AGRICULTURAL SCIENCE AND TECHNOLOGY INDICATORS

DGRST

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REPUBLIC OF CONGO

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This brief reviews the major investment and institutional trends in public agricultural research in the Republic of Congo since the early 1990s using new data collected under the Agricultural Science and Technology Indicators (ASTI) initiative (IFPRI–ISNAR–CORAF/WECARD 2002–03).[1]

INSTITUTIONAL DEVELOPMENTS

The Republic of Congo (hereafter Congo)—severely underdeveloped at the time of its independence in 1960—experienced strong economic growth during the early 1980s following the discovery of important oil resources. Tumbling world oil prices since 1985, however, and two civil wars in the 1990s plunged the country into a state of serious economic crisis. Despite contributing relatively small shares to both GDP (6 percent in 2001) and total exports (1 percent in 2001), the agricultural sector is nonetheless significant to the national economy because it employs a high proportion of the country's active population—40 percent in 2001 (FAO 2004). Consequently, agricultural research and development (R&D) is a priority for the Congolese government. In 2001, 17 agencies were involved in agricultural research.[2] Combined, these agencies employed 135 full-time equivalent (fte) researchers and spent 780 million CFA 1999 francs on agricultural R&D, equivalent to 2.4 million 1993 international dollars (Table 1).[3]

The General Delegation of Scientific and Technical Research (DGRST), under the Secretary of State for Scientific Research of the Ministry of Higher Education and

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

Type of agency	Spending		Researchers[a]	Share		Agencies in sample[b]
	1999 CFA francs	1993 international dollars		Spending	Researchers	
	(*millions*)		(*fte's*)	(*percent*)		(*number*)
DGRST[c]	472.10	1.44	92.7	60.6	68.8	11
CNES	11.60	0.04	3.0	1.5	2.2	1
Nonprofit[c, d]	154.07	0.47	11.2	19.8	8.3	3
Higher education[c, e]	141.69	0.43	27.8	18.2	20.6	2
Total	**779.46**	**2.37**	**134.7**	**100**	**100**	**17**

Source: Compiled by authors from ASTI survey data (IFPRI–ISNAR–CORAF/WECARD 2002–03) and MENRSTET–MAEEFTP–FAO (1996).

[a] Includes national and expatriate research staff.

[b] See note 2 for a list of the 17 agencies in the sample.

[c] The expenditures for CRCRT and the nonprofit and higher-education agencies are estimates based on average expenditures per researcher for the government sector.

[d] Researcher total for the three nonprofit agencies are estimates based on 1995 data from MENRSTET–MAEEFTP–FAO (1996) and 2001 data for the government agencies . The staff at the three nonprofit agencies spent between 50 and 60 percent of their time on research, resulting in 11.2 fte researchers.

[e] Researcher totals for the Faculty of Science at Marien Ngouabi University are estimates based on 1995 data from MENRSTET–MAEEFTP–FAO (1996). The staff at the two higher-education agencies spent between 20 and 40 percent of their time on research, resulting in 27.8 fte researchers.

KEY TRENDS

- The total number of agricultural researchers in Congo increased gradually throughout the 1990s, while total agricultural R&D expenditures fell by more than half.
- The 11 agricultural research centers under the General Delegation of Scientific and Technical Research (DGRST) accounted for roughly two-thirds of Congo's agricultural researchers and expenditures in 2001.
- Donor contributions to agricultural research fell drastically as a result of the two civil wars of the 1990s.
- The large number of relatively small agricultural research agencies—often with overlapping mandates—has made Congo's agricultural research coordination and management weak and ineffective.

ABOUT ASTI

The Agricultural Science and Technology Indicators (ASTI) initiative comprises a network of national, regional, and international agricultural R&D agencies and is managed by the International Service for National Agricultural Research (ISNAR) division of the International Food Policy Research Institute (IFPRI). The ASTI 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 Centre for International Agricultural Research (ACIAR), the European Union, and the U.S. Agency for International Development (USAID).

Scientific Research (MESRS), supervises the majority of agricultural R&D activities undertaken by government agencies in Congo. DGRST was established in 1960, immediately after independence (see *A Short History of Government-Based Agricultural Research* below). It is an executive body, responsible for the implementation and management of the national science policy through a Scientific and Technical Directorate, an Administration and Finance Directorate, and a Scientific and Technical Information Directorate (MENRSTET–MAEEFTP–FAO 1996). In addition, DGRST coordinates and oversees the research activities of the following agricultural research agencies: the Veterinary and Zootechnical Research Center (CRVZ), the Agricultural Research Center of Loudima (CRAL), the Tropical Plants Genetic Improvement Research Center (CERAG), the Soil Conservation and Restoration Research Center (CRCRT), the Forestry Research Center of the Coast (CRFL), the Forestry Research Center of Ouesso (CRFO), the Hydrobiological Research Center of Mossaka (CRHM), the Research and Technology Project Initiation Center (CRIPT), the Study Center on Vegetable Resources (CERVE), the Research and Study Center on Social and Human Sciences (CRESSH), and the Study and Research Group on Biological Biodiversity (GERDIB).[4, 5] These 11 research agencies together accounted for about two-thirds of the country's agricultural researchers and expenditures in 2001. With the exception of CRCRT, CRFO, CRHM, and CRESSH, DGRST centers maintain autonomous legal, administrative, and financial status. Each center has its own program committee to determine research programs, subsidy requirements from the state budget, and changing needs in the number of research laboratories (Onanga 1992). In terms of fte researcher numbers, DGRST's largest agricultural research centers, as of 2001, are CRVZ (33), CRAL (17), and CERAG (15). The other agencies are much smaller, each employing fewer than seven fte researchers in 2001.

CRVZ—formerly the Scientific Veterinary Laboratory (LVS)—was established in 1970 with support from the Soviet Union. CRVZ is DGRST's only livestock research agency, accounting for a quarter of the agricultural researchers in Congo in 2001. Established in 1986, CRAL is Congo's principal crop research agency. It has five research stations located across the country's agroclimatic zones and primarily focuses on the selection and improvement of food crops and fruits. CERAG focuses on plant improvement, particularly through biotechnology, and most of its activities are centered on cassava research (MENRSTET–MAEEFTP–FAO 1996). The remaining eight DGRST agencies carry out a broad range of activities from forestry and soil research to socioeconomic research. The overlapping research mandates of certain DGRST agencies have contributed to the recommendation by a 1996 FAO-led study to rationalize DGRST's numerous agencies through the formation of a single national research institute. No action, however, has been taken to date, most likely because of funding constraints through lack of donor investment (as is discussed further below).

Under the Ministry of Agriculture, Livestock, Fisheries and Women's Promotion (MAEPPF), the National Center for Soil Study (CNES) is the only non-DGRST government agricultural research agency in Congo. Based in Brazzaville, CNES undertakes limited research on soils, employing 3 fte researchers in 2001 and accounting for only 2 percent of both agricultural researchers and expenditures that year.

We identified three nonprofit agencies active in agricultural R&D in Congo in 2001, together accounting for 8 percent of total fte researchers and 20 percent of agricultural R&D spending. The Research Institute for Development Support in Tropical Zones (Agricongo) carries out adaptive research on market gardens, food crops, fruit, and fodder and is also involved in training and extension. In 2001, it employed 7 fte researchers. The Industrial Plantations Productivity Unit (UR2PI) conducts research on fast-growing forest tree species (eucalyptus, tropical pine, and acacias) and manages more than 400 plantations in the north of Congo totaling over 1,000 hectares (CORAF/WECARD 2000). The Agricultural Industrial Sugar Refinery (SARIS) was privatized in 1991 and leads important research projects focusing on sugarcane and maize (SARIS n.d.).

We identified two higher-education agencies involved in agricultural research in 2001. With 23 fte researchers, the Institute of Rural Development (IDR) accounted for 17 percent of Congo's agricultural researchers. IDR was established in

A Short History of Government-Based Agricultural Research

Prior to independence, Congo's French colonizers established one of their first test gardens on the African continent in Brazzaville in 1901, though agricultural research in Congo did not seriously commence until the foundation of the Loudima research station by the French in 1935. After the Second World War, additional French research institutes established offices in Congo.

After independence in 1960, the national government was in a position to take immediate control of the national agricultural research system (though key French agencies maintained their presence in Congo). The same year, the new government created the General Delegation of Scientific and Technical Research (DGRST) to oversee all agricultural research activities. Two research stations in Loudima were nationalized in 1963, leading to the departure of a large number of French expatriate researchers based there. Only two French agencies remained in Congo thereafter: the Technical Tropical Forestry Center (CTFT) and the Overseas Scientific and Technical Research Office (ORSTOM) of Brazzaville.

In 1970, the Scientific Veterinary Laboratory was established with Soviet support; in 1985 it was renamed the Veterinary and Zootechnical Research Center (CRVZ) and has maintained operations since that time as Congo's sole livestock research agency. In the late 1970s and early 1980s, the Congolese government refocused its attention on agriculture, establishing the Rural Development Institute (IDR) in 1975, renovating and renaming the Loudima station as the Agricultural Research Center of Loudima (CRAL) in 1981, and founding various other research centers focusing forestry, soil, and crop research, among other activities.

CTFT withdrew from Congo in 1992 and ORSTOM closed its Brazzaville office in 1994, resulting in the relocation of national staff to CRAL and CRVZ, currently the country's two largest government agencies. Since the collapse of the Soviet Union, withdrawal of the CIFT and ORSTOM-Brazzavile, and upsurge of civil unrest in the 1990s, Congo's national agricultural research system has been severely obstructed.

Source: MENRSTET–MAEEFP–FAO 1996.

1975 within the Marien Ngouabi University at Brazzaville. It is the country's principal training institute in the fields of agriculture, forestry, and the environment. IDR's research activities are organized across six vegetable production programs, nine animal production programs, two forestry ecology programs, and six rural economy and sociology programs. The research activities of the Faculty of Science within Marien Ngouabi University are undertaken by the Animal Biology and Physiology Department and the Plant Biology and Physiology Department. The faculty employed five fte researchers in 2001.

We did not identify any private-for-profit agencies conducting agricultural research in Congo. Certain R&D agencies, however, carry out contract-based research for private companies, including Elf-Congo, an oil company, and Congo Eucalyptus (ECO-SA), a forestry company. There is also a fair amount of collaboration among the various DGRST centers. Collaboration with regional and international agencies has slowly recovered since the late 1990s with the alleviation of the civil unrest. DGRST's international scientific partners include the International Agricultural Research Center for Development (CIRAD), the Research Institute for Development (IRD), the West Africa Rice Development Association (WARDA), the International Institute of Tropical Agriculture (IITA), various networks of the West and Central African Council for Agricultural Research and Development (CORAF/WECARD), and several European universities. Collaboration includes joint research projects and training. Congo maintained longstanding bilateral relations with the Soviet Union and various Eastern European countries up until the collapse of the Soviet Union in the 1980s and the rise of civil unrest in Congo in the 1990s.

HUMAN AND FINANCIAL RESOURCES IN AGRICULTURAL R&D

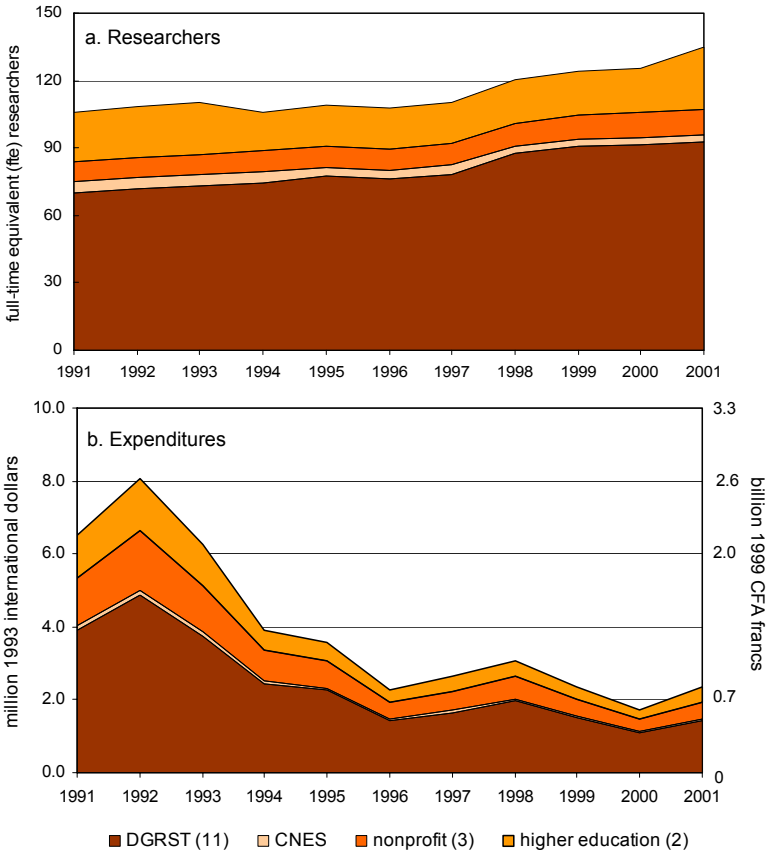
Overall Trends

The total number of agricultural researchers in Congo increased by an average of 2.2 percent per year during 1991–2001 (Figure 1a).[6] This growth was more pronounced within the 11 DGRST agencies (3.1 percent) than at the other 6 agencies (0.3 percent). In 1994 when the French closed the Brazzaville branch of the Overseas Scientific and Technical Research Office (ORSTOM)—IRD's predecessor—many of its researchers were relocated to other DGRST centers, mainly CRAL and CRVZ. Consequently, CRAL's fte researcher numbers grew from only 10 in 1991 to 20 by 1996, though they contracted to 17 by 2001 with the resurgence of civil unrest in the late 1990s. CRVZ maintained relatively stable, though declining researcher numbers over the same period, from 39 in 1991 to 33 in 2001. The decline can be attributed to non-replacement of retiring researchers due to budgetary constraints. Despite the fall of fte researcher totals at DGRST's two largest agencies, the total researcher numbers for the 11 DGRST centers rose steadily throughout the 1990s. Most of this growth occurred at CERAG, CRCRT, and CRFO.

The share of expatriates in the total number of researchers was relatively high during the 1970s and 1980s but rapidly declined with the closure of two French research agencies—the Technical Tropical Forestry Center (CTFT) in 1992 and ORSTOM-Brazzaville in 1994. In addition, the civil wars of the 1990s prevented expatriate researchers from returning to Congo. IRD's center in Pointe Noire is the only French agricultural research center remaining in Congo, but it currently employs only Congolese researchers. As of 2001, we identified only 0.5 fte expatriate researchers active in Congo.

Agricultural R&D spending fell significantly during 1991–2001 at an annual average of 12.7 percent—from $6.5 to $2.4 million (Figure 1b). The sharpest decline occurred between 1992 and 1996 when the first wave of violence erupted. Although relative order has been reestablished in recent years, annual agricultural R&D expenditures have not rebounded to pre-war levels. In 2001, foreign donor contributions to DGRST centers were minimal—down from 51 percent of total funding a decade earlier (MENRSTET–MAEEFTP–FAO 1996). Consequently, total agricultural research expenditures have remained at an extremely low level.

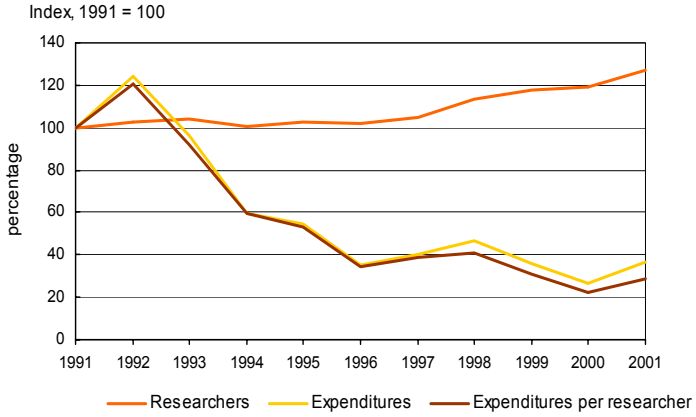
Figure 1—Public agricultural R&D trends, 1991-2001



Sources: Compiled by authors from ASTI survey data (IFPRI–ISNAR–CORAF/WECARD 2002–03) and MENRSTET-MAEEFTP-FAO (1996).
Notes: Figures in parentheses indicate the number of agencies in each category. 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 on the ASTI website (http://www.asti.cgiar.org).

The combination of rising total fte researcher numbers and strongly declining agricultural research spending have resulted in very low average expenditures per researcher, down from $59,000 in 1991 to only $18,000 in 2001. This puts Congo's expenditures per agricultural researcher among the lowest in Africa.

Figure 2—Trends in public expenditures, researchers, and expenditures per researcher, 1991-2001

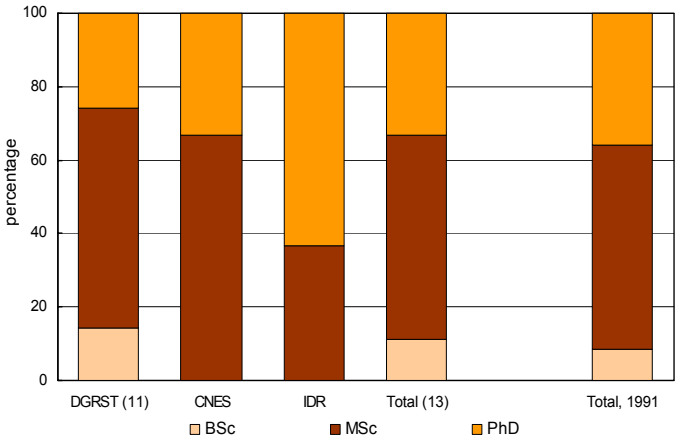


Source: Figure 1.

Human Resources

In 2001, 89 percent of 118 researchers in a 13-agency sample had received postgraduate level training and 33 percent held PhD degrees (Figure 3). Researchers at the higher-education agencies were more highly qualified than staff at the government agencies, which corresponds with findings in most other African countries. The share of DGRST researchers with postgraduate-level training declined somewhat, from 89 percent in 1991 to 86 percent in 2001, as the result of the previously mentioned nonreplacement of retiring researchers in combination with the departure of well-qualified younger researchers to the Marien Ngouabi University, which was considered to be a more attractive employer. Training of researchers has been largely financed by the Congolese government and foreign donors in the form of grants. The majority of Congolese researchers holding PhD degrees were trained at universities in the former Soviet Union.

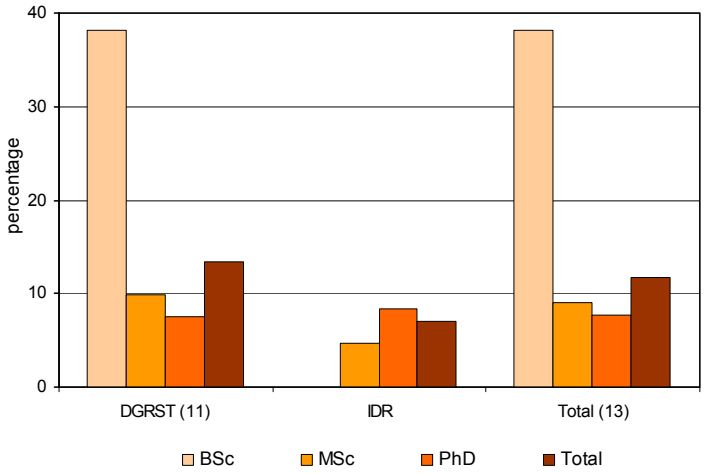
Figure 3—Educational attainment of researchers, 1991 and 2001



Sources: 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. 1991 data on educational attainment are for CNES, IDR, and the 7 DGRST agencies existing at the time.

Based on a 13-agency sample for 2001, 12 percent of Congo's researchers were female, which is comparable with many other West and Central African countries (Figure 4). The DGRST centers employed relatively higher numbers of female researchers, at 13 percent, compared with IDR (7 percent) and CNES (0 percent). In terms of education levels, of all researchers holding PhD degrees at the 11 DGRST centers and IDR, 8 percent were women.

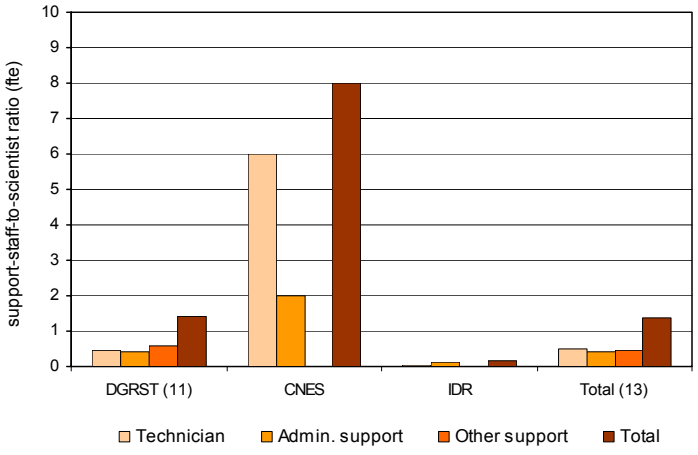
Figure 4—Share of female researchers, 2001



Source: Compiled by authors from ASTI survey data (IFPRI–ISNAR–CORAF/WECARD 2002–03).
Note: Figures in parentheses indicate the number of agencies in each category. Total includes CNES, which did not employ any female researchers in 2001.

In 2001, the average number of support staff per scientist in a 13-agency sample was 1.3, comprising 0.5 technicians, 0.4 administrative personnel, and 0.5 other support staff such as laborers, guards, drivers and so on (Figure 5). Congo's support-staff-per-researcher ratio is very low compared with most other African countries, though CNES stands out as having a very high support staff per researcher ratio, at 8.0.

Figure 5—Support-staff-to-researcher ratios, 2001



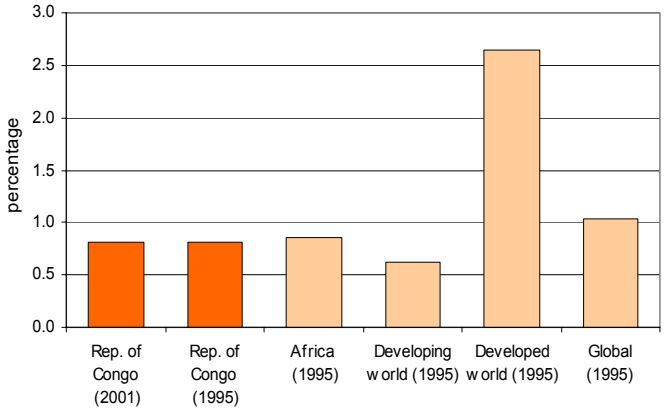
Source: Compiled by authors from ASTI survey data (IFPRI–ISNAR–CORAF/WECARD 2002–03).
Note: Figures in parentheses indicate the number of agencies in each category.

Spending

Total public spending as a percentage of agricultural output (AgGDP) is a commonly used indicator for comparing agricultural R&D spending across countries and regions. Congo's agricultural research intensity ratio remained unchanged between 1995 and 2001, at $0.81 for every $100 of agricultural output. This rate was slightly lower than the

corresponding 1995 ratio for Africa as a whole (0.85) but higher than the 1995 ratio for the developing world (0.62). By way of comparison, the equivalent 1995 ratio for the developed world was 2.64 (Figure 6).

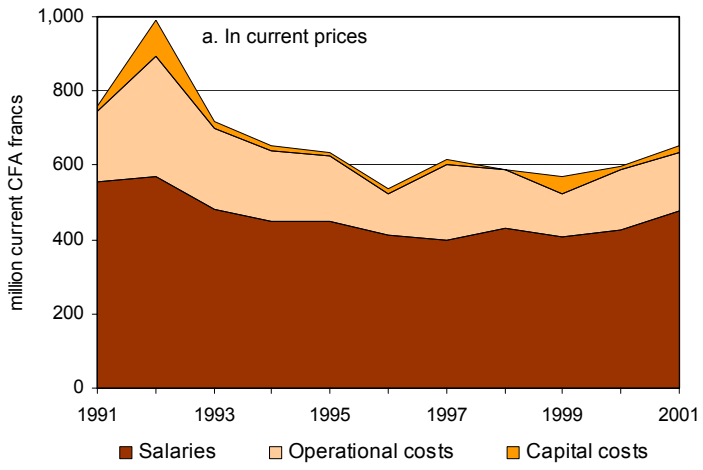
Figure 6—Congo's public agricultural research intensity compared regionally and globally

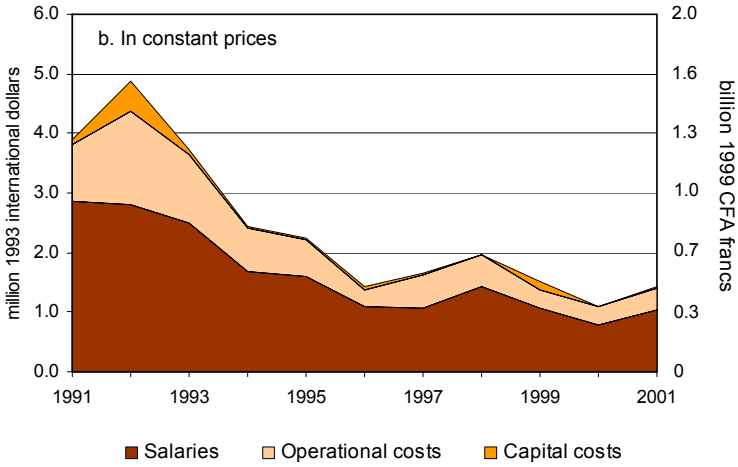


Sources: Congo compiled from Figure 1b; AgGDP from World Bank (2003); other intensity ratios from Pardey and Beintema (2001).

Between 1991 and 2001, salaries accounted for 73 percent of total expenditures at the DGRST centers, while operating costs accounted for 24 percent, and capital costs, 3 percent (Figures 7a and 7b). These shares fluctuated little throughout the 1990s, but there were noticeable differences among the DGRST centers: CRIPT, GERDIB, and CRFO, for example, reported sizable capital investments in 2001, but capital expenditures at the other DGRST centers were nonexistent that year. Total agricultural R&D expenditures fell drastically between 1992 and 2001, primarily due to the cessation of foreign funding following the withdrawal of ORSTOM-Brazzaville and CTFT from Congo, and the subsequent upsurge of civil unrest. The decrease in spending, however, was more severe in real terms (71 percent) than in nominal terms (34 percent) because of the high inflation rate in the years following the 1994 devaluation of the CFA franc. With the exception of 1992 and 1999, the annual share of capital expenditures in total spending did not exceed the 2.6 percent mark—an extremely low level, particularly considering the severe deterioration of physical infrastructure at many DGRST centers as a result of the civil wars.

Figure 7—Cost-category shares in DGRST's expenditures, 1991–2001





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

FINANCING PUBLIC AGRICULTURAL R&D

Agricultural research in Congo is largely financed by the national government and aid from foreign donors. Among DGRST's principal donors during 1991–2001 are the French government, the European Union, the German Agency for Technical Cooperation (GTZ), IITA, and the International Fund for Agricultural Development (IFAD), the International Science Foundation (ISF), and the International Development Research Center (IDRC). Agricongo reported funding from the European Union, the Congolese government, and Elf-Congo. UR2PI received financial support from CIRAD, ECO-SA, and the national government. Research at SARIS, on the other hand, is largely self-financed. The Marien Ngouabi University committed only 2–5 percent of its annual budget to research in the early 1990s (Onanga 1992) and this share has changed little since. ISF, the French government, and (mostly French) foreign universities also contributed important funding for research at the higher education agencies.

Detailed data on funding sources by individual DGRST centers were not available. We do know, however, that financing from foreign donors declined rapidly in the early 1990s. As previously mentioned, 51 percent of total funding for DGRST agencies was derived from foreign sources in 1991. By 1994, this share had fallen to only 12 percent and continued to fall thereafter, though its exact 2001 value is unknown.

Unlike the majority of African countries, the World Bank has not had any involvement in agricultural research in Congo, although it has financed numerous projects more generally related to agriculture. In 1988, the World Bank and the Congolese government prepared to launch a project on National Agricultural Extension and Adaptive Research at a cost of US$19.7 million. The objective was to facilitate the development and dissemination of agricultural technologies applicable to small-scale farmers. Despite several evaluations and approval of the loan in 1991, the bank eventually suspended its assistance to Congo when the government fell into arrears on repayments for other projects. The effects of the subsequent civil unrest and deterioration of the national agricultural research system ultimately rendered the project's design outmoded, and in 1994 the World Bank cancelled the loan (World Bank 1997).

There are currently no large donor projects financing agricultural research in Congo, though IFAD is planning a rural development project for late 2004/early 2005. This US$15.1 million project, of which IFAD will contribute a US$11.9 million loan, is expected to run for seven years.[7] The project's overall objective is to improve the income, food security, and living conditions of the rural population. Although agricultural research is not a key priority under this project, some research-related investments are anticipated (IFAD 2004).[8]

RESEARCH ORIENTATION

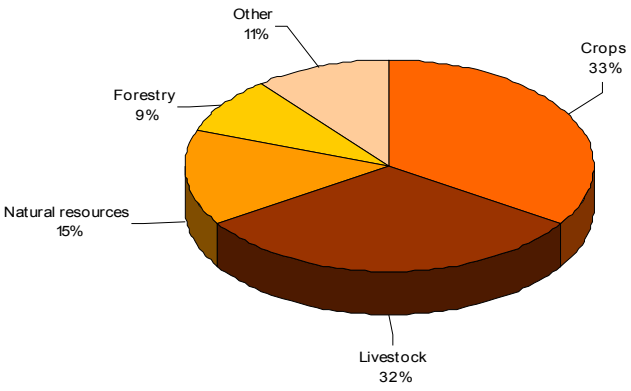
Commodity Focus

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.

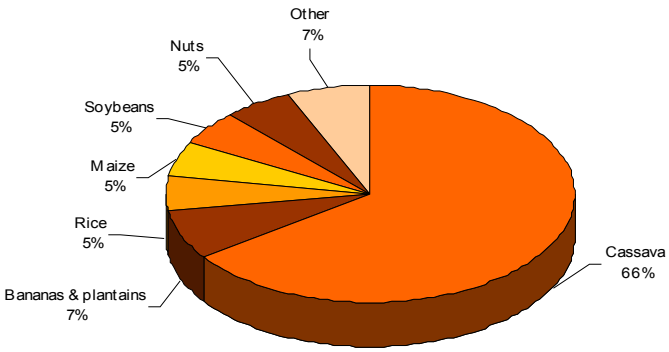
Based on a sample of 12 government agencies employing a total of 96 fte researchers in 2001, 34 percent of researchers were conducting crop research; 32 percent, livestock research; 15 percent, natural resources research; and 9 percent, forestry research (Figure 9a). At the four government agencies in our sample conducting crop research, cassava accounted for nearly two-thirds of all crop research (Figure 8b). Other important crops included bananas and plantains (8 percent), and rice, maize, sorghum, and soybeans, each accounting for 5 percent of all crop research.

Figure 8—Commodity Focus of Congo's government agencies, 2001

a. Fte researchers by major item



b. Fte crop researchers by item



Source: Compiled by authors from ASTI survey data (IFPRI–ISNAR–CORAF/WECARD 2002–03).
Notes: Figure 8a includes the 12 government agencies involved in agricultural R&D. Figure 8b includes four government agencies involved in crop research.

Thematic Focus

In 2001, 29 percent of researchers in a sample of 12 government agencies focused their activities on crop genetic improvement. Natural resources represented a 20 percent share; livestock pest and disease control, a 10 percent share; soils, a 10 percent share; and postharvest activities, a 7 percent share (Table 2). The remaining researchers concentrated largely on other themes related to crops and livestock.

Table 2—Thematic focus of Congo's government agencies, 2001

	Numbers of researchers	Shares
	(*in fte's*)	(*percent*)
Crop genetic improvement	24.4	28.6
Crop pest and disease control	3.6	4.2
Other crop	1.8	2.1
Livestock genetic improvement	3.1	3.6
Livestock pest and disease control	8.8	10.3
Other livestock	1.9	2.2
Soil	8.1	9.5
Water	2.0	2.3
Other natural resources	17.3	20.3
Postharvest	6.3	7.3
Other	8.1	9.5
Total	*85.2*	*100.0*

Source: Compiled by authors from ASTI survey data (IFPRI-ISNAR-CORAF/WECARD 2002-03).
Note: Table includes the 12 government agencies engaged in agricultural R&D.

CONCLUSION

During 1991–2001, investments in agricultural research in Congo contracted significantly in response to the two civil wars. Donor funding declined rapidly, many DGRST laboratories were seriously damaged, and the country became increasingly isolated from the international scientific community. Though sociopolitical tensions abated after 1999, funding—and hence expenditure—levels have not recovered anywhere near pre-war levels; at $18,000 in 2001, Congo had one of the lowest expenditure-per-researcher ratios in Africa. A 1996 study supported by FAO recommended the establishment of a single national agricultural research institute to replace the country's numerous research agencies and address issues of funding and efficiency (especially given apparently overlapping and duplicate research mandates within the centers). No action has been taken to date, however, presumably because of the funding crisis. This has left the country without clear coordination and management of its agricultural research and with a rapidly contracting agricultural research capacity. Compounding this problem is the increasing age of well-qualified researchers, making retirement imminent, and the departure of younger researchers to the Marien Ngouabi University, which is perceived as a more attractive employer. Without new sources of funding from donors, producer organizations, or private enterprises, the future of the DGRST research agencies—and hence the overall national agricultural research system—is grim.

NOTES

1. The authors are grateful to numerous colleagues in Congo for their time and assistance with the data collection, and thank Nienke Beintema for her useful comments on drafts of this brief.
2. The 17-agency sample consisted of:
   - Twelve government agencies/units: *Centre de Recherche sur l'Amélioration Génétique des Plantes* (CERAG), *Centre de Recherche Agronomique de Loudima* (CRAL), *Centre d'Études sur les Ressources Végétales* (CERVE), *Centre de Recherche sur la Conservation et la Restauration des Terres* (CRCRT), *Centre de Recherche Forestière du Littoral* (CRFL), *Centre de Recherche Forestière de Ouesso* (CRFO), *Centre de Recherche Hydrobiologique de Mossaka* (CRHM), *Centre de Recherche Vétérinaire et Zootechnique* (CRVZ), *Centre de Recherche et d'Initiation des Projets de Technologie* (CRIPT), *Groupe d'Étude et de Recherche sur la Diversité Biologique* (GERDIB), *Centre de Recherche et d'Étude en Sciences Sociales et Humaines* (CRESSH), and *Centre National d'Étude des Sols* (CNES);
   - Three nonprofit institutions : *Institut de Recherche pour l'Appui au Développement en Zones Tropicales* (AGRICONGO), *Unité de Recherche sur la Productivité des Plantations Industrielles* (UR2PI), and *Société Agricole et de Raffinage Industriel du Sucre* (SARIS); and
   - Two higher-education agencies: *Institut de Développement Rural* (IDR) and *Faculté des Sciences*, both under *Université Marien Ngouabi*.
3. Unless otherwise stated, all data on research expenditures are reported in 1993 international dollars or in 1999 CFA francs. In contrast with other ASTI country briefs, we chose to use the PPP value from the World Penn Tables rather than from the World Bank's World Development Indicators because we considered that the World Bank included unrealistic levels of agricultural R&D spending for Congo.
4. English translations of agency names have been used throughout the brief except in note 2, where the original French is provided.
5. Only the DGRST agencies involved in agricultural R&D are mentioned here; DGRST also oversees various other agencies involved in research not related to agriculture.
6. Data are calculated as least square growth rates.
7. The balance is expected to be financed by the Congolese government and beneficiaries (IFAD 2004).
8. The five main components of the project are opening up agricultural production zones, strengthening local capacity, supporting agricultural and fishery production, developing financial services, and managing and coordinating projects (IFAD 2004).

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 Congolese 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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