

TUNISIA

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KEY INDICATORS, 2000–2012

Total Public Agricultural Research Spending	2000		2009		2012
Tunisian dinars (million constant 2005 prices)	32.9		26.7		30.2
PPP dollars (million constant 2005 prices)	60.8		49.4		55.9
Overall Growth		-19%		13%	
Total Number of Public Agricultural Researchers					
Full-time equivalents (FTEs)	348.1		431.5		541.6
Overall Growth		24%		26%	
Agricultural Research Intensity					
Spending as a share of agricultural GDP	0.96%		0.62%		0.64%
FTE researchers per 100,000 farmers	45.56		53.21		66.05

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

► The total number of agricultural researchers in Tunisia has grown rapidly in recent years, predominantly due to the establishment of four new regional research centers under the country's overarching agricultural R&D entity, IRESA, and an influx of BSc-qualified researchers at IRA, one of the institutes under the IRESA umbrella.

► Total agricultural research spending has not kept pace with high rates of inflation and rapid agricultural output growth over time; as a result, Tunisia's agricultural research intensity ratio fell by half during 2002–2012.

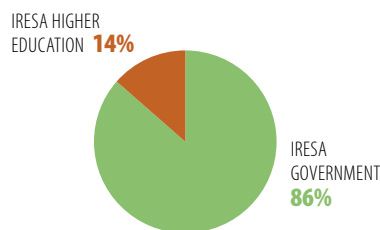
► Tunisia's agricultural researchers are among the most highly qualified in West Asia and North Africa (in terms of degree levels), but half the researchers with PhD degrees were in their fifties or sixties as of 2012, and hence are approaching retirement age.

FINANCIAL RESOURCES, 2012

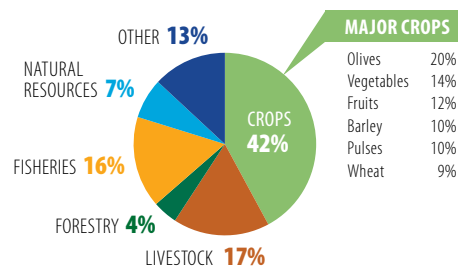
Spending Allocation	
Salaries	69%
Operating and program costs	20%
Capital investments	11%
Funding Sources	
Government	97%
Sales of goods and services	2%
Other	1%

Note: Shares are based on data for government agencies only.

INSTITUTIONAL PROFILE, 2012



RESEARCH FOCUS, 2012



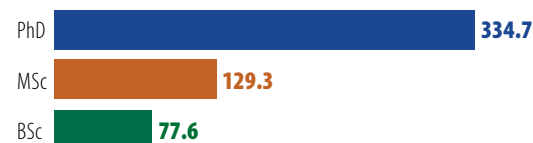
MAJOR CROPS	
Olives	20%
Vegetables	14%
Fruits	12%
Barley	10%
Pulses	10%
Wheat	9%

Notes: Major crops include those that are the focus of at least 5 percent of all crop researchers; 25 percent of total crop researchers focused on a wide variety of other crops.

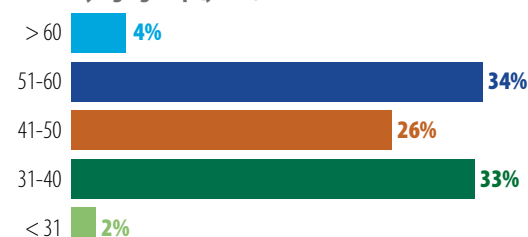
RESEARCHER PROFILE, 2012



Number by qualification (FTEs)



Share by age group (years)



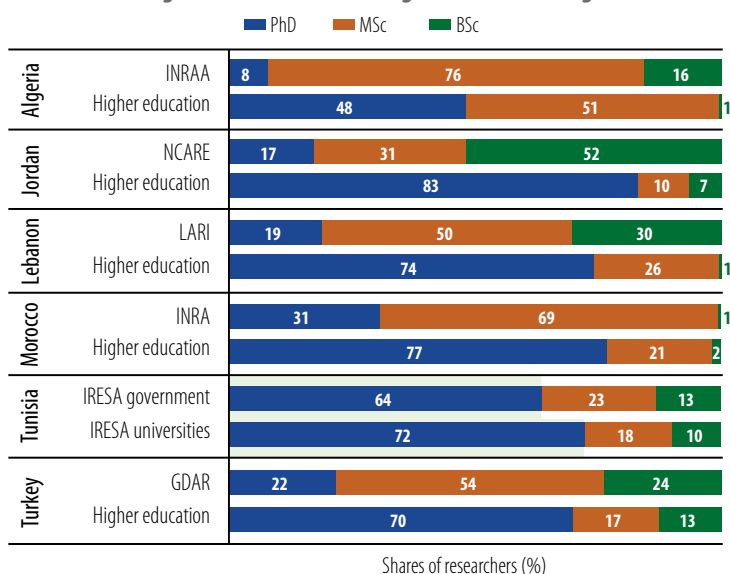
CHALLENGE

- ▶ Although Tunisia's number of agricultural researchers increased rapidly in recent years, research capacity is not optimally distributed across institutes, disciplines, and regions, or by age group. IRESA lacks a critical mass of scientists in certain key disciplines, including agronomy and biometrics. Moreover, the recently established regional centers remain understaffed and underfunded.

POLICY OPTIONS

- ▶ IRESA needs to develop a systematic human resource strategy incorporating existing and anticipated skills gaps and training needs (working closely with universities to make sure that researchers receive appropriate training). It will also need to plan for staff attrition due to the retirement and (unforeseen) departure of researchers. The successful implementation of such a plan would require political and financial support.

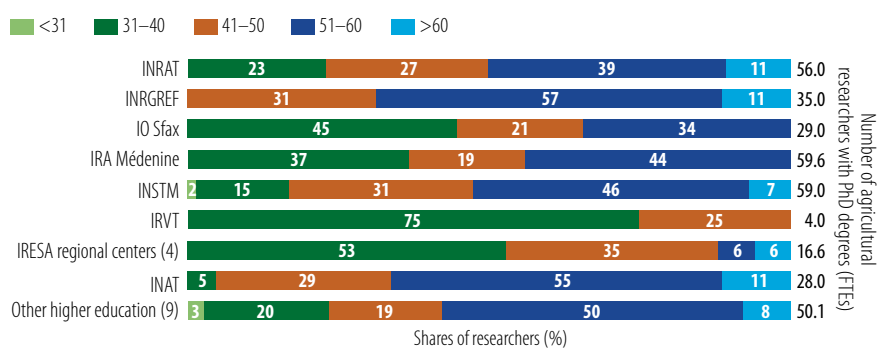
Distribution of agricultural researchers at government and higher education agencies by degree qualification, selected countries, 2012



Tunisia employs a higher share of PhD-qualified agricultural researchers than most other West Asian and North African countries, where university-based agricultural researchers, on average, hold higher qualification levels than their colleagues at government agencies. In Tunisia, these differences are less apparent because both government R&D agencies and agricultural universities are administered by IRESA under the Ministry of Agriculture. As a result, agricultural R&D in Tunisia is far more equitable across the government and higher education sectors—in terms of qualifications, remuneration, incentives, and general status—compared with many countries in the region and elsewhere.

Note: INRAA = National Agricultural Research Institute of Algeria, NCARE = National Centre for Agricultural Research and Extension, LARI = Lebanon Agricultural Research Institute, INRA = National Agricultural Research Institute, and GDAR = General Directorate of Agricultural Research.

Distribution of PhD-qualified agricultural researchers by age bracket, 2012



Note: Figures in parentheses indicate the number of agencies in each category.

In 2012, roughly half the PhD-qualified agricultural researchers in Tunisia were more than 50 years old, but at some agencies (including INRGREF and INAT), around two-thirds of researchers were in their fifties or sixties. Given the official retirement age of 65 years, it is crucial that younger BSc- and MSc-qualified researchers are given the opportunity to upgrade their qualifications in the medium term to counteract the impending large-scale loss of senior researchers in the years to come.

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)
Tunisia	541.6	26%	62%
Algeria	593.4	16%	23%
Morocco	556.3	7%	40%
Mauritania ^a	62.9	26%	25%

^a Mauritania data refer to 2011 or the 2009–2011 period.

CHALLENGE

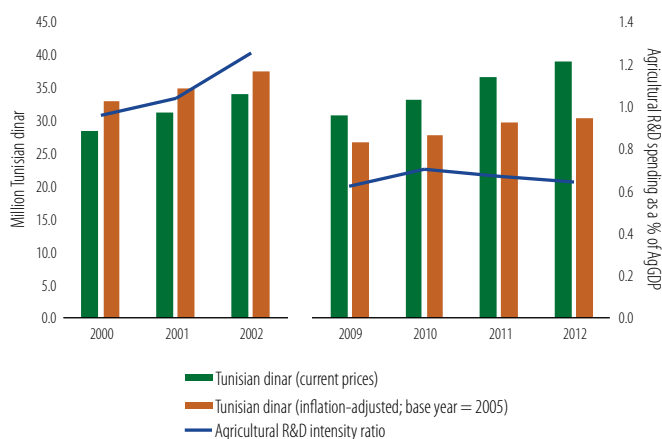
- Tunisia's agricultural R&D intensity ratio (spending as a share of AgGDP) has traditionally been higher than the 1-percent target recommended by the United Nations and NEPAD, partly due to funding through three consecutive World Bank projects (1990–2008). Since the completion of PRSAA in 2008, agricultural R&D has been almost entirely funded by the government and the national agricultural R&D intensity ratio has fallen considerably.

POLICY OPTION

- It is important that Tunisian agricultural R&D institutes diversify their funding base, in particular by generating funding internally through the sale of goods and services. To stimulate private agricultural R&D funding, the government needs to provide a more enabling policy environment through tax incentives and subsidies, protection of intellectual property rights, and regulatory reforms. Greater flexibility in human resource and institutional policies is also needed to facilitate the participation of Tunisian researchers in international research initiatives, such as the EU-supported Horizon 2020.

Although agricultural R&D spending has steadily increased in recent years when expressed in current Tunisian dinars, inflation-adjusted investment levels were 20 percent lower in 2012 than those recorded a decade earlier.

Long-term trends in agricultural R&D spending, 2000–2012



Tunisia's agricultural R&D intensity ratio (total agricultural R&D spending as a percentage of AgGDP) fell by half during 2002–2012, indicating that agricultural R&D investment levels have not kept pace with growth in agricultural output.

► STRENGTHENING AGRICULTURAL RESEARCH THROUGH DECENTRALIZATION AND CONSOLIDATION

A number of important institutional changes have taken place in Tunisia's agricultural research system in recent years. In 2008, INSTM and IRA were transferred from the Ministry of Higher Education and Scientific Research to IRESA, bringing them closer to the constituents they serve. In addition, following recommendations from the World Bank, IRESA embarked on a program of decentralizing its research activities with a view to enhancing its ability to meet farmers' needs. The program involved strengthening IRESA's regional branches by increasing researcher numbers, investing in infrastructure, and securing funding for regional research programs. In addition to two new higher education agencies, four new regional centers were established: an agricultural research center focusing on oases, in Tozeur (2006); a research center focusing on horticultural and biological agriculture, in Sousse (2006); a research center for the center–west region of the country, in Sidi Bouzid (2009); and a crop research center, in Béja (2010). The 2011 political uprising and transition period thereafter has delayed the scheduled establishment of a fifth regional center in El Kef.

A new, long-term strategy for IRESA is currently being prepared. In the process, IRESA's mission, revised structure, programs, and funding arrangements are being reviewed. One of the key challenges in the coming years will be establishing greater complementarity between the research conducted by the national and regional centers. In addition, linkages between research and extension need to be improved. Sufficient government funding will need to be made available to address these issues, to enable the next generation of scientists to be trained, and to strengthen linkages between research and technology transfer.

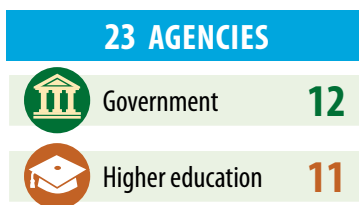
CROSS-COUNTRY COMPARISONS OF KEY INDICATORS *continued*

	Total spending, 2012 (million 2005 PPP dollars)	Overall spending growth, 2009–2012	Spending as a share of AgGDP, 2012
Tunisia	55.9	13%	0.64%
Algeria	81.7	19%	0.21%
Morocco	131.2	3%	0.49%
Mauritania ^b	8.9	-21%	0.80%

^b Mauritania data refer to 2011 or the 2009–2011 period.

OVERVIEW OF TUNISIA'S AGRICULTURAL RESEARCH AGENCIES

Twenty-three agencies perform agricultural R&D in Tunisia, all under the umbrella of IRESA, a semiautonomous institute administered by the Ministry of Agriculture. IRESA has the national mandate to develop research programs, oversee research budgets, facilitate linkages between its research and education agencies and with extension agencies and producer organizations, and ensure the relevance of the research conducted according to national agricultural production and development priorities. IRESA comprises 6 research institutes, 4 regional centers, 2 so-called regional poles, and 11 higher education agencies. The 6 research institutes under IRESA are INRAT (74 FTE researchers in 2012), INSTM (75 FTEs), IRA (120 FTEs), INRGREF (59 FTEs), IO (35 FTEs), and IRVT (9 FTEs). INRAT is Tunisia's principal crop and livestock research institute. Headquartered in Tunis, it operates 20 centers, 6 laboratories, and 5 experiment stations across the country. INRAT's research focuses predominantly on barley, wheat, pulses, vegetables, livestock, and socioeconomic. IRA conducts dry area research, particularly on camels, pastures and forages, barley, and pulses. INSTM focuses on fisheries; INRGREF on forestry, water, and agricultural engineering; IO on olive trees; and IRVT on livestock. INAT (35 FTEs) is IRESA's largest higher education institute. Its principal mission is teaching, but crop, livestock, fisheries, and natural resources research play a relatively important role as well. The other higher education agencies each employed 13 or fewer FTEs in 2012. The private sector plays a negligible role in the conduct of agricultural R&D in Tunisia.



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

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 Tunisia, visit www.asti.cgiar.org/tunisia.

ACRONYMS USED IN THIS FACTSHEET

AgGDP	Agricultural gross domestic product
FTE(s)	Full-time equivalent (researchers)
INAT	Tunisian National Institute for Agronomy
INRAT	National Agricultural Research Institute of Tunisia
INRGREF	National Research Institute for Water Management, Forestry, and Agricultural Engineering
INSTM	National Institute for Aquatic Science and Technology
IO	Olive Tree Institute
IRA	Institute for Arid Regions
IRESA	Agricultural Research and Higher Education Institution
IRVT	Tunisian Institute of Veterinary Research
NEPAD	New Partnership for Africa's Development
PPP	Purchasing power parity (exchange rates)
PRSA	Agricultural Support Services Strengthening Project

ABOUT ASTI, IFPRI, AND IRESA

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 **Agricultural Research and Higher Education Institution (IRESA)** implements and coordinates agricultural R&D in Tunisia and oversees a network of government and higher education agencies that conduct research on crops, livestock, forestry, fisheries, and natural resources.

ASTI/IFPRI and IRESA 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 IRESA.