Technology
CORAF	West and Central African Council for Agricultural Research and Development
FTE(s)	Full-time equivalent (researchers)
ITRAD	Chadian Institute of Agricultural Research for Development
LRVZ	Veterinary and Zootechnic Research Laboratory
NEPAD	New Partnership for Africa's Development
PPP(s)	Purchasing power parity (exchange rates)

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 R&D agency. It falls under the Ministry of Agriculture and Irrigation 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 country factsheet. ASTI also thanks the Bill and Melinda Gates Foundation for its 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.