

UGANDA

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Background and Key Trends

- ▶ After a period of strong growth during 2000–2015, agricultural R&D spending in Uganda fell by almost one-third due to the completion of ATAAS and EAAPP, combined with reduced support from other donors. With the conclusion of EAAPP, government counterpart funding to NARO also declined.
- ▶ Declining spending during 2016 caused Uganda's intensity ratio (measured as the share of agricultural R&D spending of total AgGDP) to fall from close to 1 percent in 2014–2015 to 0.62 percent in 2016. Consequently, Uganda no longer met the recommended R&D investment target of 1 percent of AgGDP set by the African Union and the United Nations.
- ▶ The total number of agricultural researchers employed in Uganda rose considerably from 2010 to 2016. This was the result of the establishment of new universities and an increase in the number of researchers at NARO.

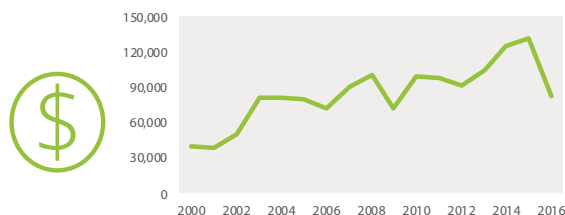
Current Challenges

- ▶ With the completion of ATAAS and EAAPP, government funding contracted substantially in 2016. The vast amount of funds were needed to meet salary-related and operating costs, so most of NARO's institutes lacked funding for conducting research. The exceptions were the National Crops Resources Research Institute in Namulonge and the National Agricultural Research Laboratories in Kawanda, which were, and are still, relying on small grants from the Rockefeller Foundation, the Bill & Melinda Gates Foundation, and a few other donors.
- ▶ Despite the funding for improvements in infrastructure and equipment received through EAAPP and a wide range of other donors, some of NARO's laboratories and research facilities remain inadequate.

Policy Developments

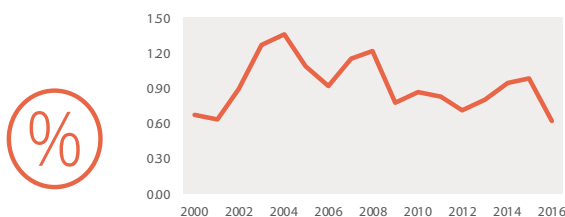
- ▶ As of autumn 2018, the Ugandan government was negotiating a loan from the World Bank under the ECAAT program. The six-year initiative—with funding estimated at US\$ 100 million—is expected to begin in mid-2019.
- ▶ Various staffing improvements and development were implemented during 2015–2016, including filling existing vacancies, hiring of short-term consultants as full-time researchers, and increasing salaries of researchers and support staff.
- ▶ The passage of the Biosafety Act of 2017 is likely to assist Uganda in increasing the effectiveness, stability, and impact of its agricultural research system. Currently, as many as 15 biotechnology products are under trial in various phases. Some of these are considered to be critical to Uganda's future food security.

AGRICULTURAL RESEARCH SPENDING



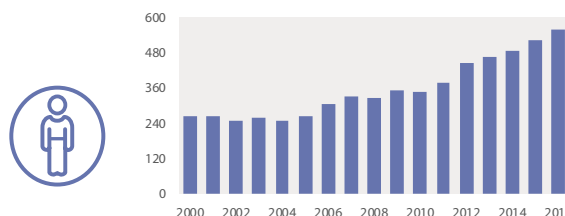
	UGANDA	ETHIOPIA	KENYA	TANZANIA
Million Ugandan shillings (2011 constant prices)	82,817.3			
Million PPP dollars (2011 constant prices)	99.4	162.1	222.7	68.5

SPENDING INTENSITY



Agricultural research spending as a share of AgGDP	0.62%	0.29%	0.48%	0.17%
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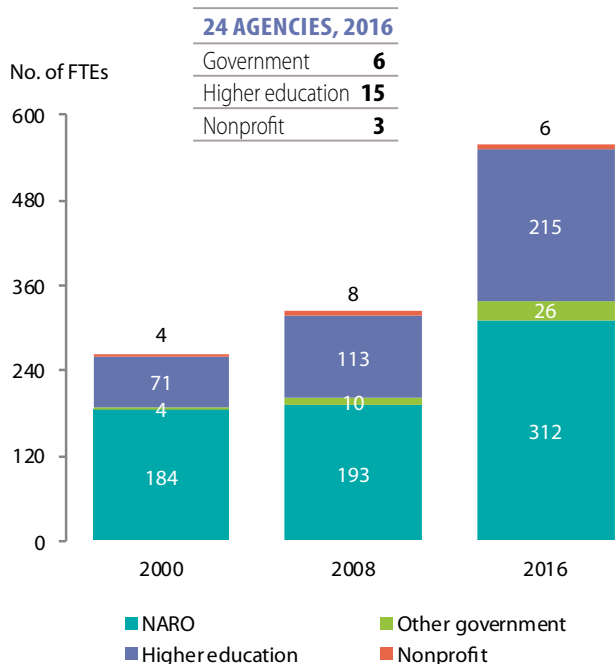
AGRICULTURAL RESEARCHERS



Full-time equivalents	558.7	3,024.6	1,157.6	785.0
Share of researchers with MSc and PhD degrees	81%	47%	85%	77%

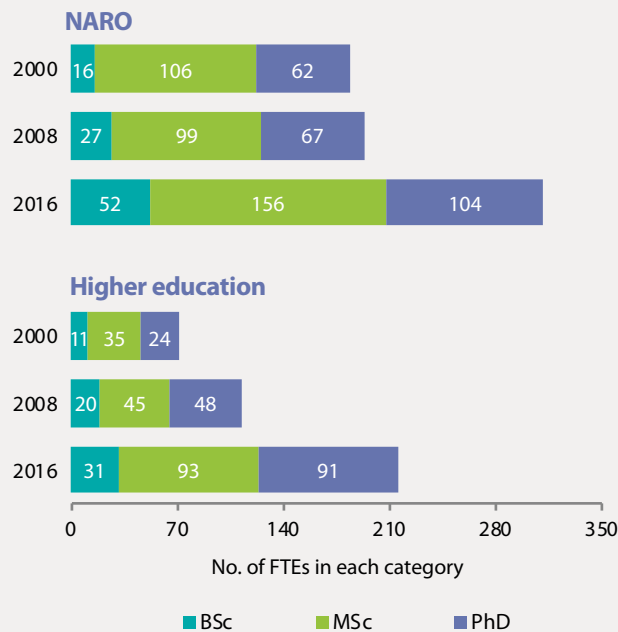
Institutional composition of agricultural research

Both the number of agencies involved in agricultural research and the total number of agricultural researchers employed in Uganda (in FTEs) rose in recent years due to growth in the number of public and private universities. The number of researchers at NARO also grew, but the organization's share of the country's FTEs fell from 72 to 56 percent during 2000–2016.



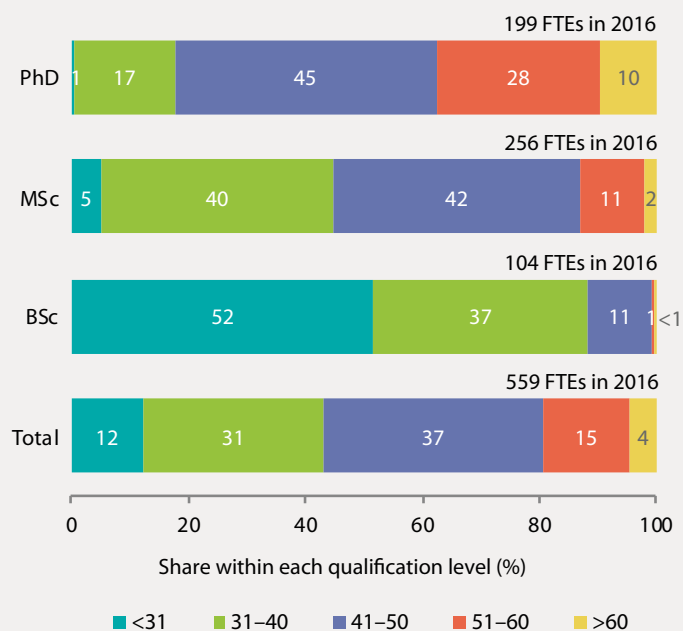
Agricultural researchers by sector and qualification level

NARO's total number of agricultural researchers rose substantially across all qualification levels during 2000–2016. Growth was strongest at the BSc level due to the promotion of technical staff to researchers, although this practice was recently halted. Growth in the higher education sector stemmed from expansion in the number of universities.



Distribution of agricultural researchers by qualification level and age bracket

As of 2016, 38 percent of PhD-qualified researchers were in their 50s or 60s. Although significant, this share is considerably lower than in most other African countries. Unsurprisingly, researchers with BSc- and MSc-degrees were comparatively younger.



Agricultural researchers by gender

Overall, the share of female agricultural researchers rose from 20 percent in 2008 to 30 percent in 2016. NARO and the other government agencies employed comparatively more women than did the higher education and nonprofit agencies. As of 2016, female researchers were generally younger and less well-qualified than their male colleagues.



Share of women within each qualification level, 2016

BSc	44%	MSc	41%	PhD	21%
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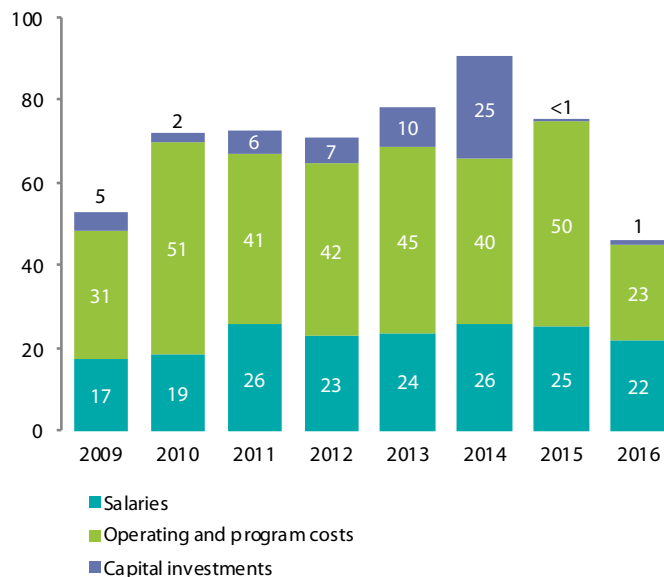
Share of women by age bracket, 2016

< 41	36%	41–50	30%	> 50	16%
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NARO's spending by cost category

Spending on salaries remained fairly constant during 2011–2016 (in inflation adjusted terms). Shares of operating and program costs were high overall, generally due to low levels of donor and development bank funding. In 2016, all shares other than for salaries declined due to the completion of World Bank loans supporting ATAAS and EAAPP activities.

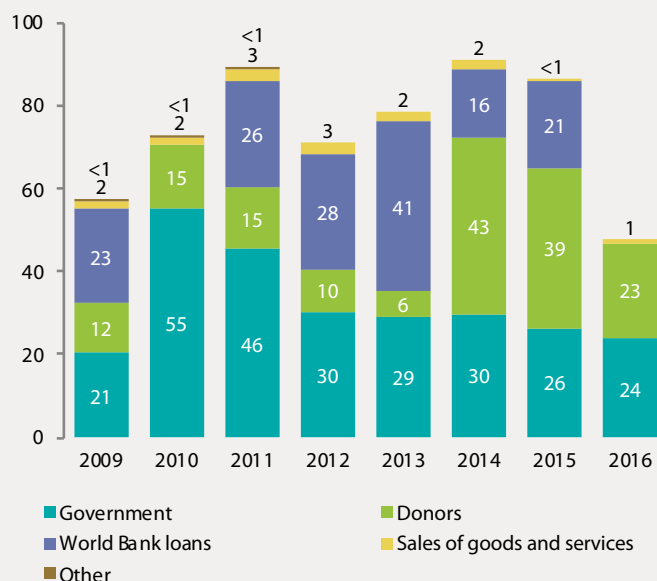
Billion Ugandan shillings (inflation-adjusted; base year = 2011)



Sources of NARO's funding

Government funding to NARO declined from 30 to about 24 billion Ugandan shillings between 2014 and 2016 (in inflation adjusted terms). Funding through EAAPP and ATAAS enabled NARO to improve its research facilities, procure equipment, and develop human resource capacity. With the completion of both programs, funding significantly declined in 2016.

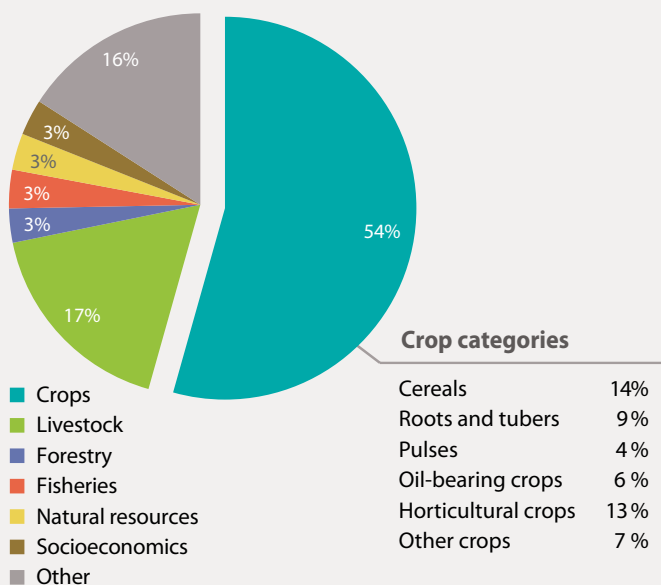
Billion Ugandan shillings (inflation-adjusted; base year = 2011)



Agricultural researchers by area of focus

In 2016, more than half of the country's FTE researchers conducted crop research, whereas 17 percent undertook livestock research. Major crops under investigation were bananas, maize, cassava, rice, and coffee.

Share of researchers, 2016



NARO and MAK's recent peer-reviewed publications

During 2012–2016, NARO published an average of 129 articles per year in international, regional, or national journals, whereas the MAK colleges published 103 articles per year during 2013–2015. Articles per researcher averaged 0.5 and 1.2 per year for NARO and MAK, respectively.

Type	Number of journal articles (yearly average)		Per FTE researcher	
	NARO (2012–2016)	MAK-CAES & MAK-COVAB (2013–2015)	NARO (2012–2016)	MAK-CAES & MAK-COVAB (2013–2015)
Journal articles				
International	117.2	71.3	0.414	0.847
Regional	6.0	18.3	0.021	0.218
National	6.0	13.7	0.021	0.162
Total	129.2	103.3	0.457	1.227

Resources for Uganda

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



ASTI's **agency directory** provides a view of agencies that conduct agricultural research in Uganda, 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 and international organizations is excluded.
- ▶ 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
ATAAS	Agricultural Technology and Agribusiness Advisory Services
EAAPP	East African Agricultural Productivity Program
ECAAT	Eastern and Central Africa Agriculture Transformation Project
FTE(s)	full-time equivalent(s)
MAK-CAES	Makerere University, College of Agricultural and Environmental Sciences
MAK-COVAB	Makerere University, College of Veterinary Medicine, Animal Resources, and Biosecurity
NARO	National Agricultural Research Organisation
PPP(s)	purchasing power parity (exchange rates)
R&D	research and experimental development

About ASTI, IFPRI, and NARO

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 facilitated 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 Agricultural Research Organisation (NARO)** is Uganda's principal agricultural research agency; the institute falls under the Ministry of Agriculture, Animal Industry, and Fisheries and it conducts crop, livestock, forestry, fisheries, and natural resources research.

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