





UGANDA

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KEY INDICATORS, 2000–2011

Total Public Agricultural Research Spending	2000		2008		2011
Ugandan shillings (million constant 2005 prices)	24,253.0		57,705.4		66,204.3
PPP dollars (million constant 2005 prices)	39.1		93.1		106.8
Overall Growth		138%		15%	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	254.1		312.5		353.9
Overall Growth		23%		13%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.76%		1.29%		1.22%
FTE researchers per 100,000 farmers	3.02		3.00		3.13

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

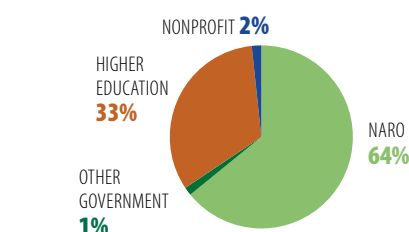
- ▶ Total spending on agricultural R&D in Uganda grew by 15 percent during 2008–2011, mainly stemming from increased spending by the country's main agricultural R&D agency, NARO.
- ▶ The Ugandan government doubled its funding to NARO during 2008–2011 (in inflation-adjusted terms); development bank loans and donor contributions continued to be important funding sources as well, but have been highly volatile over time.
- ▶ The number of FTE researchers employed at NARO and the seven other agencies involved in agricultural R&D grew during 2008–2011. Most of this growth occurred at the MSc and BSc level.

FINANCIAL RESOURCES, 2011

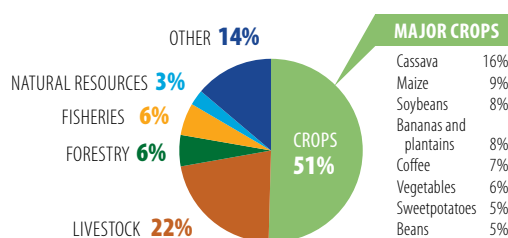
Spending Allocation	
Salaries	35%
Operating and program costs	57%
Capital investments	8%
Funding Sources	
Government	51%
Donors	17%
Development bank loans	29%
Sales of goods/services	3%

Note: Shares are based on data for NARO only.

INSTITUTIONAL PROFILE, 2011



RESEARCH FOCUS, 2011



Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 36 percent of total crop researchers focused on a wide variety of other crops.

MAJOR CROPS

Cassava	16%
Maize	9%
Soybeans	8%
Bananas and plantains	8%
Coffee	7%
Vegetables	6%
Sweetpotatoes	5%
Beans	5%

RESEARCHER PROFILE, 2011

79% MALE  **21%** FEMALE 

Number by qualification (FTEs)

PhD	109.9
MSc	183.7
BSc	60.4

Share by age group (years)

> 60	5%
51–60	17%
41–50	28%
31–40	38%
< 31	12%

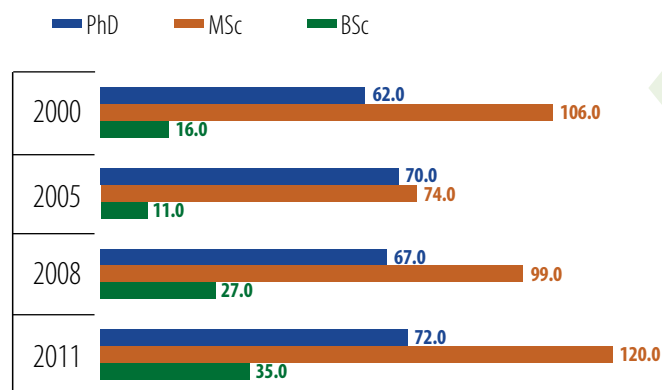
TREND

- ▶ Although agricultural researcher numbers continued to increase at both NARO and Makerere University, growth in the number of PhD-qualified researchers appeared to slow. It is, however, unclear whether this is a temporary shift or the beginning of a longer-term trend.

OBSERVATION

- ▶ NARO and Makerere University are both taking steps to strengthen their human resource capacity. A large number of researchers are undertaking short-term and degree-level training at both agencies, with funding provided by the government and through numerous donor-driven initiatives led by the World Bank (EAAPP, ATAAS), the Bill and Melinda Gates Foundation (RUFORUM, AGRA), Sida, and the Rockefeller Foundation, among others.

Number of agricultural researchers at NARO, 2000–2011 (FTEs)



Notes: In 2011, NARO employed 13 technical support staff with MSc degrees and 52 with BSc degrees. These staff members do not have official researcher status and hence are not included in the figure.

NARO and Makerere University have always collaborated closely, but this has increased in recent years as a result of various government and donor initiatives that encouraged closer interaction between agricultural research service providers, including universities. In addition, a competitive grant scheme creates incentives for the implementation of strategic research partnerships involving both public and private institutions. The challenge is competing for limited funding and conducting research for development, rather than purely academic purposes.

The number of agricultural researchers employed at NARO increased by 18 percent during 2008–2011 (in FTEs), mostly as a result of the recruitment of MSc-qualified researchers. This in contrast to the 2000–2008 period when the number of researchers with MSc degrees had declined.

COOPERATION BETWEEN NARO AND MAKERERE UNIVERSITY

1. Capacity building

- The majority of NARO scientists are trained at Makerere University.
- Some senior NARO scientists are external examiners for the University.
- Many students from Makerere University conduct their thesis research at NARO.

2. Project development and implementation

- NARO and university staff collaborate in developing project proposals and executing projects.

3. Knowledge sharing

- Research conducted at Makerere University partly informs NARO's research agenda (for example, through student thesis recommendations or research projects).
- Scientists from NARO and Makerere University participated in a Rockefeller Foundation-funded climate change networking forum.
- Scientists from NARO and Makerere University contributed to Uganda's biotechnology and biosafety agenda.

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)
Uganda	353.9	13%	31%
Kenya	1,150.9	13%	32%
Ethiopia	1,876.6	33%	9%
Tanzania	814.8	18%	20%

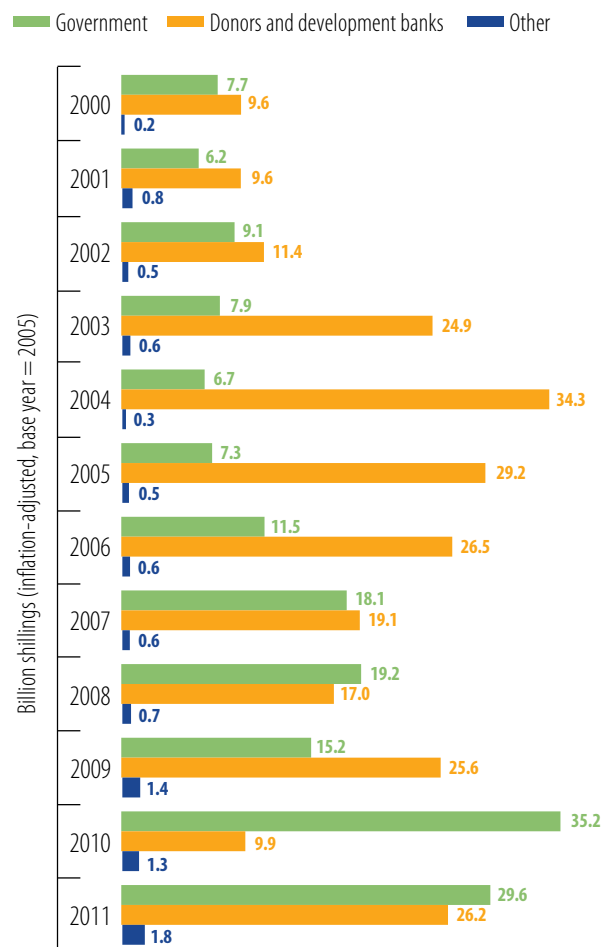
TREND

- ▶ Given strong government and donor support, Uganda's agricultural research system is well-funded compared with many other systems in Africa. As such, Uganda is one of nine African countries that have succeeded in meeting NEPAD's recommended target of investing 1 percent of agricultural GDP in agricultural R&D.

OBSERVATION

- ▶ The Ugandan government has set the ambitious goals of increasing its national agricultural production and productivity, as stipulated in its Development Strategy and Investment Plan of 2010. Despite recent increases in government support to agricultural R&D, reaching these goals will require additional government funding to NARO, Makerere University, and other organizations conducting agricultural research, as well as organizations promoting the transfer of technology.

NARO's funding sources, 2000–2011



▶ UGANDA'S STRONG COMMITMENT TO AGRICULTURE, SCIENCE, AND TECHNOLOGY

Science and technology is among the Government of Uganda's four main priorities, as defined in its National Development Plan of 2010/11 to 2014/15, which outlines the government's strategy to transform the country's economy by 2040. The plan identified agriculture as one of eight primary growth sectors. To address ongoing constraints in the sector, MAAIF created the Development Strategy and Investment Plan of 2010/11 to 2014/15, which focuses on (1) increasing agricultural production and productivity; (2) increasing market access and adding value; (3) creating an enabling environment for private-sector participation in agriculture; and (4) strengthening both centralized- and local-government agricultural institutions.

NARO is the key implementer of these investment plans and is mandated to oversee, coordinate, and implement research for development related to crops, livestock, fisheries, forestry, and natural resources. Currently NARO is implementing research on ten priority commodities identified in the strategy (bananas, beans, beef, cassava, coffee, dairy, fish, maize, rice, and tea). Technologies under development focus on the commodities' value chains, as well as on increasing productivity and commercialization, developing seed systems, and adding value. Makerere University is also an important contributor, and to date the two agencies have made considerable progress toward reaching the goals outlined in both plans.

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
Uganda	106.8	15%	1.22%
Kenya	188.1	11%	1.21%
Ethiopia	69.6	8%	0.19%
Tanzania	81.4	5%	0.54%

OVERVIEW OF UGANDA'S AGRICULTURAL RESEARCH AGENCIES

Eight public agencies conduct agricultural R&D in Uganda. NARO (employing 227 FTE researchers in 2011) is by far the largest. NARO comprises 15 public agricultural research institutes. Five NARIs carry out strategic research of national importance related to crops, fisheries, forestry, livestock, and semi-arid agriculture, respectively. A sixth NARI constitutes Uganda's National Agricultural Research Laboratories. Nine ZARDIs carry out adaptive or applied research related to the country's agroecological zones. Seven of these previously operated as agricultural R&D centers but were upgraded to institutes in the mid-2000s. Makerere University is the country's main higher education agency involved in agricultural research (97 FTE researchers in 2011) at its College of Agricultural and Environmental Sciences; College of Natural Science; and College of Veterinary Medicine, Animal Resources, and Biosecurity. Two other higher education agencies—Busitema University (17 FTEs) and Nyabeyaya Forestry College (1.7 FTEs)—are involved in a limited amount of agricultural research. UCDA (24 FTEs) is a nonprofit agency and performs research related to coffee. Agricultural R&D performed by the private for-profit sector in Uganda is minimal.

8 AGENCIES



Government

2



Higher education

5



Nonprofit

1



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

ASTI DATA PROCEDURES AND METHODOLOGIES

- ▶ The **data underlying this fact sheet** 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 Uganda, visit www.asti.cgiar.org/uganda.

ACRONYMS USED IN THIS FACTSHEET

AgGDP	Agricultural gross domestic product
ATAAS	Agricultural Technology & Agribusiness Advisory Services
AGRA	Alliance for a Green Revolution in Africa
EAAPP	Eastern Africa Agricultural Productivity Project
FTE(s)	Full-time equivalent (researchers)
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NARI(s)	National agricultural research institute(s)
NARO	National Agricultural Research Organisation
NEPAD	New Partnership for Africa's Development
PPP	Purchasing power parity (exchange rates)
R&D	Research and development
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
Sida	Swedish International Development Cooperation Agency
UCDA	Uganda Coffee Development Authority
ZARDI(s)	Zonal agricultural research and development institute(s)

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 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 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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