OMAN

Gert-Jan Stads, Saleem Nadaf, Raed Badwan, Hamid Galoub Ali, Ahmed Al-Bakri, and Michael Rahija

KEY INDICATORS, 2009–2012

Total Public Agricultural Research Spending	2009		2012
Omani rial (million constant 2005 prices)	11.0		13.1
PPP dollars (million constant 2005 prices)	81.4		97.0
Overall Growth		**19%**	
Total Number of Public Agricultural Researchers			
Full-time equivalents (FTEs)	193.3		243.6
Overall Growth		**26%**	
Agricultural Research Intensity			
Spending as a share of agricultural GDP	4.99%		6.51%
FTE researchers per 100,000 farmers	63.80		63.60

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

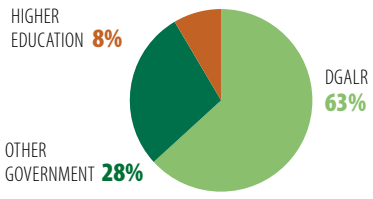
- Based on increased government support, agricultural R&D spending rose by roughly one-third during 2007–2012. At 6.5 percent, Oman's agricultural research intensity ratio (investment in agricultural research as a share of agricultural GDP) is among the highest in the world, but such high ratios are not uncommon in countries with small populations and relatively high per capita income.
- The number of agricultural researchers employed at Oman's main agricultural and fisheries research agencies, DGALR and DGFR, increased substantially during 2009–2012, although most of the new recruits were only qualified to the BSc-degree level.
- In addition to large capital investments in agricultural research infrastructure, the government demonstrated its commitment to agricultural R&D through a number of important policy and institutional changes, including the 2011 establishment of TRC and the 2012 enactment of STIP.

FINANCIAL RESOURCES, 2012

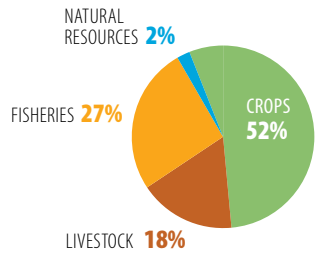
Spending Allocation	
Salaries	27%
Operating and program costs	57%
Capital investments	16%
Funding Sources	
Government	100%

Note: Shares are based on data for DGALR and DGFR only.

INSTITUTIONAL PROFILE, 2012

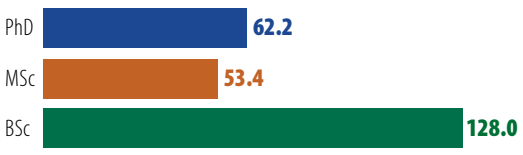


RESEARCH FOCUS, 2012

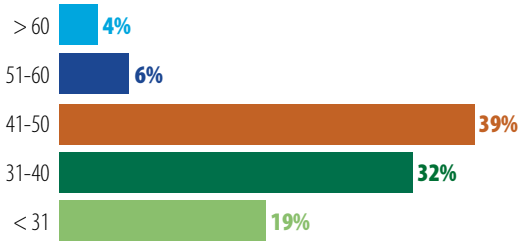


RESEARCHER PROFILE, 2012

Number by qualification (FTEs)



Share by age group (years)



CHALLENGE

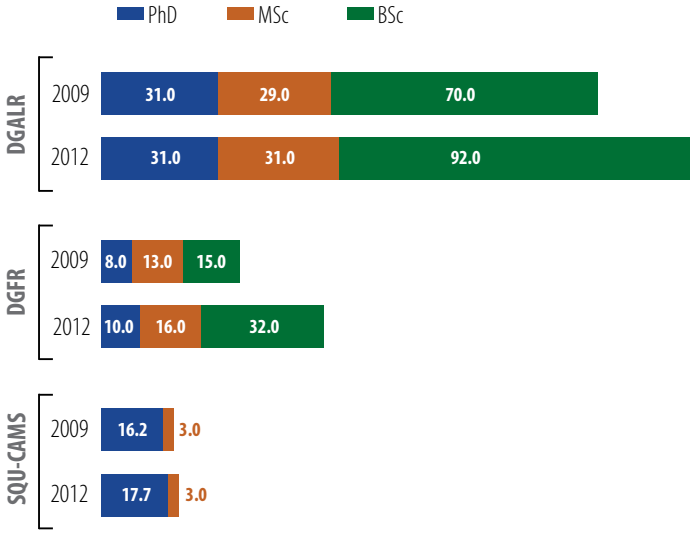
- Until recently, salary levels for professional staff at Oman's universities were between 25 and 50 percent higher than those offered by government agencies, creating significant incentives for some researchers to leave DGALR and DGFR in favor of faculty positions.

POLICY OPTION

- In January 2014, the Omani government standardized civil service salary levels, thereby improving DGALR's and DGFR's ability to compete in recruiting and retaining agricultural researchers. Sufficient financial resources will need to be made available to facilitate further training for the new (predominantly BSc-qualified) recruits, and to provide the necessary conditions to motivate them and secure their commitment over time.

During 2009–2012, the number of agricultural researchers employed at DGALR, DGFR, and SQU-CAMS grew steadily. Based on the government's 2011 policy to provide jobs that fit the qualifications of the country's unemployed youth, most of the new recruits at DGALR and DGFR were only qualified to the BSc-degree level. The number of PhD- and MSc-qualified researchers remained relatively stable during this period.

Distribution of agricultural researchers by degree, 2009 and 2012 (FTEs)



Note: In 2012, SQU-CAMS employed 19 technicians with MSc degrees and 16 with BSc degrees. These staff members do not have official researcher status and hence are not included in the figure.

GROWTH AND CONSOLIDATION OF OMANI AGRICULTURAL R&D

Since the turn of the millennium, the Omani government has been actively engaged in diversifying its economy and diminishing the country's dependence on oil exports. The agricultural and fisheries sectors are considered crucially important in this endeavor. Consequently, agricultural R&D has been given high priority, especially in light of challenges stemming from climate change, desertification, and increasing soil salinity. In 2006, the Omani government strengthened the institutional capacity of agricultural R&D by consolidating numerous isolated entities under two directorates, DGALR and DGFR. The government also provided significant capital funding for the establishment of new agricultural research stations, including research facilities and laboratories at Rumais and Jimah for DGALR, and a new Aquaculture Center under DGFR.

New academic programs in the agricultural sciences have been established in recent years. Previously, local researchers wanting to pursue a PhD degree had to travel abroad, but in 2009 SQU-CAMS began offering PhD programs in crop sciences, soil and water management, food science and nutrition, and marine science and fisheries. That year the college also rationalized its existing MSc programs and added new disciplines.

Despite these institutional, infrastructural, and training improvements, it is still quite difficult for agricultural R&D agencies to both recruit and find appropriate training opportunities for researchers in certain specialties and disciplines, including socioeconomics, agricultural economics, biotechnology, vegetable breeding, forage production and management, and toxicology.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS

	Total number of researchers, 2012 (FTEs)	Growth in number of researchers, 2009–2012	Share of PhD researchers, 2012 (FTEs)
Oman	**243.6**	**26%**	**26%**
Yemen	526.7	8%	29%
Jordan	272.3	1%	35%
Lebanon	209.2	61%	45%

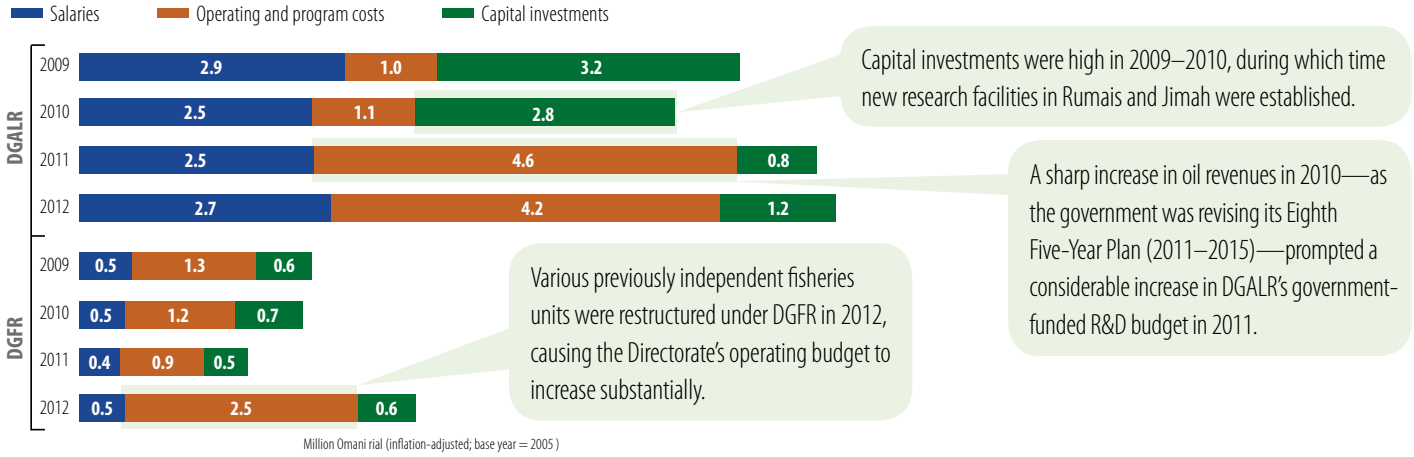
OBSERVATION

- The 2011 establishment of TRC as an independent body in support of (agricultural and nonagricultural) science and technology was a significant step in the country's scientific development. TRC is charged with building research capacity mechanisms and providing an enabling environment for public- and private-sector research and innovation. TRC also manages two competitive grant schemes, the Open Research Grant program and the Strategic Research Grant program.

OPPORTUNITY

- TRC has already funded a number of agricultural and fisheries-related research proposals from the higher education sector. It has not yet begun to fund proposals from agencies under the Ministry of Agriculture and Fisheries, but is expected to do so in the near future. These competitive grants will enhance cooperation among the country's research performers, and stimulate research excellence.

Spending by cost category for DGALR and DGFR, 2009–2012



Capital investments were high in 2009–2010, during which time new research facilities in Rumais and Jimah were established.

A sharp increase in oil revenues in 2010—as the government was revising its Eighth Five-Year Plan (2011–2015)—prompted a considerable increase in DGALR's government-funded R&D budget in 2011.

Various previously independent fisheries units were restructured under DGFR in 2012, causing the Directorate's operating budget to increase substantially.

OMAN'S EXTREMELY HIGH AGRICULTURAL RESEARCH INTENSITY RATIO

Oman has one of the highest agricultural research intensity ratios in the world. In 2012, the country invested 6.5 percent of its agricultural GDP in agricultural research. In comparison, ratios recorded in other Arab nations that year were considerably lower—for example, 1.84 percent in Jordan, 0.95 percent in Lebanon, and 0.56 percent in Yemen. Although Oman's high (and increasing) intensity ratio clearly emphasizes the strong commitment of the Omani government to funding agricultural R&D, it needs to be carefully interpreted in context.

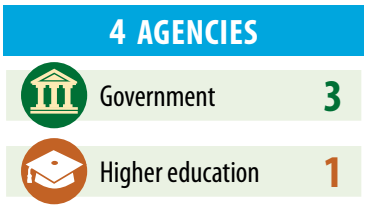
- Oman is a high-income country. High-income countries tend to have much higher agricultural research intensity ratios compared with low- and middle-income countries because economies tend to become more knowledge-based with economic growth.
- Oman is a small country. Small countries often have higher research intensities based on their inability to take advantage of economies of scale. To be effective, national research systems in small countries need to establish some minimum capacities across all relevant disciplines and major commodities, regardless of the size of the agricultural sector the system is designed to serve. As a result, they have to spend relatively more than larger countries to achieve the same results.
- Oman has a relatively small agricultural sector. Given its arid climate, agriculture in Oman accounts for just 1 percent of the country's GDP, which is one of the lowest shares in the Middle East. Unsurprisingly, the lower the size of a country's agricultural sector, the higher its agricultural R&D intensity ratio becomes.

CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*

	Total spending, 2012 (million 2005 PPP dollars)	Overall spending growth, 2009–2012	Spending as a share of AgGDP, 2012
Oman	**97.0**	**19%** ▲	**6.51**
Yemen	34.5	–28% ▼	0.56
Jordan	32.3	–5% ▼	1.84
Lebanon	34.1	57% ▲	0.95

OVERVIEW OF OMAN'S AGRICULTURAL RESEARCH AGENCIES

Four public agencies conduct agricultural R&D in Oman. DGALR (employing 154 FTE researchers in 2012) is the largest agency, accounting for close to two-thirds of the country's agricultural researchers. DGALR is headquartered in Rumais, where it operates six research centers specializing in plant production, plant protection, soil and water, date palms, livestock, and animal health. In addition, DGALR runs six research stations located across the country's various agroecological zones. DGFR (58 FTEs in 2012) is the country's principal fisheries research directorate, comprising the Marine Science and Fisheries Center, the Fisheries Quality Control Research Center, and the Aquaculture Research Center. The third-largest government agency conducting agricultural R&D is Royal Gardens and Farms (11 FTEs). This agency is mainly involved in research on crop genetic improvement and crop pest and disease control. A fourth government agency—the Oman Animal and Plant Genetic Resources Center—was established under TRC in 2011, but its research agenda had yet to commence at the time of ASTI's data collection activities in Oman. Agricultural R&D performed by the university sector in Oman is relatively small. SQU-CAMS (21 FTEs) is the only higher education agency involved in agricultural R&D. Its research predominantly focuses on fruits, vegetables, wheat, fisheries, livestock, and natural resources. No private sector for-profit agencies conducting agricultural R&D were identified in Oman.



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

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.
- **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 Oman, visit* **www.asti.cgiar.org/oman.**

ACRONYMS USED IN THIS FACTSHEET

DGALR	Directorate General of Agriculture and Livestock Research
DGFR	Directorate General of Fisheries Research
FTE(s)	Full-time equivalent (researchers)
GDP	Gross domestic product
PPP(s)	Purchasing power parity (exchange rates)
R&D	Research and development
SQU-CAMS	Sultan Qaboos University–College of Agricultural and Marine Sciences
STIP	Science, Technology, and Innovation Policy
TRC	The Research Council of Oman

ABOUT ASTI, IFPRI, AND DGALR

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 **Directorate General of Agriculture and Livestock Research (DGALR)** is Oman's principal agricultural R&D agency. It falls under the Ministry of Agriculture and Fisheries and carries out research on crops, livestock, soil, and water.

ASTI/IFPRI and DGALR gratefully acknowledge participating agricultural R&D agencies for their contributions to the data collection and preparation of this country factsheet. ASTI also thanks the Economic Research Service of the United States Department of Agriculture for its generous support of ASTI's work in West Asia and North Africa and the Association of Agricultural Research Institutions in the Near East and North Africa for facilitating the survey implementation. 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 or DGALR.