

RWANDA

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KEY INDICATORS, 2005–2011

Total Public Agricultural Research Spending	2005		2008		2011
Rwandan francs (million constant 2005 prices)	3,472.1		3,768.0		5,071.5
PPP dollars (million constant 2005 prices)	18.6	↑	20.2	↑	27.2
Overall Growth		9%		35%	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	118.5	↑	124.9	↑	180.4
Overall Growth		5%		44%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.63%		0.62%		0.69%
FTE researchers per 100,000 farmers	3.15		3.04		4.02

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

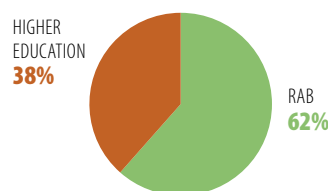
- ▶ The number of public agricultural researchers in Rwanda grew significantly during 2008–2011. Moreover, the number of FTE researchers qualified to the PhD level increased by more than two-thirds (from 13.3 to 21.9 FTEs), while the number qualified to the MSc level more than doubled.
- ▶ Following a period of slow growth, agricultural R&D spending grew substantially during 2008–2011, mostly stemming from increased government support to RAB.
- ▶ With two-thirds of its agricultural researchers under the age of 41 years, Rwanda has one of the youngest pools of agricultural researchers in Africa.

FINANCIAL RESOURCES, 2011

Spending Allocation	
Salaries	40%
Operating and program costs	54%
Capital investments	6%
Funding Sources	
Government	55%
Donors	39%
Sales of goods/services	5%

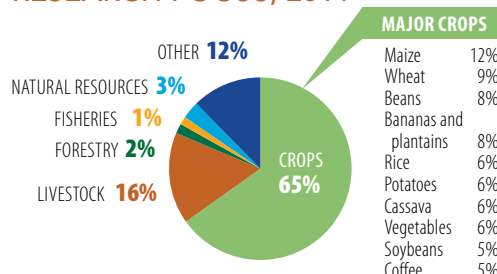
Note: Due to lack of availability, financial data exclude the higher education sector.

INSTITUTIONAL PROFILE, 2011



Note: Institutional category shares are based on the number of FTE researchers.

RESEARCH FOCUS, 2011



MAJOR CROPS	
Maize	12%
Wheat	9%
Beans	8%
Bananas and plantains	8%
Rice	6%
Potatoes	6%
Cassava	6%
Vegetables	6%
Soybeans	5%
Coffee	5%

Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 31 percent of total crop researchers focused on a wide variety of other crops.

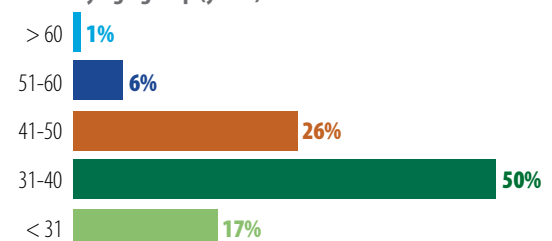
RESEARCHER PROFILE, 2011



Number by qualification (FTEs)



Share by age group (years)



CHALLENGE

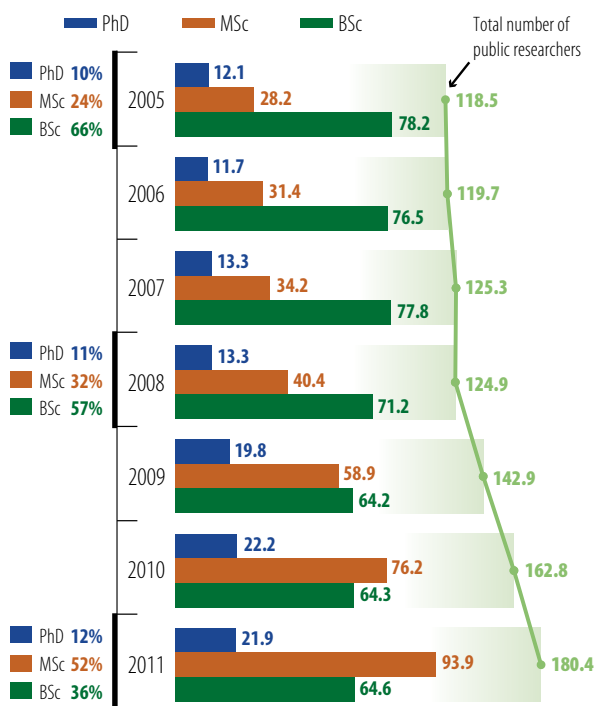
- ▶ Despite making significant advances in its agricultural research capacity in recent years—both in terms of the number of researchers and their qualifications—Rwanda still lacks a critical mass of experienced, PhD-qualified researchers to lead research programs, and mentor and train junior staff.

POLICY RESPONSE

- ▶ The government has supported the development of a number of agricultural MSc and PhD programs at NUR, together with the hiring of international researchers to mentor young scientists at RAB. The system would be well-served through the continuation, and even expansion, of both these practices until the current pool of researchers is sufficiently experienced, and local postgraduate training programs have been established.

The share of MSc-qualified scientists rose from 24 to 52 percent during 2005–2011, while the share of PhD researchers rose from 10 to 12 percent.

Public agricultural researchers by degree, 2005–2011 (FTEs)



Note: Due to lack of availability, 2011 degree data for KIST have been estimated based on prior years.

EFFORTS TO STRENGTHEN AGRICULTURAL R&D CAPACITY

In 2012 the Government of Rwanda established the Strategic Capacity Building Initiative for the purpose of building human resource capacity across the public sector. Given Rwanda's lack of local training programs, the initiative also incorporates the strategy of hiring international experts to train and mentor younger staff. To date, nine senior-level researchers have been recruited through the Ministry of Agriculture and Animal Resources, predominantly from Kenya and Uganda. Various European donors and regional organizations, such as the AGRA, FARA, and ASARECA, have supported some of RAB's researchers in undertaking postgraduate training overseas, mostly in South Africa, and Eastern African and European countries. Given that these training opportunities were already in place for researchers, Phase II of the Strategic Plan for Agricultural Transformation—financed by the International Fund for Agricultural Development—focused primarily on providing MSc-level training to extension agents; 46 agents and 4 researchers took advantage of this training during 2010–2013.

The lack of local postgraduate programs in agricultural sciences makes it difficult and expensive, for Rwandan researchers to build their qualifications. To address this issue, all of Rwanda's public universities were merged into the newly established UR in September 2013, and PhD programs in the areas of soil management and agroforestry have been established. Agricultural R&D-related activities are now conducted under the College of Agriculture, Animal Sciences, and Veterinary Medicine. The government has provided substantial financial support to UR both for training (such as students scholarships), as well as laboratory equipment and facilities. While these efforts indicate excellent progress, further expansion of graduate programs in agricultural sciences will be necessary if Rwanda is to maintain a pool of well-trained researchers into the future.

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)
Rwanda	180.4	44%	12%
Burundi	132.3	32%	18%
DR Congo	423.9	25% ^a	13%
Uganda	353.9	13%	9%

^a For DR Congo, this growth is based on data for the 2009–2011 period.

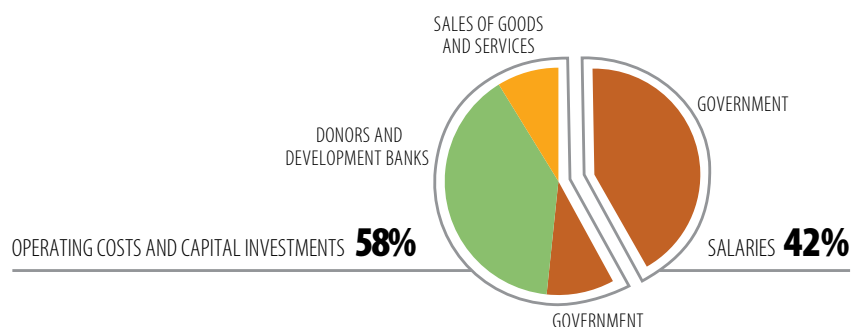
TREND

- ▶ Agricultural R&D spending in Rwanda grew by about 50 percent during 2005–2011, the period for which data were available. The government contributes the largest share of RAB's funding (55 percent in 2011), while the remainder is derived from donors (39 percent in 2011) or is generated internally through the sale of goods and services (5 percent in 2011).

OBSERVATION

- ▶ RAB relies on outside sources to fund research activities and has been highly successful in establishing a diverse funding portfolio that includes regional organizations, such as ASARECA and AGRA, and international organizations, such as CGIAR, FAO, and many others.

RAB's and ISAR's combined funding sources, 2008–2011



The majority of national government funding is allocated to staff salaries, while the small remainder is allocated to operating costs. The vast majority of the costs associated with running research programs is covered by donor funding.

▶ THE MERGER OF RESEARCH AND EXTENSION

Since 2006, the government has recognized the need to consolidate extension services and closely link them with agricultural R&D. ISAR (the precursor to RAB) lacked the capacity to conduct both research and extension, so two new agencies, RADA and RARDA, were established with the goal of more effectively delivering technologies to farmers in close collaboration with ISAR. The agricultural sector in Rwanda continued to grow over time, and demands for a more efficient agricultural R&D and extension system prompted the government to instigate a different strategy. As a result, in 2011 the government merged ISAR, RADA, and RARDA, to form RAB.

The merger has provided many benefits but, as with any large-scale institutional restructuring, was not without its challenges. By bringing scientists and extension agents together under a single entity, RAB has been able to make more effective and efficient use of scarce resources. The difficulties associated with the merger were mostly administrative—for example, salary discrepancies under the new system caused discontent—but these issues have since been rectified. RAB still needs to further integrate research and extension activities at the program level if it is to succeed in fully taking advantage of the potential synergies and efficiencies of the new structure.

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
Rwanda	27.2	35%	0.69%
Burundi	8.4	-20%	0.57%
DR Congo	16.2	76% ^b	0.17%
Uganda	106.8	15%	1.22%

^b For DR Congo, this growth is based on data for the 2009–2011 period.

OVERVIEW OF RWANDA'S AGRICULTURAL RESEARCH AGENCIES

As of 2011, the most recent year for which data are available, seven agencies conducted agricultural R&D in Rwanda. RAB is the only government agency, employing almost two-thirds of the country's agricultural researchers (111 FTEs in 2011). In addition to conducting research on crops, livestock, and natural resources, RAB coordinates national-level agricultural R&D, provides policy implementation advice to the national government, and conducts extension services across the country. As previously discussed, Rwanda's government-based agricultural R&D activities in the higher education sector were consolidated under UR in 2013. As of 2011, however, ISAE (35 FTEs) was the largest of Rwanda's six higher education agencies involved in agricultural research. Two recently established private universities, INATEK and UCK, also conduct agricultural R&D, together employing 22 FTE researchers in 2011. Agricultural R&D performed by the nonprofit and for-profit private sector in Rwanda is negligible and hence is excluded from this factsheet.

7 AGENCIES



Government

1



Higher education

6



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

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 Rwanda, visit www.asti.cgiar.org/rwanda.

ACRONYMS USED IN THIS FACTSHEET

AgGDP	Agricultural gross domestic product
AGRA	Alliance for a Green Revolution in Africa
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FTE(s)	Full-time equivalent (researchers)
INATEK	Institute of Agricultural Technology and Education of Kibungo
ISAE	Institute of Agriculture and Animal Husbandry
ISAR	Rwanda Agricultural Research Institute
KIST	Kigali Institute of Sciences, Technology, and Management
NUR	National University of Rwanda
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
RAB	Rwanda Agriculture Board
RADA	Rwanda Agricultural Development Authority
RARDA	Rwanda Animal Resources Development Authority
UCK	Catholic Institute of Kabgayi
UPU	Umutara Polytechnique University
UR	University of Rwanda

ABOUT ASTI, IFPRI, AND RAB

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 **Rwanda Agriculture Board (RAB)** is Rwanda's principal agricultural research agency; the institute falls under the Ministry of Agriculture and Animal Resources and it conducts crop, livestock, forestry, fisheries, agricultural engineering, socioeconomic, and natural resources research.

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