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This research brief reports on full time equivalent (fte) positions devoted to research and development of major food and cash crops in SSA. Data on fte by country and crop were collected from individual Agricultural Science and Technology Indicator (ASTI) country briefs. ASTI data are obtained from unpublished surveys conducted by CGIAR centers.

Methodology

Our report includes 23 countries in Sub-Saharan Africa (SSA). Data for Botswana, Eritrea, Madagascar, Mauritius, Nigeria, Uganda, and Zambia were collected in 2000; data for Burkina Faso, the Democratic Republic of Congo, Côte d'Ivoire, Gambia, Ghana, Malawi, Mali, Mauritania, Niger, Senegal, and Togo were collected in 2001. Data for Ethiopia, Kenya, Sudan, and Tanzania were collected in the late 1990s. Burundi, Gabon, and South Africa were excluded from our report due to insufficient information about sample size.

ASTI researchers identified 421 agencies conducting agricultural research in 23 countries in SSA. This population often included the primary government agency conducting agricultural research in each country along with a variety of public, private, and non-profit centers. Data were available for 400 of those 421 agencies, a total of 8,126 full time equivalent (fte) researchers (Table 1). For the purpose of our distribution analysis, we consider those 8,126 fte researchers the total fte in SSA. Data regarding commodity research focus (crop, fisheries, forestry, livestock, or other) were available for 293 agencies, employing 82% (6,662) of the 8,126 fte researchers in the sample. Within that 293-agency sample, 194 agencies and a total of 3,104 fte researchers were identified as conducting crop research.

Data on specific crop item focus were available for 3,028 of the 3,104 fte crop researchers identified. ASTI crop item categories are inconsistent across countries. Typically, the four or five most researched crops or crop categories in each country are identified with the rest included in the “other” category. A crop identified separately in one country (e.g., yams) may therefore be contained within a larger category in another country (e.g., vegetables) or as part of the “other” category in a third country. Our report therefore presents crop items by category (cash crops, fruits and nuts, grains excluding maize and rice, maize, rice, vegetables, other) in order to partially compensate for those inconsistencies in Table 2, and by twelve of the major cash or food crops in Table 3. Table 2 crop categories are divided as follows:

- Cash crops: Cocoa, coffee, cowpea, gum arabic, oilpalm, ornamentals, sugarcane, tea, and tobacco
- Fruits and nuts: Bananas, coconut, nuts, and unspecified fruit
- Grains: Millet, sorghum, wheat (maize and rice were analyzed separately)
- Vegetables: Cassava, cowpea, potatoes, yams, and unspecified vegetables
- Maize
- Rice
- Other: all unspecified fte

Table 1. Agencies sampled, year surveyed, and total fte identified by country

Country	Agencies Identified	Total Agencies Surveyed (N _T)	Agencies in Sample (N _S)	Crop Agencies in Sample (N _C)	FTE in Surveyed Agencies (N _T)	Year Surveyed
Botswana ¹	6	6	6	<i>Unknown</i>	101.4	2000
Burkina Faso	11	11	8	<i>Unknown</i>	260.5	2001
Congo, DR	17	17	12	4	134.7	2001
Côte d'Ivoire	13	11	1	<i>Unknown</i>	160.9	2001
Eritrea	3	3	3	2	85.8	2000
Ethiopia	41	30	27	20	742.2	1990s
Gambia	9	9	3	1	48.3	2001
Ghana	29	29	19	13	474.5	2001
Guinea	12	12	10	3	269.3	2001
Kenya	28	26	19	14	833.3	1990s
Madagascar	15	15	15	9	206.2	2000
Malawi	8	8	7	5	149.3	2001
Mali	5	5	5	2	300.3	2001
Mauritania ²	7	7	6	3	109.9	2001
Mauritius	16	16	11	9	153.5	2000
Niger	6	6	6	4	108.7	2001
Nigeria	81	81	59	43	1351.9	2000
Senegal	9	7	6	5	158.9	2001
Sudan ³	35	32	20	<i>Unknown</i>	790.7	1990s
Tanzania	34	33	25	17	542.3	1990s
Togo	6	6	6	5	102	2001
Uganda	14	14	6	<i>Unknown</i>	249.9	2000
Zambia	16	16	13	5	790.7	2000
TOTAL	421	400	293	164	8125.2	

Burundi, Gabon and South Africa excluded for lack of data availability.

N_T Total fte researchers identified in agencies surveyed (400 out of 421 agencies; see table 1.)

N_S Commodity research focus sample: fte researchers with known commodity research focus. Subset of N_T.

N_C Fte crop researchers identified *within* commodity research focus sample. Subset of N_S.

Table 2. Agricultural fte researchers by country, research focus, and crop type

Country	<i>Sampling</i>				Crop fte in sample (N _C)	<i>Distribution by item focus (% of N_C)</i>						
	Fte researchers identified (N _T)	Fte in sample (N _S)	Percentage of fte sampled (N _S /N _T)	% Crop fte in sample (% of N _S)		Cash crops	Fruit & Nuts	Grain ⁴	Maize	Rice	Vegetables	Other
Botswana¹	101.4	101.4	100%	36%	36.5	0%	16%	40%	16%	0%	16%	12%
Burkina Faso	260.5	209	80%	26%	54	0%	0%	36%	19%	26%	10%	9%
Congo, DR	134.7	96	71%	34%	32.6	0%	12%	0%	5%	5%	71%	7%
Côte d'Ivoire	160.9	105	65%	63%	66.15	39%	17%	0%	0%	0%	8%	36%
Eritrea	85.8	85.8	100%	40%	34.4	0%	0%	63%	0%	0%	9%	28%
Ethiopia	742.2	691	93%	55%	380	6%	0%	22%	12%	0%	19%	41%
Gambia	48.3	35	72%	51%	17.8	0%	33%	16%	8%	13%	7%	23%
Ghana	474.5	442	93%	61%	269.6	11%	9%	0%	11%	8%	20%	41%
Guinea	269.3	251	93%	48%	121	15%	5%	0%	8%	50%	6%	16%
Kenya	833.3	800	96%	33%	264	11%	10%	9%	16%	0%	23%	31%
Madagascar	206.2	202	98%	32%	64.6	15%	0%	0%	6%	32%	21%	26%
Malawi	149.3	133	89%	66%	88	43%	0%	0%	10%	0%	20%	27%
Mali	300.3	300.3	100%	35%	105.1	16%	9%	20%	0%	30%	10%	15%
Mauritania²	109.9	109.9	100%	38%	41.4	0%	20%	18%	0%	25%	24%	13%
Mauritius	153.5	148	96%	79%	117	71%	10%	0%	0%	0%	11%	8%
Niger	108.7	108.7	100%	47%	51.23	0%	0%	55%	0%	5%	33%	7%
Nigeria	1351.9	1252	93%	48%	600.96	10%	8%	0%	6%	0%	20%	56%
Senegal	158.9	157	99%	38%	59.66	8%	0%	25%	9%	19%	15%	24%
Sudan³	790.7	540	68%	46%	248.4	15%	6%	10%	0%	0%	9%	60%
Tanzania	542.3	379	70%	48%	181.92	9%	7%	0%	8%	9%	7%	60%
Togo	102	102	100%	54%	55.08	33%	0%	0%	19%	8%	10%	30%
Uganda	249.9	227	91%	54%	122.58	15%	20%	0%	8%	0%	28%	29%
Zambia	790.7	186	24%	49%	92	7%	0%	20%	20%	6%	13%	34%
TOTAL	8125.2	6661.1	82%	47%	3104.0	14%	7%	9%	8%	7%	18%	38%

Burundi, Gabon and South Africa excluded for lack of data availability.

¹Item focus available for only 26.7 of 36.5 fte crop researchers.

²Item focus available for only 37.3 of 41.4 fte crop researchers.

³Item focus available for only 186.2 of 248.4 fte crop researchers.

⁴Excluding maize and rice

N_T Total fte researchers identified in agencies surveyed (400 out of 421 agencies; see table 1.)
 N_S Commodity research focus sample: fte researchers with known commodity research focus. Subset of N_T.
 N_C Fte crop researchers identified *within* commodity research focus sample. Subset of N_S.

Table 3. Distribution of fte crops researchers in Sub-Saharan Africa, by country and research item focus.

	Total crop fte	Bananas	Cassava	Cotton	Cowpea	Maize	Millet	Nuts	Rice	Sorghum	Soybeans	Wheat	Yam	Other ⁴
Botswana	36.5	8%				16%	16%			24%				36%
Burkina Faso	54.0					19%	10%		26%	26%				19%
Congo, DR	32.6	7%	66%			5%		5%	5%		5%			7%
Côte d'Ivoire	66.2			15%										85%
Eritrea	34.4						14%			23%		13%		50%
Ethiopia	380.0					12%				8%		14%		66%
Gambia	17.8		7%			8%	16%	25%	13%					31%
Ghana	269.6		13%			11%			8%					68%
Guinea	121.0	5%	6%			8%			50%					31%
Kenya	264.0					16%						9%		75%
Madagascar	64.6			10%		6%			32%					52%
Malawi	88.0		9%			10%								81%
Mali	105.1			16%				5%	30%	20%				29%
Mauritania	41.4						7%		25%	11%				57%
Mauritius	117.0	2%												98%
Niger	51.2				28%		40%		5%	15%				12%
Nigeria	601.0	8%	11%			6%							9%	66%
Senegal	59.7					9%	16%		19%	9%				55%
Sudan	248.4			10%						4%		6%		80%
Tanzania	181.9		7%			8%			9%					76%
Togo	55.1			16%		19%			8%					57%
Uganda	122.6	20%	19%			8%								53%
Zambia	92.0			7%		20%	6%		6%	7%	7%	7%		40%
TOTAL	3104.0	3%	6%	2%	0%	8%	2%	0%	7%	4%	0%	3%	2%	63%

Burundi, Gabon and South Africa excluded for lack of data availability.

¹ Crop type distribution available for only 26.7 of 36.5 fte crop researchers.

² Crop type distribution available for only 37.3 of 41.4 fte crop researchers.

³ Crop type distribution available for only 186.2 of the 248.4 fte crop researchers in the 540 fte total sample.

⁴ Categories labeled “fruits” and “vegetables” were placed in “other” for clarity. In some instances, these categories, combined with other crops not listed on this table, were quite large thus contributing to the large percentage in “other” for some countries.