

# AGRICULTURAL SCIENCE AND TECHNOLOGY INDICATORS



ASTI Country Brief No. 16 • March 2004

# TOGO

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This brief reviews the major investment and institutional trends in public agricultural research in Togo since the early 1970s, including a new set of survey data for the 1990s collected under the Agricultural Science and Technology Indicators (ASTI) in itiative (IFPRI–ISNAR–CORAF/WECARD 2002–03).<sup>1</sup>

## INSTITUTIONAL DEVELOPMENTS

Unlike many other countries in West Africa, Togo is self sufficient in terms of food production. In 2002, roughly 60 percent of the population worked in the agricultural sector, and agriculture accounted for about a quarter of total export earnings (FAO 2003), making agricultural research and development (R&D) an important priority. We identified six agencies involved in agricultural R&D in Togo in 2001.<sup>2</sup> These agencies employed a comb ined total of 102 full-time equivalent (fte) researchers and spent approximately 1.8 billion 1999 CFA francs—equivalent to 14 million 1993 international dollars (Table 1).<sup>3</sup>

Togo's principal agricultural research agency, the Togolese Agricultural Research Institute (ITRA), accounted for nearly 60 percent of the country's agricultural researchers and more than three-quarters of expenditures in 2001.<sup>4</sup> ITRA was established in July 1997 based on World Bank recommendations under the National Agricultural Services Support Project (PNASA) and resulted in the fusion of several research institutes that until that time were administered by the National Agricultural Research Directorate (DNRA): the National Food Crops Institute (INCV), the National Nutrition and Food Technology Institute (INTA), the National Soil Institute (INS), the Cotton and Exotic Textiles Research Institute (IRCT), the Coffee and Cocoa Research Institute (IRCC), and the National Animal Husbandry and Veterinary Institute (INZV) (See *A Short History of Government-Based Agricultural Research* on page 2).<sup>5</sup> ITRA, under the Ministry of Agriculture, Livestock, and Fisheries (MAEP), is responsible for research on agricultural systems, crops, livestock, fisheries, natural

Table 1—Composition of agricultural research expenditures and total researchers, 2001

Spending				Share		
Type of agency	1999 CFA francs	1993 international dollars	Researchers	Spending	Researchers	Agencies in sample <sup>a</sup>
	(mili	ions)	(fte's)	(percent)		(numbei)
ITRA	1,343.5	10.5	60.0	76.3	58.6	1
Nonprofit <sup>b, c</sup> Higher	203.8	1.6	9.1	11.6	8.9	3
education b, d	214.2	1.7	33.3	12.2	32.5	2
Total	1,761.4	13.8	97.7	100	100	6

Source: Compiled by authors from survey data (IFPRI -ISNAR-CORAF/WECARD 2002-03).

<sup>a</sup>See note 2 for a list of the 6 agencies included in the sample.

<sup>b</sup>The expenditures for the nonprofit and higher-education agencies are estimates based on ITRA's average expenditures per researcher.

<sup>c</sup> The 20 staff at the 3 nonprofit agencies spent between 10 and 80 percent of their time on research, resulting in 9.1 fte researchers. <sup>d</sup> The 171 staff at the 2 higher-education agencies spent between 10 and 30 percent of their time on research,

<sup>d</sup> The 171 staff at the 2 higher-education agencies spent between 10 and 30 percent of their time on research, resulting in 33.3 fte researchers.

## **KEY TRENDS**

- Total agricultural R&D expenditures and funding declined steadily throughout the 1990s, while researcher numbers remained relatively stable.
- The main agricultural R&D agency is the Togolese Agricultural Research Institute (ITRA), accounting for more than three-quarters of the country's expenditures in 2001 and nearly 60 percent of its agricultural researchers.
- The Togolese agricultural sector was significantly restructured under the National Agricultural Services Support Project (PNASA), culminating in the formation of ITRA in 1997. ITRA was largely dependent on PNASA funding, which was drawn predominantly from World Bank loans.
- The future of ITRA's funding remains uncertain with the end of PNASA in 2003. Many research programs have been cut, and only projects funded by regional networks have adequate funding.

# **ABOUT ASTI**

The Agricultural Science and Technology Indicators (ASTI) Initiative consists of a network of national, regional, and international agricultural R&D agencies managed by IFPRI and ISNAR. The initiative compiles, processes, and makes available internationally comparable data on institutional developments and investments in public and private agricultural R&D worldwide, and analyses and reports on these trends in the form of occasional policy digests for research policy formulation and priority setting purposes.

Primary funding for the ASTI initiative was provided by the CGIAR Finance Committee/World Bank with additional support from the Australian Center for International Agricultural Research (ACIAR), the European Union, and the U.S. Agency for International Development (USAID). resources management, and food technology. It is headquartered in Lomé and has satellite centers (CRAs), located in each of the country's four agroecological zones: the coast, the forest zone, the humid savannas and the dry savannas (ITRA 2002). The institute has management autonomy and is governed by a board consisting of two representatives from the government, one from the Technical Advice and Support Institute (ICAT),<sup>6</sup> one each from the coffee/cocoa and cotton commodity organizations, one from the organization of agricultural input importers, and five from various producer organizations (World Bank 2003).

In 2001, three nonprofit agencies involved in agricultural R&D accounted for 12 percent of Togo's agricultural research expenditures and 9 percent of total fte researchers. The Action and Research Group for Durable Human Development (GLOBE) was founded in 1998 but only began conducting research on crops, livestock, and natural resources in 2000. In 2001, GLOBE employed 8 fte researchers. Founded in 1990, the Association for the Promotion of Agro -Forestry (APAF) conducts limited forestry research, and the Research Division of the Young Men's Christian Association (YMCA), which commenced local research activities in 1995, carries out research relating mainly to crops, forestry, and postharvest activities. In 2001, APAF and YMCA employed 0.5 and 0.6 fte researchers, respectively.

The higher-education sector plays an important role in agricultural research in Togo. In 2001, the Advanced School of Agronomics (ESA) of the University of Lomé, accounted for nearly a quarter of the country's total fte researchers, employing 24 fte researchers. ESA's research focus includes crops, livestock, rural economics and sociology, and agricultural machinery and engineering. ESA conducts its activities at the research stations of institutes like ITRA and also has four agropedagogical farms of its own —one in each agroecological zone (ESA n.d.). The Faculty of Sciences of the University of Lomé also conducts agricultural research—in particular on crops, forestry, and natural resources—and employed 9 fte researchers in 2001.

No private for profit companies were identified as participating in agricultural R&D in Togo between 1991 and 2001; however, ITRA conducts research on behalf of the Togolese Cotton Company (SOTOCO), the Togolese Phosphate Office (OTP), and commercialization enterprises of phytosanitary and fertilization products. ITRA also maintains collaboration with the scientific networks of the West and Central African Council for Agricultural Research and Development (CORAF/WECARD), the West Africa Rice Development Association (WARDA), the Foundation for Sustainable Food Security in Central West Africa (SADAOC), the West and Central Africa Sorghum Research Network (ROCARS), and the West and Central Africa Maize Network (WECAMAN), as well as a number of international institutions such as the International Institute of Tropical Agriculture (IITA), the International Livestock Research Institute (ILRI), and the International Center for Research and Development of Livestock in the Subhumid Zone (CIRDES) (ITRA 2002). In addition, important linkages exist between ESA and ITRA and the public and private producer organizations of Togo. At the international level, ESA works closely with various French, Belgian, Spanish, and Brazilian universities, as well as international organizations such as IITA and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (ESA n.d.).

## HUMAN AND FINANCIAL RESOURCES IN AGRICULTURAL R&D

#### **Overall Trends**

On average, the total number of agricultural researchers in Togo increased by 5.9 percent per year during 1971–2001 (Figure 1a)<sup>7</sup> but in actuality most of this growth occurred prior to 1986 (11.1 percent per year) rather than over the past 15 years, when growth stagnated at 0.3 percent per year. At the time of independence in 1960, Togo had very few national agricultural researchers compared with other African countries (Beintema et al. 1996), leading to substantial recruitment efforts over the next 20 years. From 1991 to 2001, however, government agricultural R&D agencies once again lost ground, with researcher numbers diminishing steadily by 3.4 percent per year. In contrast, total fte researcher numbers in the higher-education agencies rose by 5.3 percent per year during 1991–2001, and numbers in the nonprofit agencies rose from 0.6 to 9.1 fte researchers from

## A Short History of Government-Based Agricultural Research

Formal agricultural research began in Togo in the 1940s with the establishment of regional branches of several French agricultural research institutes. After independence in 1960, most of these activities continued and two additional French research institutes were founded—the Trop ical Agricultural Research Institute (IRAT) established in 1961, and the Coffee and Cocoa Research Institute (IRCC) established in 1967. Togo was not in a position at that time to nationalize its agricultural research system given that it had few qualified scientists and limited public resources.

By the late 1980s Togolese agricultural R&D, which was fragmented across about a dozen institutes under four ministries, lacked operational and programmatic coherence. In 1991, based on World Bank recommendations, the Ministry of Rural Development (MDR) and the Ministry of Rural Planning (MAR) were merged to form the Ministry of Rural Development, Environment, and Tourism (MDRET), and a new directorate— the National Agricultural Research Directorate (DNRA)—was established in efforts to integrate the planning and coordination of the country's agricultural R&D activities. DNRA also took over administrative responsibility for the Institute of Nutrition and Food Technology (INTA), the National Soil Institute (INS), and the National Meteorological Directorate (DMA). In addition, all the agencies conducting food crop research were merged to form the National Food Crops Institute (INCV), and all livestock research was regrouped and located under the Institute of Animal Husbandry and Veterinary Sciences (INZV). As of 1994, DNRA also took over the administration of IRCC and the Cotton and Exotic Textiles Research Institute (IRCT).

The World Bank's National Agricultural Services Support Project (PNASA) focused on the need to redefine the roles of the various research agencies, and to this end all DNRA units were merged to form the Togolese Agricultural Research Institute (ITRA) in July 1997.

1995 to 2001, which was the result of the initiation of local research activities by GLOBE in 2000. This combination of falling fte researcher numb ers in the government sector and growth in the higher-education and nonprofit sectors resulted in little overall change throughout the 1990s.





*Sources*: Compiled by authors from ASTI survey data (IFPRI –ISNAR– CORAF/WECARD 2002–03) and Beintema et al. (1996). *Notes*: Figures in parentheses indicate the number of agencies in each category.

"Government" includes ITRA's predecessors: DPV, INCV, INS, INTA, INZV, IRAT, IRCC, and IRCT. 1991-97 government expenditures have been interpolated. Expenditures for the nonprofit and higher-education agencies are estimates based on combined average expenditures per researcher for the government agencies. Underlying data are available at the ASTI website (http://www.asti.cgiar.org).

After independence, the majority of agricultural R&D activities undertaken by the French continued, and two new French agricultural research institutes established branches in Togo: the Tropical Agricultural Research Institute (IRAT) and IRCC. This explains the relatively high proportion of French expatriate researchers in Togo throughout the 1970s and into the 1980s, though reversal of this trend occurred from the 1980s onwards, when agencies began recruiting local (less expensive) researchers (Beintema et al. 1996). By 1991, French expatriates were still employed at INCV (two), at IRCT (five), and at IRCC (three), but all of these researchers completed their research and left Togo within a year. No expatriates were identified as undertaking research in Togo in 2001.

Total agricultural R&D expenditures exhibited a downward—though erratic—trend during 1971–2001 (Figure 1b). Strong average annual spending growth occurred in the 1970s, at 14.1 percent in real terms, reflecting the continuation of research activities by the French during that time. After 1980, however, expenditures gradually declined (3.1 percent per year on average), in part because of the nationalization of agricultural R&D, resulting in the replacement of expatriate researchers with local staff, as mentioned above. From 1998 to 2001 funding under PNASA was especially erratic because the project was suspended several times when the Togolese government was unable to meet its commitments for counterpart funding.

An increase in total researcher numbers along with a decline in expenditures caused expenditures per researcher to fall, especially after 1975 (Figure 2). Despite this, Togo's 2001 expenditures per researcher, at \$135,000, were much higher compared to many other West African countries.





#### **Human Resources**

In 2001, 96 percent of the 102 fte agricultural researchers active in Togo held postgraduate degrees, which is a high proportion compared with other countries in the region such as Ghana (84 percent) and Côte d'Ivoire (85 percent) (Stads and Gogo 2004; Stads and Beintema 2003). The same year, 39 percent of agricultural researchers held PhD degrees (Figure 3). A higher proportion of higher-education agency staff held PhD degrees (75 percent) compared with staff at ITRA and the nonprofit institutions (20 and 37 percent, respectively), which is in line with findings in other African countries (Beintema 2003).

Available data suggest that the education levels of Togolese researchers in the government sector improved significantly in the 1990s. In 1991, 72 percent of researchers in a sample of four of ITRA's seven predecessors were trained to the postgraduate level, representing 60 percent of all fte researchers in the government sector that year. By 2001, the share of researchers with postgraduate training at ITRA was 95 percent. Most of this growth stemmed from increased MSc-level train ing. The relative share of fte researchers in the higher-education sector with doctorate degrees declined in the 1990s, but this was the combined result of the relative increase in the number of fte researchers at ESA with MSc degrees and the 1997 establishment of the Faculty of Sciences, which employed relatively fewer staff with PhD degrees.

PNASA included a valuable training component for agricultural researchers: 10 received training to MSc levels at

the University of Lomé and 18 received training in scientific writing (World Bank 2003). The majority of Togolese researchers holding PhD degrees were educated at universities in the former Soviet Union (DNRA 1995).



Figure 3<sup>3</sup>/<sub>4</sub> Educational attainment of researchers, 1991 and 2001

*Source*: Compiled by authors from ASTI survey data (IFPRI–ISNAR– CORAF/WECARD 2002–03) and Beintema et al. (1996). *Notes*: Figures in parentheses indicate the number of agencies in each category. 1991 data on educational attainment were only available for four of the seven government agencies in existence in Togo at that time (INCV, INTA, INZV, and IRCT). These agencies accounted for about 60 percent of total fte researchers in the government sector that year.

In 2001, 6 percent of total fte researchers (excluding the nonprofit sector) were female, which was similar to the corresponding 1991 share of 7 percent (Roseboom and Beintema 1996) but low compared with other African countries (Beintema 2003). ITRA had the highest 2001 share of female researchers in our sample, at 5 of its 60 fte researchers. The female researcher share was lower in the higher-education sector: 7 percent of fte researchers at the University of Lomé's Faculty of Science were female but only 1 percent were female at ESA (Figure 4). In terms of qualifications, one-quarter of all fte researchers holding BSc degrees, 6 percent of those trained to the MSc level, and 4 percent of those trained to the PhD level were female.



Figure 4<sup>3</sup>/<sub>4</sub>Share of female researchers, 2001

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

In 2001, the average number of support staff per scientist in a 4-agency sample was 3.8, comprising 0.9 technicians, 0.4 administrative personnel, and 2.5 other support staff such as laborers, guards, drivers and so on (Figure 5). ITRA had the highest ratio of support staff per scientist (5.7), whereas GLOBE and the two higher-education agencies had support-staff-toresearcher ratios of 0.1 and 0.4, respectively.



Figure 5¾ Support-staff-to-researcher ratios, 1991 and 2001

Source: Compiled by authors from ASTI survey data (IFPRI –ISNAR– CORAF/WECARD 2002–03) and Beintema et al. (1996). Notes: Figures in parentheses indicate the number of agencies in each category. Support staff data for 1991 were only available for four of the seven government agencies in existence in Togo at that time (INS, INTA, INZV, and IRCT). These agencies accounted for about 45 percent of total fte researchers in the government sector that year.

### Spending

Total public spending as a percentage of agricultural output (AgGDP) is a common research investment indicator used to compare a country's agricultural R&D spending with international equivalents. In 2001, Togo invested \$0.51 for every \$100 of agricultural output (Figure 6). This ratio was less than 30 percent of the country's research intensity ratio in 1981 (1.77) reflective of the strong decline in agricultural R&D spending throughout the 1980s and 1990s. The 1995 ratio of 0.73 percent is lower than the average ratio for Africa (0.85) and higher than the average ratio for the developing world (0.62) that same year.



# Figure 6¾Togo's public agricultural research intensity compared regionally and globally

*Sources*: Togo compiled from Figure 1b; AgGDP from World Bank (2003); other intensity ratios from Pardey and Beintema (2001).

*Source*: Compiled by authors from ASTI survey data (IFPRI-ISNAR–CORAF/WECARD 2002–03).

During 1998-2001, total operating costs accounted for roughly two-thirds of ITRA's expenditures, a relatively high percentage compared with other national agricultural research institutes in West Africa, and the result of the high levels of investment contributed under PNASA. On average, salaries represented 31 percent of spending and capital expenditures, 5 percent. Yearly salary expenditures remained relatively stable at 3.4 million dollars on average in real terms, with operating and capital expenditures showing a more erratic trend. PNASA financed large components of ITRA's operating and capital costs such as the rehabilitation of pre-existing research infrastructure and the purchase of a large number of vehicles (World Bank 2003). Given the periodic suspensions of PNASA, as described earlier, ITRA's operating and capital expenditures varied widely from year to year. These suspensions, the associated low disbursement of budgeted funding, and the ultimate cessation of PNASA in March 2003, have left ITRA's financial future highly uncertain and severely affected its research programs. The only remaining research projects that are adequately funded are projects financed by regional research networks.







## FINANCING AGRICULTURAL R&D

Agricultural research in Togo is largely financed by the national government, loans from the World Bank, aid from other (foreign) donors, producer organizations, and self-generated resources. GLOBE depends largely on contributions from its members supplemented with revenue raised from locally offered services. UCJG's funding is primarily provided by German charitable organizations, although a sizable share is generated internally. APAF has relied heavily on funding from the Belgian Directorate General for International Cooperation (DCGI). Agricultural research programs conducted at Togo's highereducation agencies are mostly financed by the national government; small shares are also contributed by foreign universities. In addition, Japan, Saudi Arabia, and Germany recently supported the construction of certain buildings along with laboratory equipment (Sanchez and De Waha 2002).

#### **Togolese Agricultural Research Institute**

Though ITRA's annual budget rose temporarily between 1998 and 2000 with injections of World Bank funding, overall it declined from 12 million dollars in 1998 to 8 million in 2001 (Figure 8). During 1998–2001, average funding provided by the Togolese government represented 38 percent of the institute's total financial resources, while contributions through World Bank loans accounted for one-third of the total. However, the national government significantly reduced its agricultural R&D funding of government agencies throughout the 1990s. Consequently, ITRA was forced to generate income from other sources, and to date it has only had partial success.

Figure 83/4ITRA's funding sources, 1998-2001



Source: Compiled by authors from ASTI survey data (IFPRI –ISNAR– CORAF/WECARD 2002–03).

*Note*: Differences in funding totals in this figure and expenditure totals in Figure 7 are the result of delays in salary payments.

The World Bank was asked to help reform Togo's agricultural sector in 1995. The plan was to redefine and restructure the roles of the various agencies involved in the agricultural sector; to involve producer organizations in decision making; and to generate the human, material, and financial resources to support these goals. PNASA incorporated all these elements in four primary components: support for basic agricultural services, strengthening of agricultural research, pilot agricultural credit, and support for MAEP (Worou 2002). The initial project budget totaled US\$52.6 million and-in addition to the World Bank loan-consisted of contributions from the Togolese government (US\$7.4 million), professional economic agricultural organizations (OPEA) (US\$2.4 million), the Japanese government (US\$1.5 million), and the United Nations Development Programme (UNDP) (US\$1.2 million). US\$13 million was reserved for ITRA, of which US\$7 million represented a World Bank loan (World Bank 1997).<sup>8</sup>

PNASA was launched in 1997 and ran until March 2003, slightly longer than initially anticipated because of the many periods of suspension. Its key objective was the formation of ITRA. PNASA stipulated that 40 percent of ITRA's budget should be financed by the Togolese government; 10 percent, by SOTOCO; 5 percent, by the Institute of Technical Advice and Support (ICAT); 5 percent, by the private sector; and 40 percent, by producer organizations. Other contributors to ITRA between 1998 and 2001 included CIRDES, the European Union, France, the International Fund for Agricultural Development (IFAD), IITA, SADAOC, WARDA, and research networks such as the ROCARS and WECAMAN.

In addition to supporting the upgrade of research equipment at ITRA centers, training of personnel, and technical assistance, PNASA also financed operating costs on a declining yearly scale. The national government and producer organizations were to fund the increasing share of the balance of these costs in addition to 100 percent of salary expenses (World Bank 1997). As already mentioned, PNASA was suspended frequently between 1999 and 2001 when the national government was unable to mobilize the agreed level of counterpart funding under the project, all of which seriously disrupted ITRA's activities. By the end of the project only one-fifth of the total project budget (US\$10.3) and of its agricultural research component (US\$2.7) had been disbursed. Expected funding from the coffee and cocoa networks and the Japanese grant never materialized either.

Regardless of its limitations, PNASA transformed the country's agricultural sector by establishing an integrated, clearly defined infrastructure (Worou 2002 and World Bank 2003). Unfortunately these gains are under threat with the current insecure funding situation, and no new significant donor projects are on the horizon. Although producer organizations finance a sizable share of ITRA's budget (an average of 11 percent during 1998-2001), it is significantly less than the 40 percent target under PNASA. ITRA's administrative council has taken steps to modify the institute's status, bringing it under the State budget in alignment with other MAEP departments. By endorsing this move and already having fixed an operating budget for ITRA for 2004, Togo's government has shown its commitment to agricultural R&D. Whether future government contributions to ITRA will be higher than the 40 percent set in PNASA remains to be seen. Meanwhile, ITRA's researchers remain active only on projects sponsored by the regional networks.

## **RESEARCH ORIENTATION**

#### **Commodity Focus**

The allocation of resources among various lines of research is a significant policy decision; hence detailed information was collected on the number of fte researchers working in specific commodity and thematic areas.

In 2001, more than half of the 102 fte researchers in the 6agency sample conducted crop research (Figure 9a). Livestock accounted for 22 percent, natural resources for 7 percent, and postharvest for 5 percent of the total fte researchers. Researchers at ITRA spent relatively more time on crop research than their counterparts at the nonprofit and higher-education agencies. Researchers at thenonprofit agencies spent relatively more time on livestock, natural resources, forestry, and socioeconomic research. In 2001, the most researched crops in Togo were maize (19 percent of the 55 fte crop researchers), cotton (16 percent), and vegetables (10 percent) (Figure 9b). Other important crops include coffee, rice, and cocoa, each representing between 7 and 10 percent of the crop research undertaken. Researchers at the three agencies conducting livestock research dedicated nearly 30 percent of their time to research on sheep and goats, followed by poultry (22 percent), and pastures and forages (17 percent) (Figure 9c).





Source: Compiled by authors from ASTI survey data (IFPRI –ISNAR– CORAF/WECARD 2002–03).

*Notes*: Figures in parentheses indicate the number of agencies in each category. Figure 9b only includes agencies involved in crop research. Figure 9c only includes agencies involved in livestock research.

#### **Thematic Focus**

In 2001, 20 percent of ITRA's researchers and 18 percent of researchers at the five other agricultural R&D agencies worked on crop genetic improvement. The remainder of ITRA's researchers focused on a wide variety of themes including livestock, crops, and soil. Crop themes were also important research areas for the five other agencies, as were soil, livestock, and postharvest research (Table 2).

#### Table 2% Thematic focus, 2001

	Num	bers of		
	researchers		Shares	
	ITRA	Other (5)	ITRA	Other (5)
	(in fte's)		(percent)	
Crop genetic improvement	12.0	7.4	20.0	17.6
Crop pest and disease control	6.0	2.6	10.0	6.2
Other crop	6.0	5.4	10.0	12.7
Livestock genetic improvement	3.0	2.2	5.0	5.2
Livestock pest and disease control	6.0	0.9	10.0	2.1
Other livestock	12.0	2.1	20.0	5.0
Soil	6.0	5.3	10.0	12.5
Water	3.0	1.8	5.0	4.2
Other natural resources	_	0.9	—	2.1
Postharvest	3.0	3.2	5.0	7.5
Other	3.0	10.5	5.0	24.9
Total	60.0	42.4	100	100

*Source*: Compiled by authors from ASTI survey data (IFPRI-ISNAR-CORAF/WECARD 2002-03).

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

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## CONCLUSION

With rising numbers of researchers in the higher-education and nonprofit sectors and falling numbers in the government sector, total agricultural researcher numbers in Togo remained relatively unchanged throughout the 1990s. Agricultural research funding-and consequently spending-fell steadily. ITRA was created in 1997 through the amalgamation of several smaller institutes. 2001 funding to ITRA by the national government, however, was significantly lower, in real terms, than funding to its predecessors 10 year earlier, leaving ITRA largely dependent on other sources of income. PNASA project funded by World Bank loans, counterpart funding from the Government of Togo, OPEA, Japan, and UNDPcontributed greatly to the institute's budget, but shortfalls and delays in the disbursement of counterpart funding resulted in repeated suspension of the project and ultimately to severe disruption of research activities. Other planned funding from producer organizations and the private sector was also not forthcoming, and in March 2003 PNASA officially concluded. Currently, only the projects financed by regional research networks have adequate levels of funding. As of 2004, ITRA falls under the umbrella of the State budget, which will hopefully result in increased government contributions and alleviate the institute's heavy reliance on donor funding.

Despite these difficulties and the relatively small size of its agricultural R&D system in terms of research expenditures and researcher numbers, Togo's expenditures per agricultural researcher and the qualification levels of researchers are above the West African average.

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## NOTES

- The authors are grateful to numerous colleagues in Togo for their time and assistance with the data collection, and thank Comlan Agbobli, Nienke Beintema, Kodjo Labare, Kokou Tofia, and Soklou Worou for useful comments on drafts of this brief.
- 2. The 6-agency sample consisted of:
  - 1 government agency: Institut Togolais de Recherche Agronomique (ITRA);
  - 3 nonprofit institutions: Groupe d'Actions et de Recherche pour un Développement Humain Durable (GLOBE), Union Chrétienne de Jeunes Gens (UCJG), and Association pour la Promotion de l'Agro-Foresterie (APAF); and
  - 2 higher -education agencies: École Supérieure d'Agronomie (ESA) and Faculté des Sciences, both under Université de Lomé.

- 3. Unless otherwise stated, all data on research expenditures are reported in 1999 CFA francs or in 1993 international dollars.
- 4. English translations of agency names have been used throughout the brief except in note 2, where the original French is provided.
- 5. In 1997, ITRA also took over the research activities of the former Plant Protection Directorate (DPV). DPV's nonresearch -related activities were taken over by ICAT and the Agriculture Directorate.
- ICAT was also established as a result of PNASA with the objective of amalgamating the country's extension agencies in a single institute (World Bank 2003).
- 7. Data are calculated as least square growth rates.
- US\$2.4 million is financed by the Togolese government; US\$2.1 million, by IFAD; US\$1.0, by OPEA; and US\$0.5, by other donors.

# METHODOLOGY

- Most of the data in this brief are taken from unpublished surveys (IFPRI, ISNAR, and CORAF/WECARD 2002-03).
- The data were compiled using internationally accepted statistical procedures and definitions developed by the OECD and UNESCO for compiling R&D statistics (OECD 1994; UNESCO 1984). We grouped estimates using three major institutional categories—government agencies, higher-education agencies, and business enterprises, the latter comprising the subcategories private enterprises and nonprofit institutions. We defined public agricultural research to include government agencies, higher-education agencies, and nonprofit institutions, thereby excluding private enterprises. Private research includes research performed by private-for-profit enterprises developing pre, on, and postfarm technologies related to agriculture.
- Agricultural research includes crops, livestock, forestry, and fisheries research plus agriculturally related natural resources research, all measured on a performer basis.
- Financial data were converted to 1993 international dollars by deflating current local currency units with a Togolese GDP deflator of base year 1993 and then converting to U.S. dollars with a 1993 purchasing power parity (PPP) index, both taken from World Bank (2003). PPP's are synthetic exchange rates used to reflect the purchasing power of currencies, typically comparing prices among a broader range of goods and services than conventional exchange rates.
- The salaries and living expenses of many expatriate researchers working on donor supported projects are paid directly by the donor agency and are often excluded in the financial reports of the agricultural R&D agencies. These *implicit* costs have been estimated using the average cost per researcher in 1985 to be \$160,000 1993 international dollars and backcasting this figure using the rate of change in real personnel costs per fte researcher in the US state agricultural experiment station system. This extrapolation procedure has the assumption that the personnel-cost trend for US researchers is a reasonable proxy of the trend in real costs of internationally recruited staff in the agricultural R&D agencies.

See the ASTI website (http://www.ASTI.cgiar.org) for more details on methodology.

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8