

# AGRICULTURAL R&D IN BURKINA FASO

## An Assessment of the Environment and Agricultural Research Institute

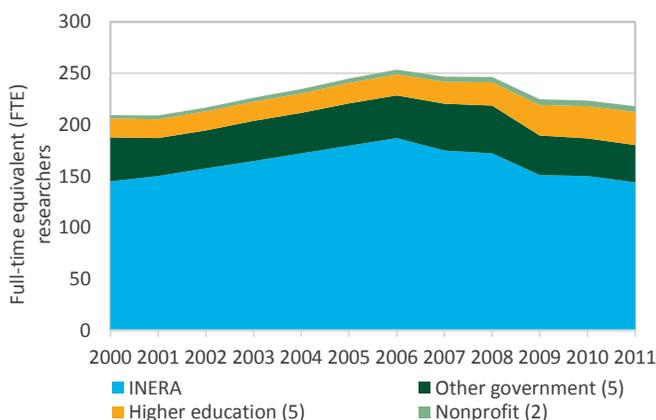
Hamidou Traoré, San Traoré, and Gert-Jan Stads

Summary Note • July 2014

### OVERVIEW OF NATIONAL AGRICULTURAL R&D

Fifteen public agencies conduct agricultural research in Burkina Faso. The Environment and Agricultural Research Institute (INERA) is the largest, accounting for about two-thirds of the country's full-time equivalent (FTE) agricultural researchers (144 FTEs in 2011).<sup>1</sup> Aside from its headquarters in Ouagadougou, INERA comprises an environmental and agricultural research and training center located in Kamboinsé, and five regional agricultural and environmental research centers distributed among the country's agroecological zones. INERA's research programs are structured around four themes: animal production, crop production, forestry, and natural resource and farming-systems management. Five other government agencies conduct agricultural R&D in Burkina Faso, the largest of which include the Research Institute for Applied Sciences and Technologies (IRSAT), which focuses on food technology and employed 21 FTEs in 2011, and the National Forest Seed Center (CNSF), which focuses on forestry research and employed 8 FTEs in 2011. The higher education sector plays an increasingly important role in agricultural R&D in Burkina Faso. The University of Ouagadougou (UO), is by far the largest agency in this category, employing 19 FTEs in 2011. Two nonprofit agencies—the Association for the Promotion of Livestock in the Sahel and the Savanna (APESS) and Albert Schweitzer Ecological Center (CEAS)—conduct agricultural

**Figure 1. Agricultural researchers by institutional category, 2000–2011**



Source: Compiled by authors from ASTI–INERA data.

Note: For full details of the agencies included in the dataset, see [www.asti.cgiar.org/burkina-faso](http://www.asti.cgiar.org/burkina-faso).

R&D, albeit on an ad hoc basis. Private for-profit research in Burkina Faso is limited, although SOFITEX plays an important role in cotton research.

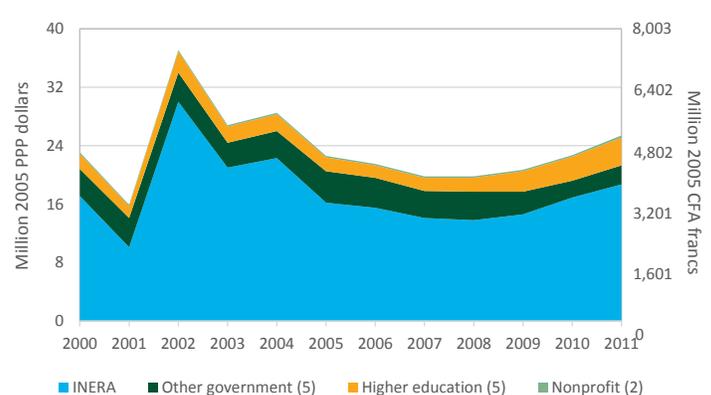
The national number of agricultural researchers grew until 2006, but thereafter steadily declined (Figure 1). In 2011, the country employed 218 FTE researchers, roughly half of whom held PhD degrees. Total agricultural research expenditures fluctuated significantly over the same timeframe, with spending peaks and lows coinciding with the initiation and completion of large donor-funded projects (Figure 2). Underinvestment in agricultural R&D in Burkina Faso remains serious. In 2011, the country invested only 0.42 percent of its agricultural GDP in agricultural R&D, which is well below the recommended 1-percent target set by the the New Partnership for Africa's Development and the United Nations.

### INERA'S CURRENT STATUS

#### Institutional Issues

- INERA falls under the National Center for Scientific and Technological Research (CNRST), which in turn is administered by the Ministry of Higher and Tertiary Education and Scientific Research. Linkages between research and extension remain weak, in part because of different ministerial affiliations, but also because of a lack of a clear demarcation between the roles of each sector.

**Figure 2. Agricultural research spending by institutional category, 2000–2011**



Source: Compiled by authors from ASTI–INERA data.

Note: For full details of the agencies included in the dataset, see [www.asti.cgiar.org/burkina-faso](http://www.asti.cgiar.org/burkina-faso).

- Discrepancies in the salary levels of INERA’s researchers and university-based researchers have recently been removed through a 35–40 percent salary increase, combined with a number of other benefits. Nevertheless, salary levels remain well below those of neighboring countries.
- CNRST’s administrative procedures are deficient. Many researchers officially listed as being on INERA’s payroll by to the administration do not work at the institute, but instead are from other ministerial divisions. This understandably impedes effective human resource management.
- INERA is lacking in efficient administration systems and practices. Data management, for example, is weak, with each center managing its own financial and human resource databases. Donor funding is often disbursed directly to the centers without passing through headquarters, and without the knowledge of the director of finance.

### Human Resources

- INERA’s research capacity has contracted since 2006. Between 2006 and 2011, INERA lost more than 40 PhD-qualified researchers. Some retired, but most departed for more lucrative positions in the private sector, at international organizations, or in neighboring countries.
- In 2013, close to half of INERA’s PhD-qualified researchers were at least 50 years. Given the official retirement age of 60–65 years (depending on the scientist’s CAMES rank), many researchers will soon retire, and the remaining pool of researchers will be inadequate—both in terms of numbers and skills mix—to enable the institute to effectively carry out its mandate.
- INERA did not recruit any researchers during 2008–2012. Recognizing that INERA will soon face significant human resource challenges, the government approved a plan to recruit approximately 30 young researchers qualified to the MSc and PhD levels per year between 2013 and 2017. It will be crucial for these young researchers to receive appropriate training and mentoring so they can develop the skills and experience needed to conduct effective research, and that appropriate conditions and incentives are established to encourage their long-term commitment to INERA.
- Some disciplines, including animal health, agricultural machinery, agroecology, and others currently lack PhD-qualified researchers. Recent recruitments have addressed the pressing lack of cotton and horticulture breeders.
- INERA has always had a training plan, but lack of funding has prevented the plan from being implemented. Virtually all training is funded by donors. In March 2013, 26 young researchers and technicians from INERA and IRSAT were chosen to receive MSc (18) and PhD (8) training, both

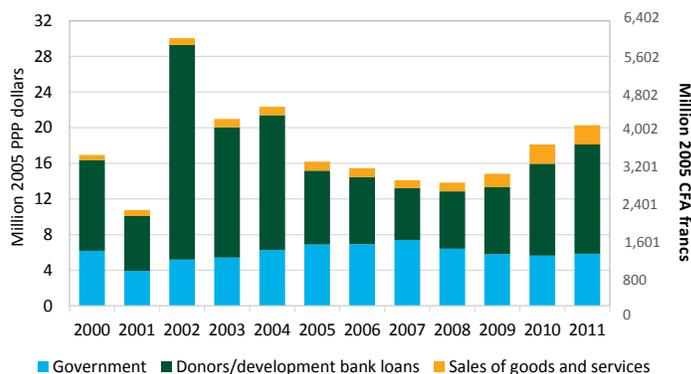
locally and in other West African countries as part of the West Africa Agricultural Productivity Program (WAAPP). Many more are expected to take advantage of this opportunity in the coming years.

- Unions have blocked merit-based promotion in favor of promotions based on seniority, whereby all researchers advance one step every two years. Productive researchers who generate funding and whose work gets published advance no faster than scientists who do not. Obviously this is serious impediment to motivation and job satisfaction.

### Financial Resources

- INERA’s funding has been highly volatile over time (Figure 3).
- Despite the recent influx of funding to support the recruitment of government-based researchers, daily operations and research infrastructure remain severely underfunded and dependent on donor contributions, predominantly through small-scale, mostly ad hoc projects. Since the completion of the World Bank loan-funded PNDISA-II in 2004, no capital investments have been made to maintain or upgrade research laboratories and equipment.
- Under WAAPP, INERA will become the center of specialization for research on mangoes, onions, and tomatoes.<sup>2</sup> Most of the WAAPP funding is allocated to staff training and the rehabilitation of R&D infrastructure. Actual funding for R&D programs remains limited. WAAPP includes of a competitive fund for research on maize, rice, groundnuts, shea butter, and cattle. Notably, however—and unlike most West African countries—WAAPP’s support of in Burkina Faso takes the form of a grant, not a loan.
- While previous World Bank loan-funded projects (PRA-I and PNDISA) were implemented institute-wide, WAAPP only focuses on a few commodities, leaving others underfunded. Management of WAAPP in Burkina Faso has faced severe capacity constraints that have delayed the project’s implementation. This has been further compounded by bureaucratic approval procedures.

Figure 3. INERA’s funding sources, 2000–2011



Source: Compiled by authors from ASTI-INERA data.

- Until recently, all funds INERA raised internally were channeled back to the Treasury, creating a disincentive for the institute to focus on the sale of goods and services. The change opens up new opportunities for INERA to increase its revenues.
- To date, INERA has been moderately successful in securing funding from the National Innovation and Research and Development Fund (FONRID), a competitive government fund created in 2011 that disburses 500 million CFA francs per year.

### R&D Infrastructure

- INERA has 21 research laboratories, 13 of which are located in Kamboinsé and 8 in Farako-Bâ; 90 percent of the institute’s research equipment—most of which is outmoded or derelict—is located in Kamboinsé.
- Families have permanently occupied some of INERA trial fields. INERA needs more legal protection to prevent this from happening.
- Numerous other issues impede INERA’s research in terms of infrastructure:
  - frequent power outages (that can, for example, disrupt trials to the point of having to repeat them);
  - lack of training on how to use (and repair) complex equipment;
  - lack of facilities to manage and destroy organic waste;
  - too few vehicles to meet the institute’s needs; and
  - insufficient computer servers, unreliable Internet connections, and outdated software.

### Research Output

- INERA developed 92 new varieties during 2008–2014, mainly of cotton, maize, sorghum, groundnuts, and rice. The institute adapted a further 78 varieties, mainly of millet, soybeans, and cotton. Compared with most other West African national agricultural research institutes, INERA’s release of new varieties is substantial.
- Only two cotton and two sorghum varieties have been protected by the African Intellectual Property Organization (OAPI). Increased regionalization of agricultural research in West Africa through WAAPP raises complex intellectual property rights issues that urgently need to be resolved.
- Data on INERA’s publications during 2008–2012 were derived from a catalog that potentially is not exhaustive (Table 1). The available data reveal that researchers tend to publish more in international rather than national journals given the impact the first have on their CAMES ratings. Nonetheless, the average number of publications per researcher per year (0.3 according to the available data) remains very low.

## CONCLUSION AND POLICY OPTIONS

- The government made significant financial commitments to agricultural research during 1990–2004 through the World Bank loan-funded PRA I and PNDSA II, which facilitated upgrades to infrastructure and research facilities, and enabled a critical mass of researchers to be trained. Nevertheless, many of the gains achieved in the past are now being eroded: scientists are nearing retirement age, and laboratories are urgently in need of rehabilitation.
- The government recently approved the recruitment of 30 young MSc- and PhD-qualified scientists per year during 2013–2017. Further training will be needed, however, which will be costly.
- WAAPP will address some of the training and rehabilitation, needs, but much more is needed. Rigid procedures under WAAPP also need to be revised if objectives are to be attained.
- Recent salary increases had a positive impact on staff morale, but more is needed. Salary discrepancies with neighboring countries need to be addressed, and other incentives need to be instituted.
- INERA has been extremely dependent on volatile donor funding over time. The government needs to allocate funding for research programs, not just staff salaries. Donor funding could become more coherent if it were channeled through FONRID, or another centralized entity, and distributed on a competitive basis.
- The Economic Community of West African States (ECOWAS) should address the issue of intellectual property rights under WAAPP given that new varieties can only be registered in one country but will (hopefully) be adopted by farmers across the region.
- M&E systems need to be improved. The development and maintenance of databases on staff, funding, research

**Table 1. INERA’s scientific publications, 2008–2012**

Publications	2008	2009	2010	2011	2012
<i>National publications</i>					
Journal articles	2	1	0	3	0
Books	0	0	0	1	0
Book chapters	1	1	2	3	0
Theses	5	9	8	9	6
Extension journals	3	0	1	1	0
“Fiches techniques”	5	3	3	0	3
Presentations at scientific meetings	3	1	10	1	0
<b>Total</b>	<b>19</b>	<b>15</b>	<b>24</b>	<b>17</b>	<b>9</b>
<i>International publications</i>					
Journal articles	41	17	53	32	22
<b>Total</b>	<b>60</b>	<b>32</b>	<b>77</b>	<b>49</b>	<b>31</b>

Source: Compiled by authors from ASTI/IFPRI–CORAF/WECARD survey data.

equipment and agricultural equipment, research data, publications help R&D managers to plan better.

- Linkages between research and extension need to be strengthened. Since the 1990s, the number of extension agents has declined and the National Agricultural Extension and Advisory System (SNVACA) is no longer effective. More manpower and funding for extension is needed, so that INERA's research outputs can be disseminated and adopted widely.

#### FOR FURTHER READING

[www.asti.cgiar.org/pdf/factsheets/burkinafaso-factsheet.pdf](http://www.asti.cgiar.org/pdf/factsheets/burkinafaso-factsheet.pdf)

#### NOTES

1. FTEs only take into account the time researchers actually spend on research, as opposed to other activities like teaching or unrelated administrative duties.
2. Burkina Faso is by no means an expert in these areas, but rice had already been assigned to Senegal, and cotton was assigned to Mali.

#### ABOUT THE ASSESSMENT

Given the importance of agriculture in West Africa, the Economic Community of West African States (ECOWAS) asked the West and Central African Council for Agricultural Research and Development (CORAF/WECARD) to undertake an in-depth assessment of agricultural research capacity in the region focusing on key institutional, human resource, and financial resource issues. The assessment is a critical input into the development of national and regional agricultural policy recommendations, which will in turn feed into a regional agricultural research strategy for West Africa.

To accomplish the assessment, CORAF/WECARD requested the support of the Agricultural Science and Technology Indicators (ASTI) initiative of the International Food Policy Research Institute (IFPRI). ASTI facilitated the assessment in six countries—Benin, Burkina Faso, Ghana, Senegal, Sierra Leone, and Togo—which included a quantitative survey on human and financial resources, R&D infrastructure, and R&D outputs; a series of interviews with selected research and managerial staff; and a staff motivation survey distributed to a selected group of researchers and managerial staff.



#### ABOUT THE AUTHORS

**Hamidou Traoré** is the scientific director of the Environment and Agricultural Research Institute (INERA). **San Traoré** was the head of INERA's Study and Project Service. **Gert-Jan Stads** is senior program manager with the Agricultural Science and Technology Indicators (ASTI) initiative of the International Food Policy Research Institute (IFPRI).

#### ABOUT ASTI, IFPRI, AND CORAF/WECARD

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 **West and Central African Council for Agricultural Research and Development (CORAF/WECARD)** is a nonpolitical organization of the national agricultural research systems of 23 countries of West and Central Africa. It aims to increase the efficiency of agricultural research in the region in order to facilitate economic growth, food security, and export competitiveness through productive and sustainable agriculture.

ASTI/IFPRI and CORAF/WECARD gratefully acknowledge INERA's managerial and research staff for their contributions to the data collection and preparation of this summary note. ASTI also thanks CORAF/WECARD for its financial support of the assessment; the Bill and Melinda Gates Foundation for its generous support of ASTI's work in Africa South of the Sahara; and Mary Jane Banks, Lang Gao, Wilmer Gutierrez, and Léa Vicky Magne Domgho for their contributions to the assessment. This note 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 CORAF/WECARD.

Copyright © 2014 International Food Policy Research Institute and West and Central African Council for Agricultural Research and Development (CORAF/WECARD). Sections of this document may be reproduced without the express permission of, but with acknowledgment to IFPRI and CORAF/WECARD. For permission to republish, contact [ifpri-copyright@cgiar.org](mailto:ifpri-copyright@cgiar.org).