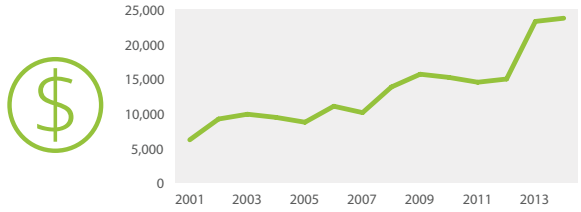
SIERRA LEONE

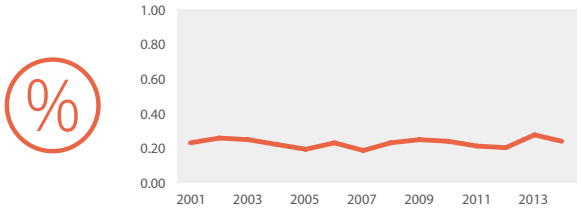
Lang Gao, Nienke Beintema, and John Momoh

AGRICULTURAL RESEARCH SPENDING



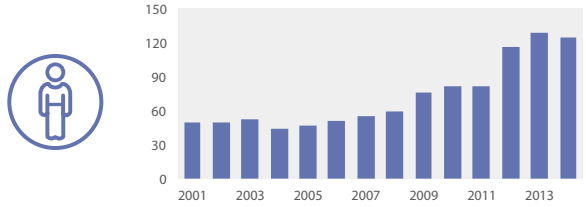
	SIERRA LEONE	THE GAMBIA	GUINEA	NAMIBIA
Million leones (2011 constant prices)	23,755.1			
Million PPP dollars (2011 constant prices)	15.3	5.1	7.8	38.8

SPENDING INTENSITY



	SIERRA LEONE	THE GAMBIA	GUINEA	NAMIBIA
Agricultural research spending as a share of AgGDP	0.24%	0.80%	0.30%	3.09%

AGRICULTURAL RESEARCHERS



	SIERRA LEONE	THE GAMBIA	GUINEA	NAMIBIA
Full-time equivalents	123.7	60.4	240.7	99.7
Share of researchers with MSc and PhD degrees	73%	72%	42%	58%

Notes: Data above are for 2014. The 2012–2014 values include estimates for the higher education sector based on 2011 data. 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/sierra-leone/directory** for an overview of Sierra Leone's agricultural R&D agencies.

Strong investment growth

Agricultural research spending grew by 70 percent during 2011–2014, sharply contrasting the modest growth during 2008–2011. This shift almost entirely resulted from a substantial increase in the number of researchers employed at SLARI, the country's main agricultural research agency. Despite this overall upward trend, however, the country still invests a very low share of its AgGDP in agricultural research—0.24 percent in 2014, which is well below the recommended 1 percent target set by the African Union and the United Nations.

Diversification of funding

SLARI relies heavily on government funding as a share of its operating costs. Government contributions cover salaries, including benefits, but not the costs of operating research programs or maintaining infrastructure. Notably, only about 80 percent of the institute's budgeted funding is actually disbursed, and the schedule of disbursement is often unpredictable, hindering planning and diminishing effectiveness. Donors such as CORAF/WECARD and several CGIAR centers, as well as WAAPP, fund research activities and any postgraduate training for researchers.

Researcher capacity constraints

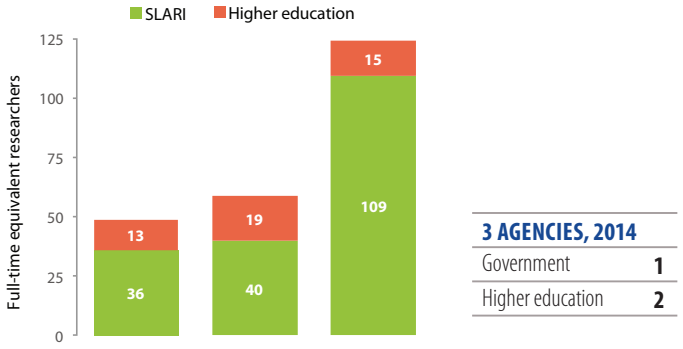
SLARI has insufficient researchers across disciplines, including emerging areas such as irrigation, biotechnology, and climate change. Insufficient national agricultural programs exist, particularly at the MSc- and PhD-degree levels, largely because of a lack of qualified faculty to supervise students' work. The majority of the institute's researchers obtained their higher degrees abroad through donor-funded programs such as WAAPP, which in recent years has allowed 38 researchers to obtain MSc and PhD degrees in priority disciplines.

Stronger collaboration needed

SLARI collaborates with Njala University, which is the only national university currently offering agricultural degree programs. Some lecturers serve as research fellows at SLARI, but this form of collaboration is limited by a lack of capacity in certain disciplines. In addition, the university has inadequate capacity to meet the country's need for agricultural scientists in advanced degrees. More extensive collaboration between SLARI and the higher education sector is needed in order to anticipate and meet future capacity needs.

Institutional composition of national agricultural research

As of 2014, just three agencies conducted agricultural research in Sierra Leone. SLARI, the sole government agency, employed 88 percent of the country's agricultural researchers (in FTEs). The remaining researchers were employed at Njala University's School of Agriculture or the University of Sierra Leone's Institute of Marine Biology and Oceanography.

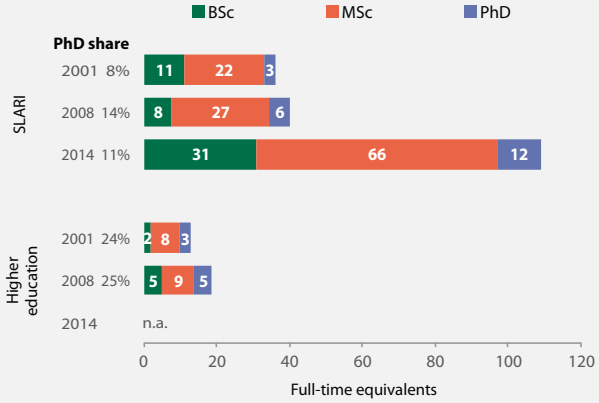


3 AGENCIES, 2014	
Government	1
Higher education	2

Notes: SLARI comprises of 6 research centers and a headquarters. 2014 total for the higher education is estimated, using 2011 values.

Agricultural researchers by sector and qualification level

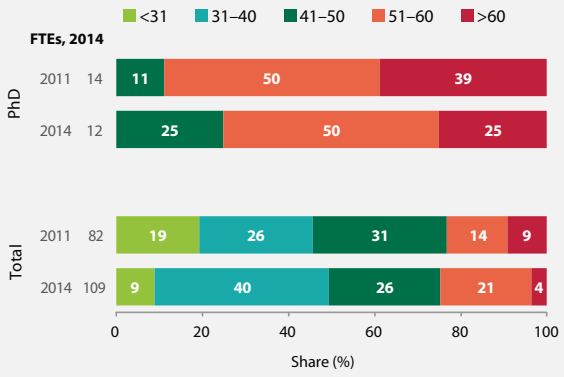
The spike in the national number of agricultural researchers during 2008–2014 stemmed from significant growth at SLARI, which occured across all degree levels but was more pronounced among those qualified to the BSc and MSc levels. Notably, SLARI employed comparatively more PhD-qualified researchers (in FTEs) than did the higher education sector.



Note: Data exclude the higher education in 2014 due to lack of availability.

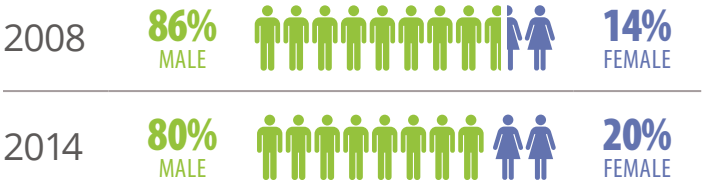
SLARI's agricultural researchers by age bracket

As a result of the civil war of 1991–2002, 75 percent of PhD-qualified researchers employed at SLARI were more than 50 years old as of 2014. In addition, based on recent recruitment efforts, 75 percent of all researchers employed at SLARI were younger as of 2014.



SLARI's share of female researchers

Reflecting one of the institute's capacity building strategies, the overall share of female researchers employed at SLARI rose from 14 percent in 2008 to 20 percent in 2014. In general, female researchers were relatively younger and less well-qualified than their male colleagues.

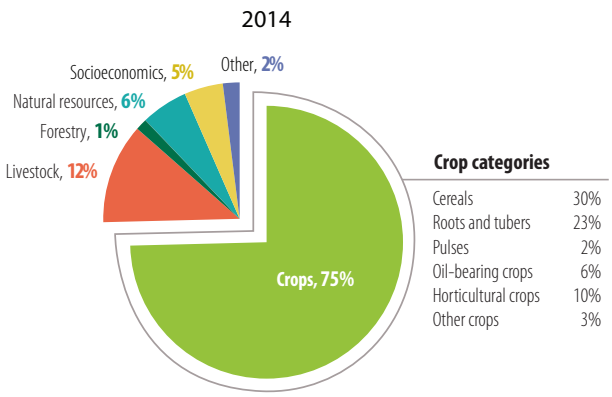


By qualification level, 2014	
BSc **23%**	MSc **23%**

By age bracket, 2014		
< 41 **35%**	41–50 **7%**	> 50 **4%**

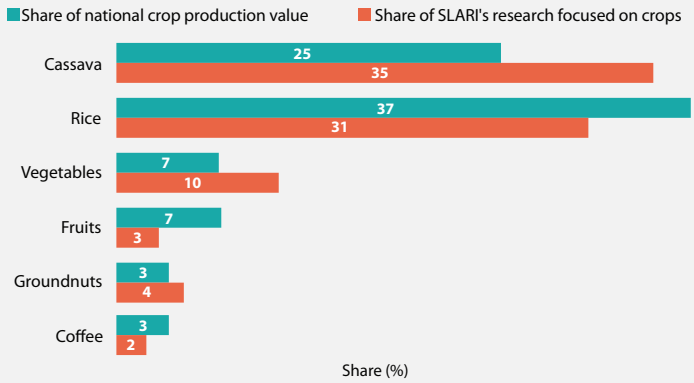
SLARI's agricultural researchers by area of focus

In 2014, 75 percent of SLARI's researchers conducted crop research, and 12 percent conducted livestock research. Major crops under investigation included rice, cassava, and vegetables.



Alignment of research focus with production value, selected crops

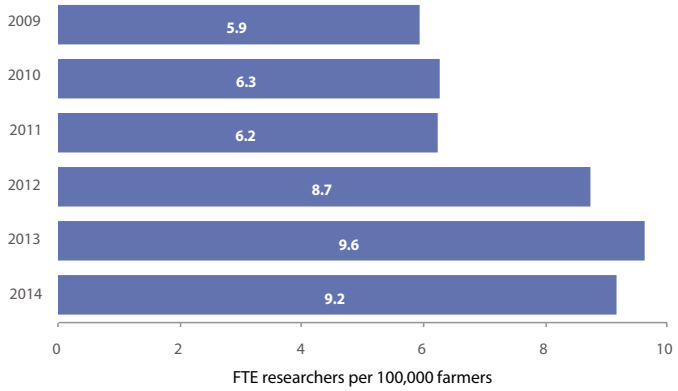
Based on data for 2013/14, rice, fruits, and coffee all receive less research attention than their crop production values would indicate, whereas cassava, vegetables, and groundnuts receive significantly more research attention than would appear to be warranted by their production values alone.



Note: Research focus shares are from ASTI; data on production value are from FAOSTAT (http://faostat.fao.org).

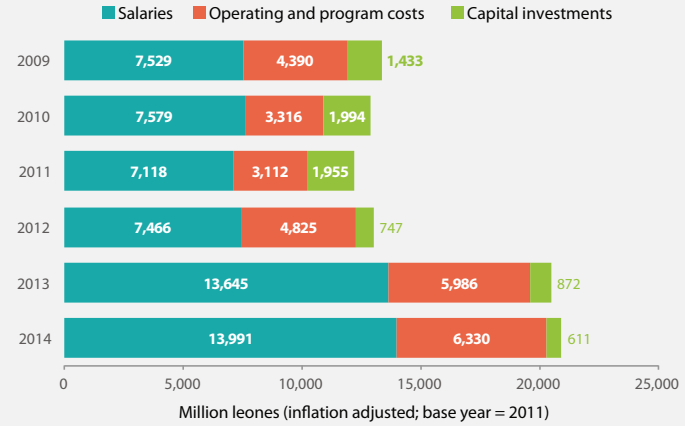
Agricultural researchers per 100,000 farmers

The number of agricultural researchers in Sierra Leone rose by 62 percent during 2009–2014, whereas the population of farmers grew by 5 percent. As a result, agricultural researchers per 100,000 farmers in the country increased substantially.



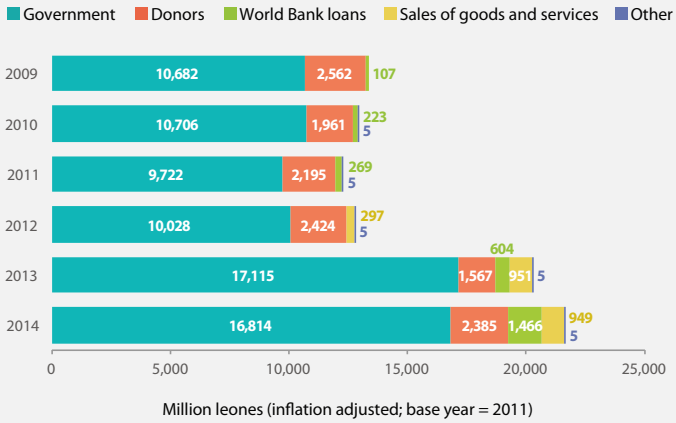
SLARI's spending by cost category

On average, salaries and related expenses accounted for 62 percent of SLARI's total agricultural research spending during 2009–2014. Nevertheless, spending associated with research programs and capital investments were low given contractions in funding levels in response to a downturn in the economy.



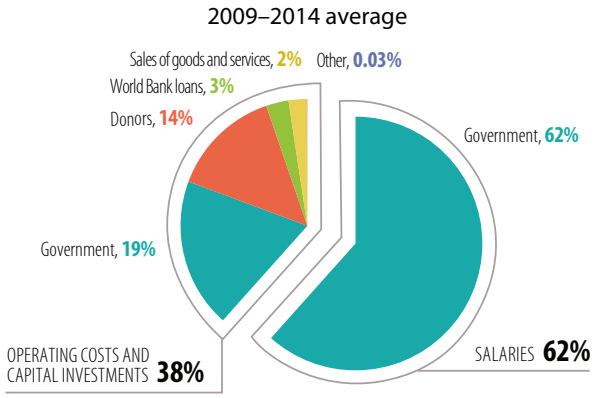
Sources of SLARI's funding

SLARI receives the vast majority of its funding from the national government. During 2009–2014, the government provided more than 80 percent of the institute's funding, yet this was insufficient to meet SLARI's growing needs. The institute also received funding through WAAPP, which is funded through a World Bank loan and contributions from various donor organizations.



SLARI's spending and funding compared

On average, government funding to SLARI during 2009–2014 supported salaries and a share of the institute's operating costs, the remainder of which was primarily supported by donor funding and World Bank loans. Given insufficient funding between 2011 and 2014, SLARI was unable to undertake major research activities, such as establishing field trials.



SLARI's recently released crop varieties

During 2012–2014, NARC and RARC—SLARI's two largest research centers—together released a total of eight new cassava varieties, seven rice varieties, four soybean varieties, and two cowpea varieties.

Crop	Number of varieties, 2012–2014	
	NARC	RARC
Cassava	8	–
Rice	–	7
Soybean	4	–
Cowpea	2	–
Total	**14**	**7**

SLARI's recent peer-reviewed publications

During 2012–2014, NARC and RARC published an average of 15 journal articles per year, primarily in international journals. Publications per researcher averaged 0.22 across the three-year period.

Type	Number of publications, 2012–2014 annual average	Per FTE researcher
Journal articles		
International	12.3	0.187
Regional	0.0	0.000
National	2.3	0.035
Books	0.0	0.000
Book chapters	0.0	0.000
Other	0.3	0.005
Total	**15.0**	**0.222**

Resources for Sierra Leone

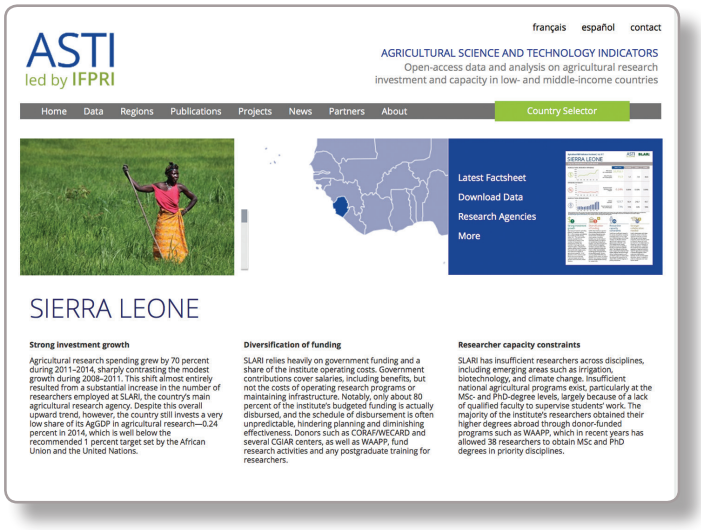
This factsheet presents recent data on the performance of agricultural research in Sierra Leone, primarily focusing on key financial, human resource, institutional, and output indicators, while also highlighting relevant trends, challenges, and institutional changes. Additional resources are available at **www.asti.cgiar.org** and include:

ASTI's **interactive country page** for Sierra Leone 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 Sierra Leone and many other countries.

ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Sierra Leone, 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)
PPP(s)	purchasing power parity (exchange rates)
NARC	Njala Agricultural Research Centre
R&D	research and development
RARC	Rokupr Agricultural Research Centre
SLARI	Sierra Leone Agricultural Research Institute
WAAPP	West Africa Agricultural Productivity Program

ABOUT ASTI, IFPRI, AND SLARI

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 **Sierra Leone Agricultural Research Institute (SLARI)**, which falls under the Ministry of Agriculture, Forestry, and Food Security, is Sierra Leone's principal agricultural research agency. SLARI's mandate encompasses crops, livestock, forestry, fisheries, and socioeconomic research.

ASTI/IFPRI and SLARI 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 SLARI.