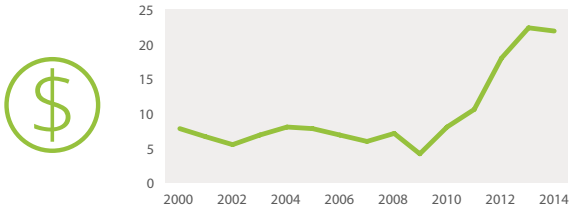
ASTI led by IFPRI

ZIMBABWE

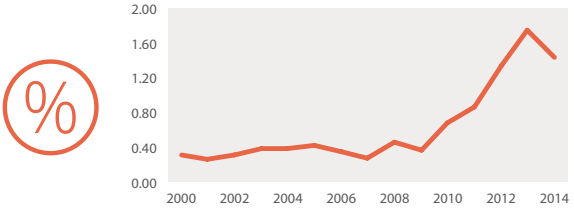
Nienke Beintema, Percy Chipunza, and Lang Gao

AGRICULTURAL RESEARCH SPENDING



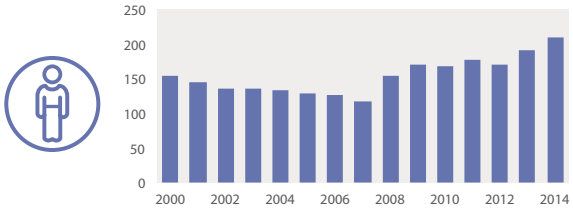
	ZIMBABWE	BOTSWANA	MOZAMBIQUE	NAMIBIA
Million Zimbabwean dollars (2011 constant prices)	21.9			
Million PPP dollars (2011 constant prices)	43.4	21.3	29.3	38.8

SPENDING INTENSITY



Agricultural research spending as a share of AgGDP	1.44%	2.92%	0.36%	3.09%

AGRICULTURAL RESEARCHERS



Full-time equivalents	208.7	137.8	308.4	99.7
Share of researchers with MSc and PhD degrees	58%	54%	56%	58%

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

Strong investment growth

Agricultural research spending and staffing levels in Zimbabwe rebounded during 2009–2014 after the adoption of a multi-currency regime, which brought economic stabilization and an end to years of hyperinflation. The recent introduction of a results-based mechanism for allocating government budgets is a positive development, but the pool of available funds remains low. Agricultural R&D in Zimbabwe is primarily funded by the government but only covers salaries and operating costs. Long-term funding constraints have left agricultural research infrastructure in a state of disrepair.

Researcher capacity constraints

Long-term hyperinflation prompted the departure of the country's most experienced agricultural researchers from both public and private institutions, the impact of which is still being felt. Within the universities, for example, for a period of time some undergraduate courses were being taught by faculty staff only qualified to the BSc-degree level. Other experienced researchers were promoted to administrative positions, but some were able to undertake MSc- and PhD-degree training. DR&SS needs to improve its research capacity by focusing on in-house training and mentorship programs.

Stronger collaboration needed

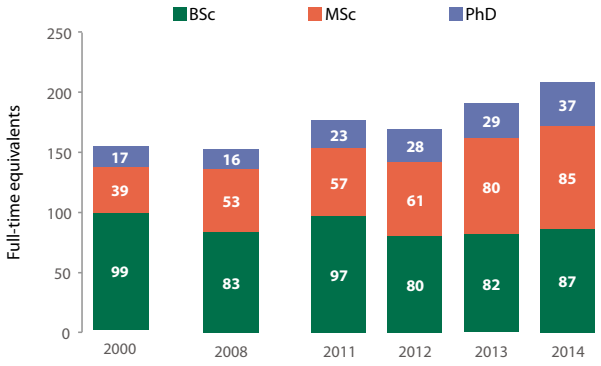
Agricultural R&D plays a critical role in driving socioeconomic transformation in Zimbabwe. Researchers are urged to focus on national challenges and pursue interdisciplinary and multidisciplinary collaboration in efforts to maximize limited resources. This calls for national, regional, and international collaboration among public and private institutions. Zimbabwe is pursuing this trajectory, but its impact has yet to manifest.

Diversification of funding

Although economic productivity in Zimbabwe has been low and in some instances declining, demand for agricultural innovation among farmers, academia, and agro-industries has grown. Other avenues to raise funding for research have not been fully exploited. The country's tobacco research is fully funded through the revenues generated by commodity levies (and government support to ensure that the levy remains in place). Similar structures and government support are needed for other agricultural commodities to ensure the sustainability and diversification of research funding.

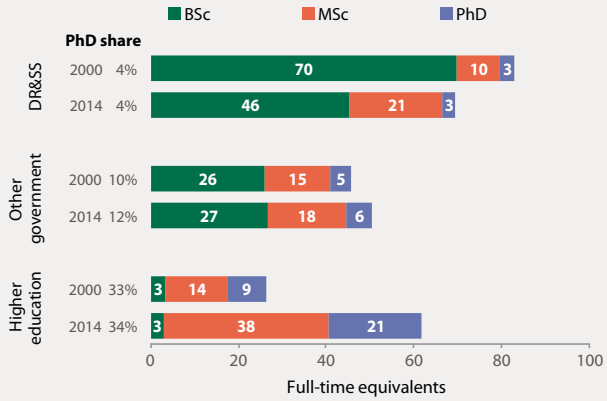
Zimbabwe's agricultural researchers by qualification level

Agricultural researcher numbers in Zimbabwe grew across all three qualification levels during 2013–2014. Although the share of researchers with PhD degrees rose from 13 percent in 2012 to 18 percent in 2014, this share is still low compared with many other African countries.



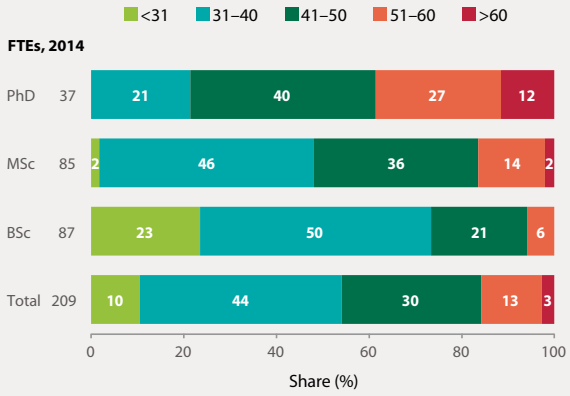
Zimbabwe's agricultural researchers by sector and qualification level

Although the qualification levels of agricultural researchers employed at DR&SS improved substantially during 2000–2014, the department's share of BSc-qualified researchers remained high as of 2014 (46 percent). DR&SS only employed 3 PhD-qualified researchers in 2014, whereas the higher education sector employed 21 FTE researchers with PhD degrees.



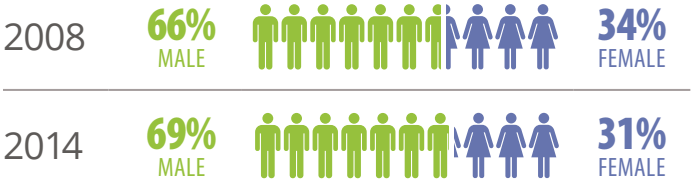
Zimbabwe's agricultural researchers by age bracket

As of 2014, close to one-third of the country's PhD-qualified researchers were in their 50s or 60s, which is comparable with the 2011 share. In contrast, about three-quarters of agricultural researchers qualified to the BSc-degree level were in their 30s or 40s.



Zimbabwe's share of female researchers

Overall, the share of female researchers declined marginally over time, from 34 percent in 2008 to 31 percent in 2014. Shares by institutional category, qualification level, and age brackets also differed only marginally.



By qualification level, 2014

BSc **30%**	MSc **33%**	PhD **29%**

By age bracket, 2014

< 41 **30%**	41–50 **32%**	> 50 **33%**

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

In 2014, Zimbabwe employed 18 plant breeders and geneticists with postgraduate degrees, representing 15 percent of the country's MSc- and PhD-qualified researchers. Approximately one-third of these researchers were employed at DR&SS. Socioeconomics, veterinary medicine, plant pathology, and natural resource management were other strong disciplines, accounting for between 7 and 14 percent of all MSc- and PhD-qualified researchers

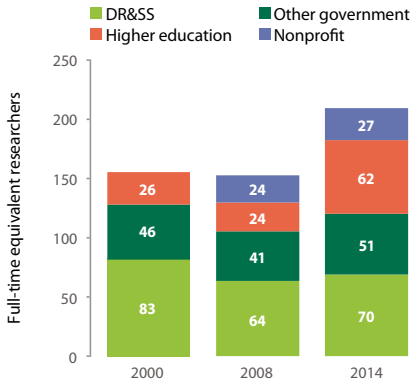
Agricultural researchers, 2014	FTEs		Share (%)	
	MSc	PhD	MSc	PhD
Plant breeding/genetics (incl. biotechnology)	12	6	5	5
Plant pathology	6	3	0.1	8
Plant physiology	4	2	0.4	3
Botany	2	0.2	0.1	4
Seed science and technology	2	2	14	1
Other crop sciences	2	–	14	1
Animal breeding/genetics	2	2	7	1
Animal husbandry	5	2	7	7
Animal nutrition	2	1	1	2
Dairy science	2	1	6	1
Poultry	4	–	0.4	12
Veterinary medicine	6	4	3	3
Zoology/entomology	2	0.2	9	2
Other animal and livestock	2	–	4	–

Agricultural researchers, 2014	FTEs		Share (%)	
	MSc	PhD	MSc	PhD
Forestry and agroforestry	5	1	–	3
Fisheries and aquatic resources	1	0.1	6	2
Soil sciences	5	3	0.1	3
Natural resources management	4	1	0.1	5
Water and irrigation management	1	1	–	5
Ecology	1	0.2	–	–
Biodiversity conservation	1	1	3	–
Food sciences and nutrition	1	1	15	5
Socioeconomics (incl. agricultural economics)	11	7	–	–
Extension and education	4	–	6	26
Other sciences	1	1	6	26
Total	**85.2**	**36.6**	**100**	**100**

Note: These are estimates based on an agency sample, representing 87 percent of the total number of FTE researchers.

Institutional composition of Zimbabwe's agricultural research

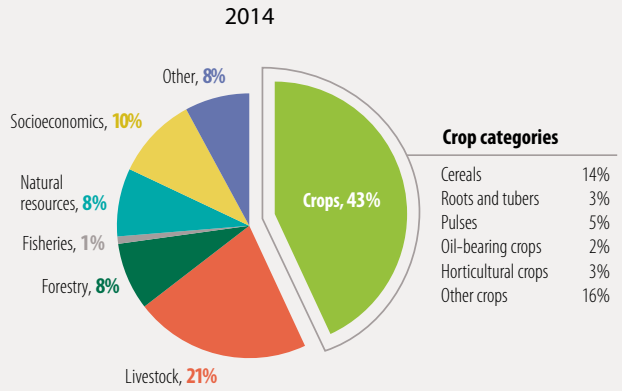
Strong growth in agricultural researcher numbers in the higher education sector during 2008–2014 caused its share to rise from 16 to 30 percent during this timeframe; as a result, DR&SS's share fell from 42 to 33 percent. The nonprofit sector also emerged during this period, largely due to the lifting of donor funding restrictions.



18 AGENCIES, 2014	
Government	6
Higher education	8
Nonprofit	4

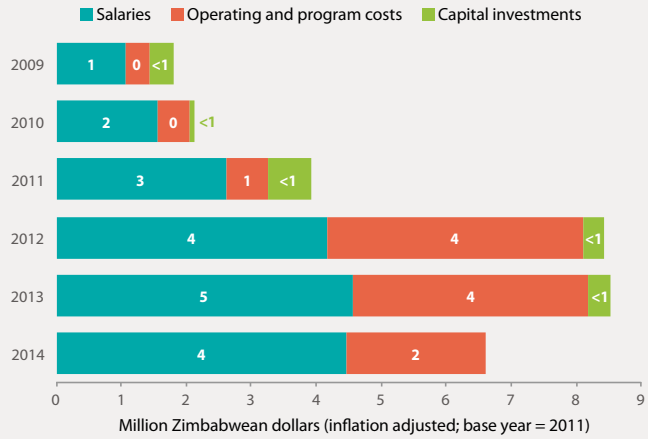
Zimbabwe's agricultural researchers by area of focus

In 2014, 43 percent of the country's FTE researchers conducted crop research, and 21 percent undertook livestock research. Tobacco and maize were the main crops under investigation, accounting for 25 and 17 percent of crop researchers, respectively. Other major crops were cotton, beans, and sugar. The importance of wheat and coffee declined after 2011.



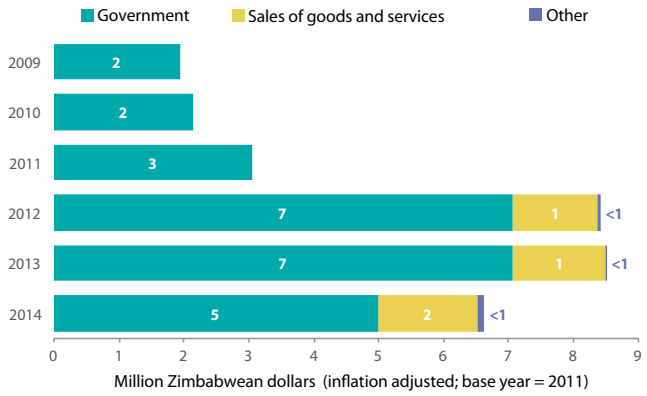
DR&SS' spending by cost category

Due to the economic crisis, salary-related expenses accounted for most of DR&SS' total spending during 2009–2011. This situation improved significantly from 2012, which had a positive impact not only on salary-related expenses, but also on the department's operating and program costs. Capital investments remained limited, however.



Sources of DR&SS' funding

Government contributions to DR&SS more than doubled in inflation-adjusted terms during 2012–2014, and the department also began generating revenues through the sale of goods of services. Funding from foreign donor organizations, however, was negligible throughout the 2009–2014 period.



DR&SS' recently released crop varieties

DR&SS released nine new crop varieties during 2012–2014, including three varieties of NERICA rice (with different maturity levels), three varieties of drought-tolerant maize, and two nutrient-dense field beans. TRB released five new tobacco varieties in 2012, but no varieties were released in 2013 or 2014.

Crop	Number of varieties, 2012–2014	
	DR&SS	TRB
Rice	3	–
Maize	3	–
Beans	2	–
Wheat	1	–
Tobacco	–	5
Total	**9**	**5**

DR&SS', TRB's, and UZ-FA's recent peer-reviewed publications

Researchers at DR&SS, TRB, and UZ-FA primarily published in international journals during 2012–2014 (8, 10, and 33 articles, respectively, on average). The combined number of publications per researcher for the three agencies averaged 0.4 per year during this timeframe.

Type	Number of publications, 2012–2014 annual average			Per FTE researcher
Journal articles	DR&SS	TRB	UZ-FA	
International	8.0	10.0	33.0	0.270
Regional	3.5	1.0	16.3	0.110
National	–	2.3	–	0.012
Books	–	0.3	–	0.002
Book chapters	–	–	4.0	0.021
Total	**11.5**	**13.7**	**53.3**	**0.415**

Note: FTE average is for the DR&SS, TRB, and UZ-FA combined.

Resources for Zimbabwe

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

ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Zimbabwe, 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
DR&SS	Department of Research and Specialist Services
FTE(s)	full-time equivalent(s)
PPP(s)	purchasing power parity (exchange rates)
R&D	research and development
TRB	Tobacco Research Board
UZ-FA	University of Zimbabwe, Faculty of Agriculture

ABOUT ASTI AND IFPRI

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.

ASTI/IFPRI 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.