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.
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.

**Challenge**

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**

<table>
<thead>
<tr>
<th></th>
<th>Total number of researchers, 2012 (FTEs)</th>
<th>Growth in number of researchers, 2009–2012</th>
<th>Share of PhD researchers, 2012 (FTEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td>541.6</td>
<td>26%</td>
<td>62%</td>
</tr>
<tr>
<td>Algeria</td>
<td>593.4</td>
<td>16%</td>
<td>23%</td>
</tr>
<tr>
<td>Morocco</td>
<td>556.3</td>
<td>7%</td>
<td>40%</td>
</tr>
<tr>
<td>Mauritania*</td>
<td>62.9</td>
<td>26%</td>
<td>25%</td>
</tr>
</tbody>
</table>

* 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.

- 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.

- 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.

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.

- 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.
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 socioeconomics. 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.

23 AGENCIES

Government 12
Higher education 11

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

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.

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