

ERITREA

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KEY INDICATORS, 2000–2011

Total Public Agricultural Research Spending	2000		2008		2011
Nafkas (million constant 2005 prices)	40.2		16.5		7.5
PPP dollars (million constant 2005 prices)	6.4		2.6		1.2
Overall Growth		-59%		-55%	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	74.4		106.9		116.8
Overall Growth		44%		9%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	2.15%		0.64%		0.30%
FTE researchers per 100,000 farmers	6.83		7.27		7.35

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

► Agricultural R&D spending fell dramatically in Eritrea during 2008–2011 as a result of declining donor funding to NARI, the country's main agricultural research agency, and international economic sanctions imposed by the United Nations in 2009.

► Eritrea's agricultural R&D spending is currently well below the levels required to sustain its needs; in fact, spending as a share of agricultural GDP fell by more than half between 2008 and 2011 and is among the lowest in Africa.

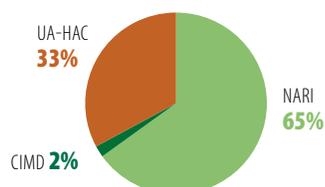
► The total number of agricultural researchers grew by close to 60 percent during 2000–2011, but the total number fluctuated from year to year. Given that more than half of its researchers are under 41 years old, and 60 percent of them hold only BSc degrees, Eritrea has one of the youngest and least-qualified pools of agricultural researchers in Africa.

FINANCIAL RESOURCES, 2011

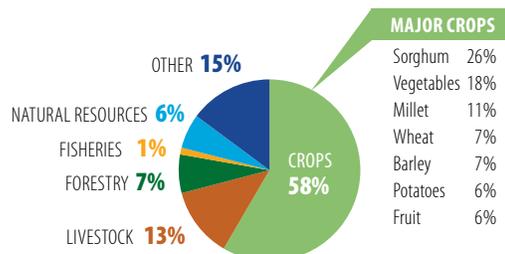
Spending Allocation	
Salaries	60%
Operating and program costs	23%
Capital investments	17%
Funding Sources	
Government	63%
Donors	37%

Note: Shares are based on data for NARI only.

INSTITUTIONAL PROFILE, 2011



RESEARCH FOCUS, 2011



MAJOR CROPS

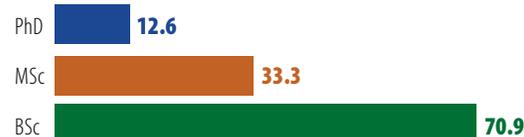
Sorghum	26%
Vegetables	18%
Millet	11%
Wheat	7%
Barley	7%
Potatoes	6%
Fruit	6%

Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 20 percent of total crop researchers focused on a wide variety of other crops.

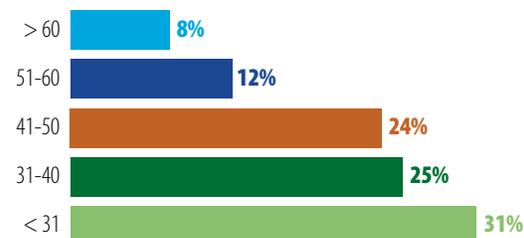
RESEARCHER PROFILE, 2011



Number by qualification (FTEs)



Share by age group (years)



CHALLENGE

- ▶ NARI and HAC, Eritrea's two main agencies involved in agricultural research, have a very small and aging pool of senior scientists with either PhD or MSc degrees. They employ a large number of locally trained, junior staff only qualified to the BSc and, in some cases, MSc levels. University staff receive higher salaries, making it difficult for NARI—which is more constrained by its government status—to compete in hiring and retaining well-qualified staff.

POLICY OPTIONS

- ▶ The increase in government support for degree training of NARI and HAC staff and recent steps to develop a PhD program at HAC are encouraging. More recruitment and training of staff will be needed in the coming years, however. In addition, the government may want to consider upgrading NARI's researchers to the "scientist" level, which would make them eligible for salaries commensurate with those offered by universities.

Number of agricultural researchers, 2005–2011 (FTEs)

	NARI		HAC	
	PhD	Total	PhD	Total
2005	2.0	70.0	3.9	15.0
2006	1.0	79.0	7.5	22.5
2007	1.0	85.0	9.3	24.3
2008	1.0	78.0	7.5	26.4
2009	1.0	78.0	8.7	34.7
2010	1.0	72.0	10.3	36.7
2011	1.0	76.0	11.6	38.4

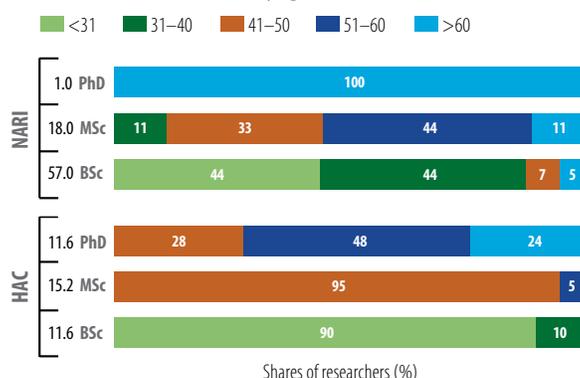
The number of researchers at NARI increased only slightly in recent years, and the institute's director general continues to be the only staff member with a PhD degree. In contrast, the number of PhD-qualified staff members at HAC has increased considerably since its establishment in 2005. Initially these were expatriate staff, mostly from India, but Eritrean nationals have replaced them in more recent years. Despite this increase, a majority of the PhD-qualified staff are over 50 years old.

▶ POOLING AND STRENGTHENING SCARCE HUMAN RESOURCES

Although NARI's pool of MSc- and BSc-qualified scientists is capable of responding effectively to farmers' needs, a minimum number of PhD-qualified researchers is necessary to ensure a high-quality research agenda; to communicate effectively with local and international stakeholders; and to secure external funding, especially through subregional or competitive funds. Acknowledging the scarce resources for agricultural research, NARI and HAC are working closely together in a number of interrelated research programs. Furthermore, NARI researchers provide lectures at HAC, and HAC staff and students occasionally use NARI's research facilities to conduct their research.

The government of Eritrea has strongly supported training for NARI and HAC scientists, with additional funding provided by the African Development Bank and ASARECA. Currently, 6 HAC scientists are pursuing PhD degrees in Kenya and South Africa, and 32 scientists from HAC and 6 from NARI are undertaking MSc degrees, either at HAC itself or abroad. Regrettably, NARI's MSc-qualified scientists are all over 50 years of old and hence do not qualify for PhD scholarships. Four of NARI's staff members are pursuing MSc degrees at HAC and 1 is undertaking MSc training in Kenya (4 funded by ASARECA and 2 funded by the government). The government is also supporting the development of a PhD program at HAC.

Distribution of researchers by age bracket, 2011



Note: In 2011, HAC employed 96 professional staff members (including 29 with PhD degrees); Data reflect the allocation of their time to agricultural R&D only, as opposed to teaching.

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)
Eritrea	116.8	9%	11%
Sudan ^a	932.8	-3%	37%
Chad	123.3	32% ^b	17%
Ethiopia	1,876.6	33%	9%

^a Sudan data refer to 2012 or the 2008–2012 period. ^b For Chad, this growth is based on the 2009–2011 period.

CHALLENGE

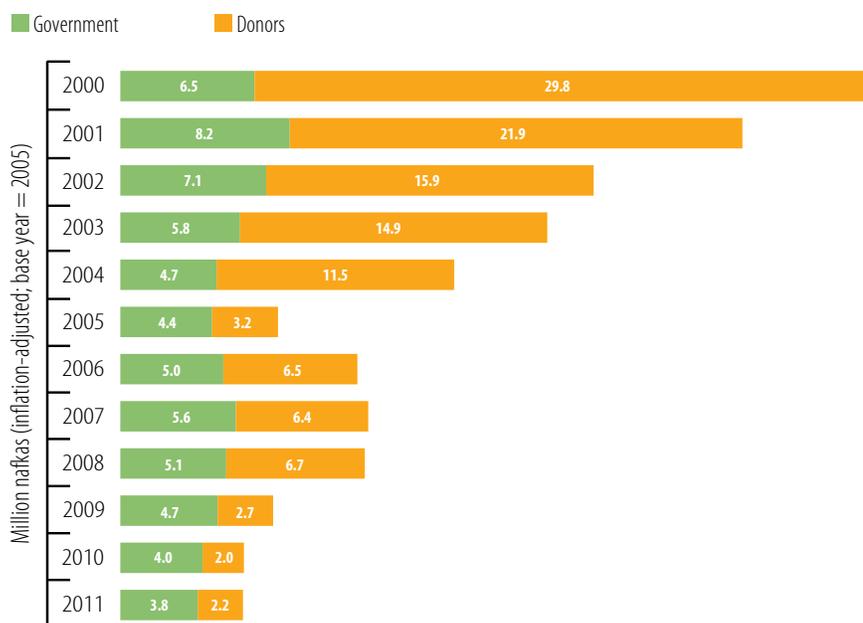
- ▶ Due to inadequate government and donor funding, NARI's agricultural R&D spending is currently well below the levels required to conduct effective agricultural research. Furthermore, economic sanctions have prevented NARI from purchasing much-needed research equipment and renovating its laboratories.

OBSERVATION

- ▶ This situation is not expected to improve until the UN-imposed embargo is lifted.

Overall, government support to NARI remained fairly constant during 2000–2011 (in inflation-adjusted terms), with slight variations from year to year. In contrast, donor funding contracted substantially, although it continued to be a major source of NARI's funding (about one-third of the total).

NARI's funding sources, 2000–2011



▶ INTERNATIONAL SANCTIONS HAVE DRAMATIC DOMESTIC CONSEQUENCES

In 2009, the United Nations Security Council imposed an embargo on Eritrea, accusing it of supplying resources to rebels in Somalia. Eritrea has challenged the validity of these accusations, but economic sanctions remain in place. Its impact on Eritrea's agricultural sector, and on the contribution of agricultural research, has been devastating. Many of the materials needed to maintain research programs—such as laboratory equipment, farm machinery, building materials, and vehicles—can only be sourced abroad. In 2010, for example, NARI attempted to purchase zero tillage planters to minimize the environmental impact of its research activities; only one vendor (in South Africa) showed interest, but ceased negotiations upon learning of the embargo.

The sanctions have also prevented much-needed renovations to NARI's laboratories and research stations, since contractors hired to undertake the work are prevented from purchasing supplies and equipment. While government and donor funding continues to flow into NARI—although at lower than pre-sanction levels—the institute has been left with budget surpluses due to these procurement issues.

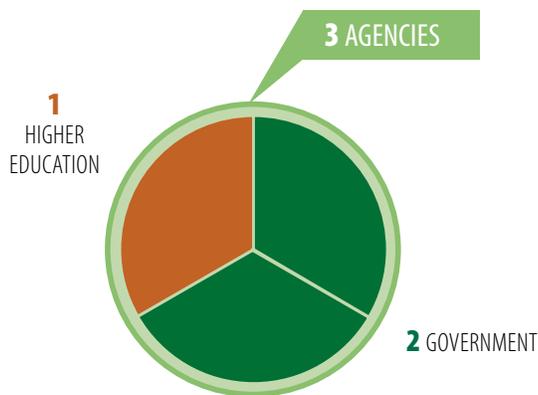
CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*

	Total spending, 2011 (million 2005 PPP dollars)	Overall spending growth, 2008–2011	Spending as a share of AgGDP, 2011
Eritrea	1.2	-55% 	0.30%
Sudan ^c	30.0	-40% 	0.19%
Chad	13.0	9% ^d 	0.90%
Ethiopia	69.6	8% 	0.19%

^c Sudan data refer to 2012 or the 2008–2012 period. ^d For Chad, this growth is based on the 2009–2011 period.

OVERVIEW OF ERITREA'S AGRICULTURAL RESEARCH AGENCIES

Three public agencies conduct agricultural R&D in Eritrea. NARI (employing 76 FTE researchers in 2011) is by far the largest agency and accounts for about two-thirds of the country's agricultural researchers (in FTEs). NARI, headquartered in Asmara, operates three regional research stations, and seven substations that concentrate primarily on crops, livestock, natural resource management, and agricultural engineering. The only other government agency involved in agricultural R&D is the Ministry of Fisheries' CIMD (employing 2.4 FTEs in 2011). The division conducts limited research on fisheries and natural resources. HAC at the University of Asmara (employing 38 FTEs in 2011) conducts agricultural research on a range of issues, primarily including crop genetic improvement, horticulture, and livestock. HAC is located at Hamelmalo to take advantage of its fertile farm land and crop diversity.



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

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 Eritrea, visit www.asti.cgiar.org/eritrea.

ACRONYMS USED IN THIS FACT SHEET

AgGDP	Agricultural gross domestic product
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
CIMD	Coastal and Island Management Division
HAC	Hamelmalo Agricultural College
FTE(s)	Full-time equivalent (researchers)
NARI	National Agricultural Research Institute
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
UN	United Nations

ABOUT ASTI, IFPRI, AND NARI

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 Institute (NARI)** is Eritrea's principal agricultural research agency; the institute falls under the Ministry of Agriculture and it conducts crop, livestock, natural resources, and agricultural engineering research.

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