

# MADAGASCAR

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## KEY INDICATORS, 2000–2011

Total Public Agricultural Research Spending	2000		2008		2011
Ariary (million constant 2005 prices)	5,538.6		6,787.1		4,979.8
PPP dollars (million constant 2005 prices)	8.5		10.4		7.7
<b>Overall Growth</b>		<b>23%</b>		<b>-27%</b>	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	197.1		190.4		193.1
<b>Overall Growth</b>		<b>-3%</b>		<b>1%</b>	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.23%		0.25%		0.16%
FTE researchers per 100,000 farmers*	3.76		2.80		2.58

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

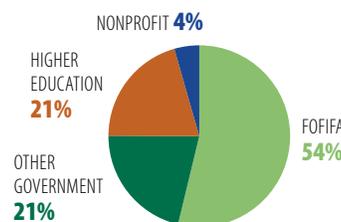
- ▶ Madagascar's agricultural R&D spending fell by roughly a quarter during 2008–2011 (in inflation-adjusted terms), largely driven by declines at CNARP, CNRO, and FIFAMANOR. FOFIFA's spending remained relatively stable over time.
- ▶ Spending just 0.16 percent of agricultural GDP on agricultural R&D in 2011, Madagascar's agricultural research intensity ratio is one of the lowest in Africa.
- ▶ Agricultural R&D capacity, in terms of the number of agricultural researchers, has remained relatively stable over time; however, maintaining high-quality research and avoiding capacity erosion will be a crucial challenge in the coming years because large numbers of experienced senior scientists are set to retire.

## FINANCIAL RESOURCES, 2011

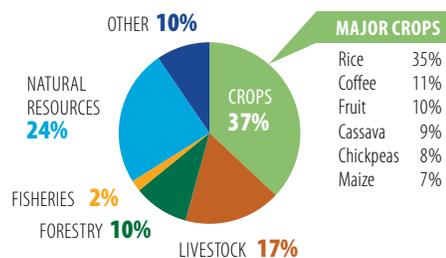
Spending Allocation	
Salaries	51%
Operating and program costs	49%
Capital investments	0%
Funding Sources	
Government	23%
Donors	73%
Sales of goods/services	4%

Note: Shares are based on data for FOFIFA only; spending allocation data exclude expatriate salaries; donor funding includes an estimation of CIRAD in-kind support.

## INSTITUTIONAL PROFILE, 2011



## RESEARCH FOCUS, 2011



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.

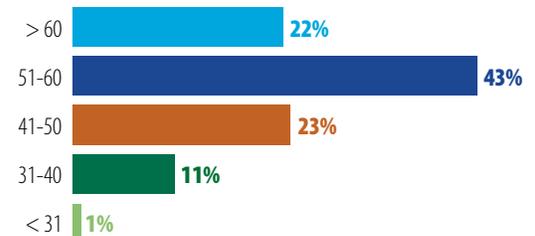
## RESEARCHER PROFILE, 2011



### Number by qualification (FTEs)



### Share by age group (years)



Note: Expatriate researchers are excluded.

## CHALLENGE

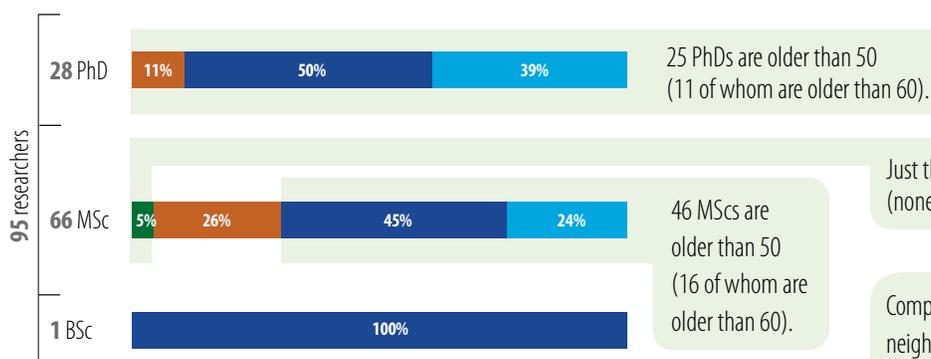
▶ Madagascar's pool of agricultural researchers is aging rapidly. In 2011, 65 percent of the country's agricultural researchers and three-quarters of FOFIFA's researchers were over 50 years old. Given that 60 is the official retirement age for civil servants, the recruitment and training of the next generation of agricultural researchers is an urgent priority.

## SOLUTION

▶ Parliament has passed a law that allows public researchers to remain employed until the age of 70 years, upon the official approval of the College of Researchers and Teachers and of institute directors (subject to a yearly medical test). In addition, in 2012 FOFIFA received approval from the Ministry of Agriculture to recruit 10 young agronomists and veterinary scientists with MSc degrees. More recruitment and training, however, is needed in the coming years if Madagascar is to maintain its human resource capacity in agricultural R&D.

### Distribution of FOFIFA's researchers by age bracket and degree, 2011

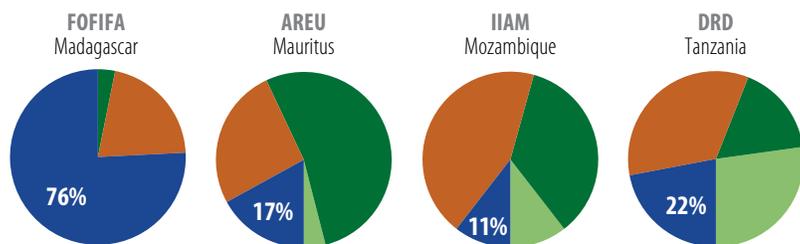
<31   31-40   41-50   51-60   >60



Note: Data exclude expatriate researchers.

### FOFIFA's age structure imbalances put into perspective

<31   31-40   41-50   >50



Note: All data are for 2011. The official retirement ages at AREU and DRD are 65 and 60 years, respectively; the official retirement age at IIAM is 65 years for men and 60 years for women.

Compared with national agricultural research institutes in neighboring countries and in Africa more generally, FOFIFA has by far the oldest pool of agricultural researchers. Maintaining a balanced age structure is crucial to ensuring the long-term continuity of agricultural research. FOFIFA will need to clearly define its long-term recruitment and training needs based on a thorough analysis of the current skill set of its researchers, and how capacity losses over time are likely affect the implementation of future research programs. Given a longstanding freeze on recruitment, the recent approval by the Ministry of Agriculture for FOFIFA to recruit 10 MSc researchers is a positive first step, but more recruitment and training are urgently needed. Sufficient levels of sustainable long-term government and donor funding need to be made available in the coming years to ensure that these short-term gains in human resource capacity can be maintained, built upon, and ultimately translated in tangible research results over time.

## 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)
Madagascar	193.1	1%	42%
Mauritius	150.7	-8%	13%
Mozambique	313.6	22%	8%
Malawi	162.3	41%	20%

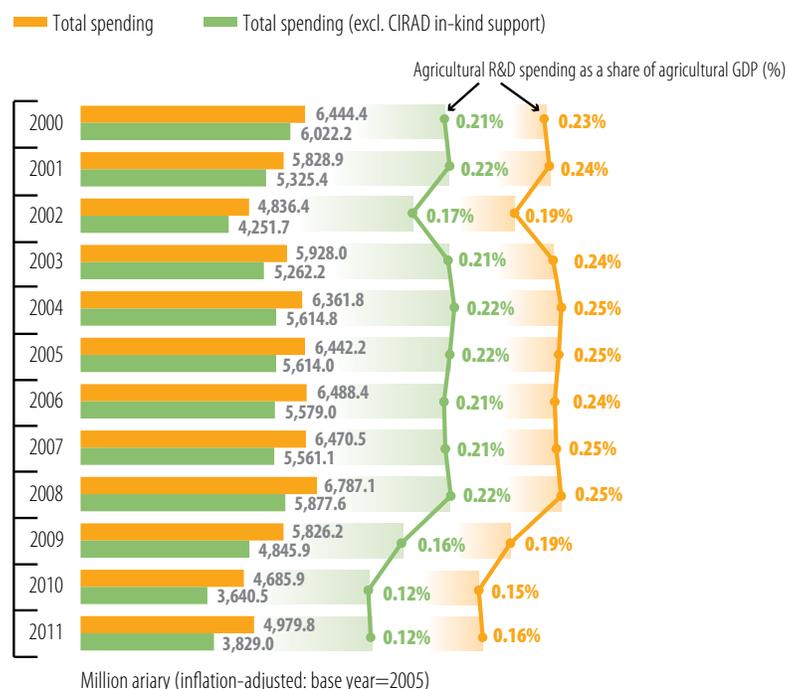
## CHALLENGE

- ▶ Madagascar's agricultural R&D spending has not kept pace with high inflation levels in recent years. As a result, spending levels have fallen considerably in real terms. In 2011, the country spent just 0.16 percent of its agricultural GDP on agricultural R&D, which is six times lower than the 1-percent target recommended by the United Nations and NEPAD.

## WAY OUT

- ▶ For agricultural R&D in Madagascar to be more productive and efficient, consistent levels of funding need to be secured to cover salaries, operating and program costs, and necessary capital investments. The government needs to clearly identify its long-term R&D priorities and allocate sustained funding to support R&D programs. Donor funding needs to be better aligned with these national priorities to ensure the consistency and complementarity of research programs. Creative mechanisms to stimulate private-sector R&D funding should also be explored.

### Long-term trends in Madagascar's total agricultural R&D spending, 2000–2011



In 2011, Madagascar spent 5.0 billion ariary on agricultural R&D (in 2005 constant prices), 27 percent less than it spent in 2008. Spending would be lower if it weren't for the sizeable in-kind support\* the country receives from CIRAD (France). ASTI estimates that without this support the yearly spending levels and research intensity ratios presented in this figure would have been between 7 and 23 percent lower during 2000–2011.

### ▶ CIRAD'S PRESENCE IN MADAGASCAR

CIRAD has had a long and expanding presence in Madagascar. More than 20 CIRAD researchers (including agronomists, forest scientists, veterinarians, agricultural economists, and geographers) currently work in Madagascar on a permanent basis, making the country CIRAD's largest base outside France. These researchers work very closely with their colleagues at FOFIFA and the University of Antananarivo on a number of priority areas, including rainfed rice production, forestry and biodiversity, food safety, and emerging animal diseases. CIRAD scientists also play a key role in supervising postgraduate theses for agricultural researchers and delivering training courses at the University of Antananarivo.

CIRAD is not a donor in the sense of actually funding agricultural R&D programs; rather, it is a technical and scientific partner that, in close collaboration with local scientists and stakeholders, generates and disseminates new knowledge, and supports the country's agricultural development. CIRAD is a key participant in Malagasy agricultural research, but its contributions are hard to quantify in financial terms.

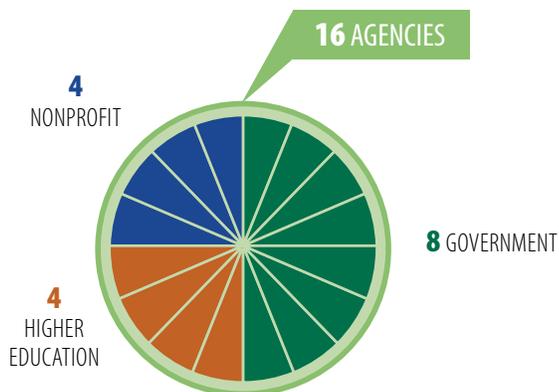
\*The in-kind support it provides to Madagascar in the form of goods and services (computer hardware, Internet access, and most importantly expertise from French scientists) has been estimated by ASTI.

## 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
<b>Madagascar</b>	<b>7.7</b>	<b>-27%</b>	<b>0.16%</b>
Mauritius	26.0	26%	4.88%
Mozambique	20.7	14%	0.36%
Malawi	34.3	110%	1.03%

## OVERVIEW OF MADAGASCAR'S AGRICULTURAL RESEARCH AGENCIES

Sixteen public agencies conduct agricultural R&D in Madagascar. FOFIFA is by far the largest and accounts for roughly half the country's agricultural researchers (in FTEs). The institute holds a broad mandate covering crop, livestock, forestry, postharvest, and socioeconomic research. FOFIFA is headquartered in Antananarivo but operates six regional research centers and seven research stations covering different agroecological zones. Seven other government agencies are involved in agricultural R&D, including, among others, CNARP (15 FTE researchers in 2011), CNRE (8 FTEs), and IMVAVET (6 FTEs). Agricultural research by the higher education sector, represented by the University of Antananarivo as well as the University of Toliary's Fisheries and Marine Science Institute, plays a modest but increasingly important role. In 2011, university-based research accounted for one-fifth of total agricultural R&D. NGOs have traditionally played an important role in agricultural R&D in Madagascar, but their role has declined in recent years. As of 2011, only four NGOs reported (limited) agricultural R&D activities, and employed a combined total of 9 agricultural researchers (in FTEs).



For a complete list of the agencies included in ASTI's dataset for Madagascar, visit [www.asti.cgiar.org/madagascar](http://www.asti.cgiar.org/madagascar).

## 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](http://www.asti.cgiar.org/methodology); for more information on agricultural R&D in Madagascar, visit [www.asti.cgiar.org/madagascar](http://www.asti.cgiar.org/madagascar).

## ACRONYMS USED IN THIS FACTSHEET

<b>AgGDP</b>	Agricultural gross domestic product
<b>AREU (Mauritius)</b>	Agricultural Research and Extension Unit
<b>CIRAD</b>	French Agricultural Research Center for International Development
<b>CNARP</b>	National Pharmaceutical Research Center
<b>CNRO</b>	National Oceanographic Research Center
<b>CNRE</b>	National Environmental Research Center
<b>DRD (Tanzania)</b>	Department of Research and Development
<b>FIFAMANOR</b>	Center for Rural Development and Applied Research
<b>FOFIFA</b>	National Center for Applied Research and Rural Development
<b>FTE(s)</b>	Full-time equivalent (researchers)
<b>IIAM (Mozambique)</b>	Mozambique Institute of Agricultural Research
<b>IMVAVET</b>	Malagasy Institute of Veterinary Vaccines
<b>NEPAD</b>	New Partnership for Africa's Development
<b>NGO(s)</b>	Nongovernmental organizations
<b>PPP(s)</b>	Purchasing power parity (exchange rates)
<b>R&amp;D</b>	Research and development

## ABOUT ASTI, IFPRI, AND FOFIFA

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 Center for Applied Research and Rural Development (FOFIFA)** is Madagascar's principal agricultural research agency; the institute falls under the Ministry of Agriculture and focuses on crop, livestock, forestry, postharvest, and socioeconomic research.

ASTI/IFPRI and FOFIFA 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 FOFIFA.

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\* This December 2013 version reports FTE researchers per 100,000 farmers, which is an adjustment from the November 2013 version (which reported per thousand farmers).