AGING AND TURNOVER OF STAFF IN AGRICULTURAL R&D

A Case Study on the Senegalese Agricultural Research Institute

Louis Sène

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AGRICULTURAL R&D: INVESTING IN AFRICA'S FUTURE
Analyzing Trends, Challenges, and Opportunities

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About the Author

Louis Sène is a scientist responsible for the planning, monitoring, and evaluation of research at the Senegalese Agricultural Research Institute.

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Acronyms and Abbreviations

ASTI	Agricultural Science and Technology Indicators
CAMES	*Conseil Africain et malgache pour l'Enseignement supérieur* [African and Malagasy Council of Higher Education]
FARA	Forum for Agricultural Research in Africa
IFPRI	International Food Policy Research Institute
ISRA	*Institut sénégalais de recherches agricoles* [Senegalese Agricultural Research Institute]
R&D	research and development
SSA	Sub-Saharan Africa

Abstract

During 2001–10 the Senegalese Agricultural Research Institute (ISRA) experienced very high rates of staff departures, primarily due to resignations, temporary re-assignments to other government entities, and retirements. The primary impediment is the Institute's ability to compete with the higher education and private sectors, as well as regional and international organizations, on the basis of low salary levels and less than optimal working conditions. The purpose of this case study is to provide stakeholders with information to facilitate future decision- and policymaking to address this situation and to provide inputs into a more broad-based assessment of similar phemona in other countries of Sub-Saharan Africa.

1. INTRODUCTION

Human resources are the most important resource in any organization, but this is especially so in the fields of research and innovation. Agricultural research organizations in Sub-Saharan Africa (SSA) are making concerted efforts in this regard, but they face a number of social and economic challenges in addressing the pressing issues of alleviating poverty, increasing agricultural production, and ensuring food security and food self-sufficiency. Among the factors requiring attention is the development and management of human resource capacity. Since the turn of the millennium, research institutes have been confronted with significant departures of well-qualified and experienced researchers to more lucrative positions in other sectors and abroad, a phenomenon that seriously compromises their ability to implement viable research programs. In 2001 the staff of the Senegalese Agricultural Research Institute (ISRA) included 114 researchers whose average age was 44 years. By 2010 their number had fallen to 67, averaging 49 years of age.

Dealing with departures resulting from retirement is one issue, but at least it can be managed with appropriate forward planning. The high rate of resignations, however, is another matter given their unpredictable timing and the prevalence of experienced researchers with PhD degrees. To illustrate this, of 50 researchers who resigned from ISRA during 2001–10, only six were not qualified to the PhD level. Similarly, Agricultural Science and Technology Indicators (ASTI) data reveal that 69 percent of the ISRA's researchers were over 49 years old in 2008, and the number of PhD-qualified researchers had fallen from 70 in 2003 to 54 in 2008. In view of these challenges, ISRA must devise strategies not only to retain researchers on a long-term basis, but also to develop a viable policy for human resources management.

The goal of this case study, which is one of five conducted in Burkina Faso, Kenya, Senegal, South Africa and Zambia, is to reveal insights into the challenges facing national agricultural research institutes (NARIs) in SSA in relation to the aging and turnover of research staff.

ISRA was established in 1974 as a public agricultural research institution mandated to

- develop and conduct crop, livestock, fisheries, and socioeconomic research of relevance to Senegal's economic and social development;
- develop and implement research programs in line with national government priorities;
- manage the Institute's research centers, laboratories, and experiment stations;
- promote the training of researchers and producers; and
- contribute to the development of regional and international agricultural research.

ISRA plays a fundamental role in the development of Senegalese agricultural research. In 2008, it accounted for 69 percent of the country's public agricultural researchers in full-time equivalents (Stads and Sène 2010).

Box 1. Methodology

This case study is based on a survey of current and past staff employed by ISRA, together with additional information obtained through interviews of senior staff and new recruits, and a literature review of human resource development in agricultural research.

2. THE COMPOSITION OF ISRA STAFFING BY POSITION CATEGORY, QUALIFICATIONS, AND GENDER

Upon its establishment in 1974, ISRA inherited the colonial research structures but very few national researchers. Of a total of 1,420 staff members (of all categories) in 1988, numbers contracted to 453 by 2001 due to financial limitations and the recommendation of donors. As a result, since 2001 ISRA's total staffing levels have been maintained in the range of 415 to 493 individuals (Table 1).

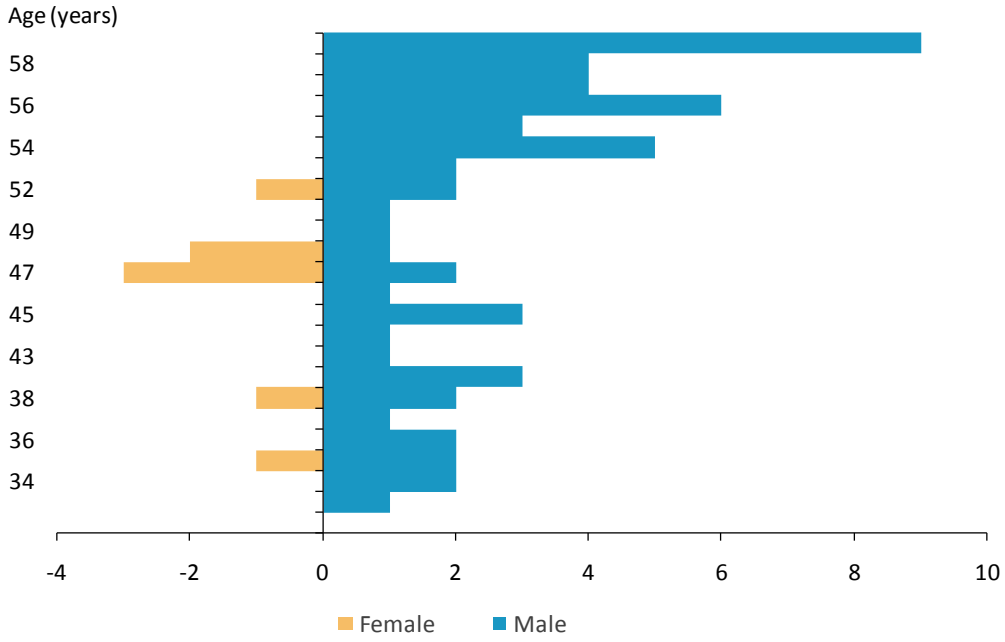
Table 1. Composition of ISRA staff by gender, 2001–10

Gender	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Male	388	380	387	325	438	421	407	412	367	356
Female	65	64	65	90	97	84	76	81	100	111
Total	453	444	452	415	535	505	483	493	467	467

Source: Case study survey data, 2011.

The age pyramid for ISRA researchers indicates that by 2017, nearly 30 researchers will be due for retirement (Figure 1). A temporary solution to this problem is to raise the retirement age for researchers from the current 60 years, but this will require government approval.

Figure 1. Age pyramid of ISRA researchers, 2010



Source: Case study survey data, 2011.

In 1990, the educational level of ISRA's research staff was high by international standards: 29 percent were qualified to the BSc level or equivalent, 43 percent were qualified to the MSc level or equivalent, and 32 percent were qualified to the PhD level or equivalent (Brush 1990). Despite the contraction in its number of senior researchers, ISRA still has a well-qualified research staff in part because, unlike most other African countries, since 1999 the minimum requirement for newly recruited researchers has been a PhD or equivalent degree (Beintema and Stads 2011). Existing researchers without a PhD degree were offered the opportunity to undertake higher training. As a result, during 2001–10 the percentage of PhD-qualified researchers was never less than 42 percent, and actually reached as high as 82 percent in 2008. Interestingly, the fact that ISRA employed so many well-qualified researchers contributed to the attrition rate, given that they were targeted by recruiting organizations. Of 60 or so researchers who began their research careers at ISRA but are now employed elsewhere, only 3 do not hold a PhD degree.

Looking at the gender balance among ISRA's researchers, women generally comprise significantly lower shares that men (Table 2).

Table 2. Composition of researchers by degree qualification and gender, 2001–10

Staff category	Gender	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Researchers											
PhD-qualified	Male	49	40	64	85	74	68	62	52	43	35
	Female	10	8	7	7	12	8	6	6	12	13
MSc-qualified	Male	53	51	28	26	26	23	21	21	19	18
	Female	2	2	2	2	2	2	2	2	2	1
Total		114	101	101	120	114	101	91	8 1	76	67
Support staff											
Techicians		208	214	218	248	243	237	255	227	186	182
Other		131	129	133	167	164	167	190	197	160	161
Total		339	343	351	415	407	404	445	424	346	343

Source: Case study survey data, 2011.
Note: Data include expatriate researchers based at ISRA.

3. HUMAN RESOURCE MANAGEMENT

One of ISRA's weaknesses is human resource development. Encouraging results were achieved in the area of training, but improvement is still needed in the areas of recruitment and performance assessment, especially for researchers. Most importantly, low salary levels make it difficult for ISRA to compete with international organizations, Senegalese universities, and the private sector for well-qualified staff. According to survey respondents comprising researchers who resigned during 2001–10, their monthly wages ranged from FCFA 0.55 to 4.17 million (US$1,200 to US$9,000), and averaged FCFA 1.7 million (US$3,687). As an example, comparable monthly salaries for faculty at Senegalese universities are FCFA 862,000 (US$1,900), which actually indicates that ISRA can in fact afford to offer its researchers higher salaries—even at rates higher than the universities—to both keep existing researchers and attract new ones.

Staff Recruitment

ISRA recruitment follows government policy, which requires that all applicants be at least 18 years old and no older than 50 years (this was increased from 35 years in 1999). Final employment of any researcher is contingent on a six-month trial period that is renewable only once. After a researcher has been recruited, he or she is mentored by a training manager, and a subject for a tenure thesis is proposed. At the end of the trial period a committee reporting to the director general either approves the researcher for permanently employment or recommends a second trial period; alternatively, although extremely rare in practice, the contract is terminated. Recruitment efforts during 2001–10 had a greater impact on support staff than on researchers and technicians (Table 3). Among other explanations, as mentioned above, the procedures for recruitment—although clear—are not followed in practice, so some recruiting is socially or politically motivated. If this trend continues an imbalanced staff structure will result.

Table 3. Staff recruited by ISRA by position category, 2001–10

Staff category	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Researcher	2	8	4	6	2	2	8	1	5	11
Technician	11	24	10	15	13	4	22	18	9	14
Support staff	15	10	29	27	13	5	33	23	23	23
Total	28	42	43	48	28	11	63	42	37	48

Source: Case study survey data, 2011.

ISRA should adhere to official recruitment procedures and execute its recruitment plan as specified in the 2010–14 Strategic Plan, which was devised in accordance with the Institute's human resource needs. Agreement should also be elicited from ISRA's governing body. Recruitment should focus on research staff rather than support staff in order to maintain an appropriate staff composition and make the best use of available resources. ISRA should also seek to increase its new recruits by attracting students direct from universities, following a rigorous selection process.

Staff Training Plans

ISRA values staff training. For the 2010–14 period the Institute earmarked CFA 1,237 billion (US$2.427 million) for long-term training, and CFA 104 million (US$204,110) for short-term training. Researchers are likely to be motivated to undertake training given that, even while studying, the researchers are paid their usual salary in addition to their training grant; both social status and prospective salary levels are improved through the increase in qualifications; and the PhD degree broadens employment opportunities both within and outside Senegal (although researchers who receive training must commit to four years of employment with ISRA after the completion of their training).

Staff Motivation

Providing staff with an appropriate working environment and incentives apart from purely financial ones is recognized as an important aspect of retaining well-qualified and talented staff. Undoubtedly, ISRA's reward system needs to be improved, requiring a number of actions, described below.

Modifying the existing policy framework. ISRA has undergone several reforms since its establishment in 1974. Policies and regulations require further reform to improve working conditions for the Institute's personnel.

Improving salaries and benefit packages. The average monthly salary of an ISRA researcher is about FCFA 450,000 (US$980, compared with about FCFA 950,000 (US$2,049) for a researcher employed at a Senegalese university—more than twice as much. Even taking into account the benefits packages that some of ISRA's managers receive (housing, a vehicle, a telephone, electricity), university faculty fare far better than their ISRA colleagues, who work longer hours.

Improving the performance appraisal and reward system. In the 1990s, ISRA conducted an initial evaluation of its researchers to assess their performance using an external advisory body. Staff supervisors also appraised the performance of their researchers, taking into account prevailing working conditions and available resources. Eighty-nine researchers were evaluated (excluding those on probation, new recruits, and those on training leave), and of those, 64 percent were rated good to very good, and 36 percent rated moderately good to passable. Given that only two complaints were registered by the researchers, the evaluation was considered effective. Those assessed, however,

considered the process ineffective since it was not accompanied by either positive rewards or negative consequences.

A new assessment was conducted in 2005, after which 14 of 38 researchers were promoted to research directors and 13 were promoted to senior research fellows. In 2010 a third assessment of 9 researchers was conducted, but this time by the African and Malagascan Council of Higher Education (CAMES); 5 researchers were promoted to research associates and one to research director. Despite these positive results, ISRA still needs to develop its own standardized (and regular) system of performance appraisal.

Maslow (1943) contends that individuals seek to have a hierarchy of their employment needs met, so appraisal and reward systems need to offer multiple incentives and rewards—and sanctions where necessary—to be effective. In addition to remuneration levels, benefits packages, and promotional opportunities, numerous factors can reward and motivate staff, such as a supportive and flexible working environment, greater autonomy and research resources, opportunities to collaborate with regional and international institutions, and prizes and other demonstrations of appreciation for a job well done. Appraisal results can also be used to assess training needs.

Staff Departures and Replacement

During the past 10 years, ISRA has progressively lost increasing numbers of staff. During 2005–10, ISRA lost 40 percent of its total staff and only replaced 30 percent of them. As of 2010, the turnover rate for researchers was 10 percent (Sène 2011). This naturally raises the question of what is causing the high rate of departure, and whether it is predominantly voluntary or involuntary (Table 4).

Table 4. Departures of researchers, 2001–10

	Year									
Reason for departure	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Retirement	—	1	1	1	4	3	3	3	9	2
Temporarily re-assignment[a]	9	4	—	7	1	2	4	8	4	4
Resignation	6	6	3	1	6	5	6	6	6	5
Death	1	—	—	—	1	—	—	—	—	1
Total	16	11	4	9	12	10	13	17	19	12

Source: Case study survey data, 2011.
Note: Data exclude expatriate researchers.
a. Some researchers are temporarily reassigned to ministries or international organizations.

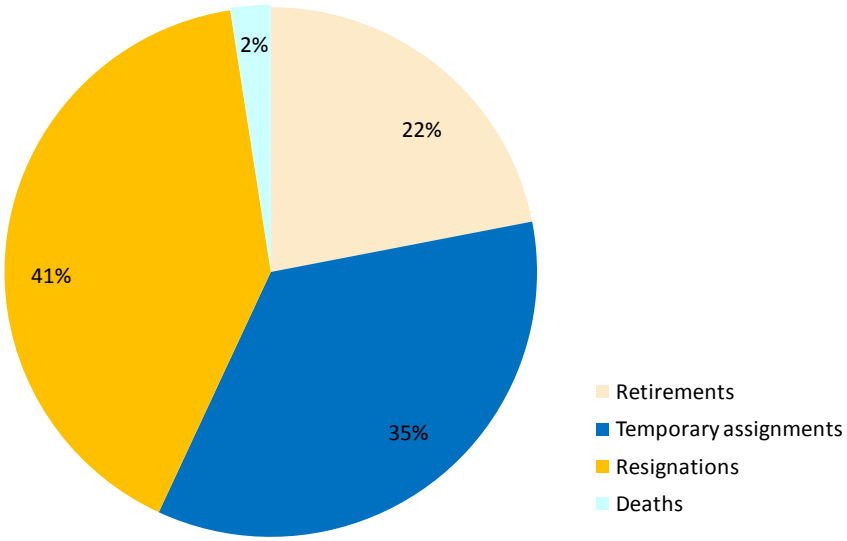
In 1999, the retirement age for ISRA staff was raised from 55 to 60 years. Universities still have an advantage in this regard, given that the retirement age for faculty staff is 65 years (60 years for support staff). Losses were highest in 2001: of 16 departing researchers, 6 held senior research fellow or higher positions. High losses were also recorded in 2008 and 2009 (Figure 2). One method of dealing with succession is to have a senior researcher nearing retirement mentor a younger researcher within the same discipline as a prospective replacement. In addition, job descriptions are a necessary aspect of securing succession, and where they are lacking, retiring researchers should be required to document them, preferably as part of the mentoring process.

Figure 2. Trends in the recruitment and departure of researchers

Source: Case study survey data, 2011.

A benefit unique to ISRA is the opportunity for employees to take unpaid leave of up to six months, renewable once—which on face value should be a positive reward. In practice, however, ISRA staff exploit this opportunity as an "insurance policy" to test out new employment, knowing that they can always return to ISRA if their new position doesn't work out. During the 2001–10 period, all unpaid leaves resulted in ultimate resignations and were counted as such in the survey; during this timeframe, 76 percent of researcher departures were due to temporary re-assignments or resignations (Figure 3).

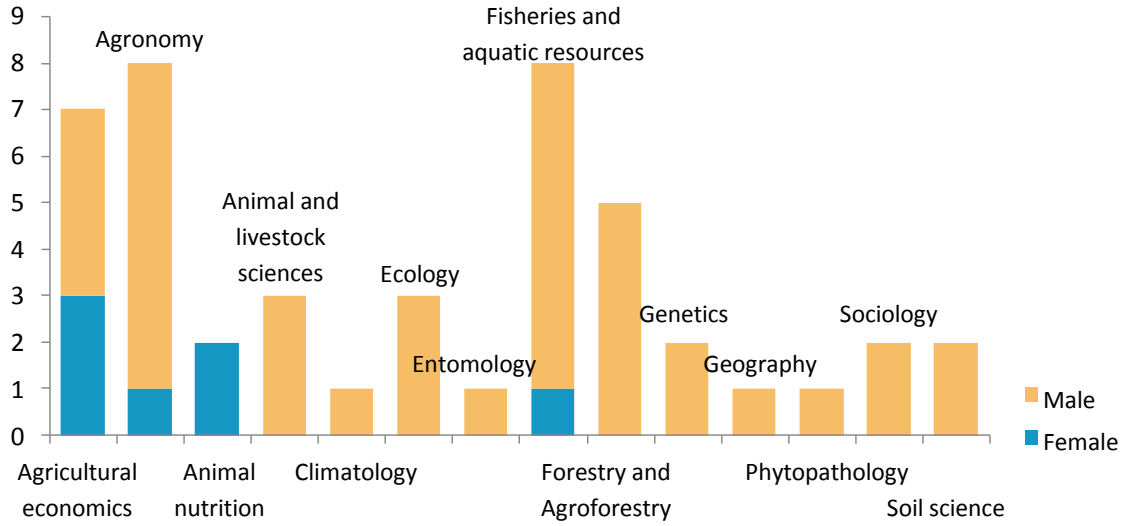
Figure 3. Shares of departing ISRA researchers by reason for departure, 2001–10



Source: Case study survey data, 2011.

Of resigning researchers during 2001–10, the majority were from the disciplines of fisheries and aquatic resources or agronomy (17 percent each), followed by the agricultural economics (15 percent and forestry and agroforestry (11 percent) (Figure 4). As a result, these four disciplines took precedence in subsequent recruitment.

Figure 4. Shares of departing ISRA researchers by discipline, 2001–10



Source: Case study survey data, 2011.

Women represented 15 percent of the researchers who resigned during 2001–10, which is still high given that they only represent 20 percent of all researchers employed at ISRA, but not quite as high as the share of men departing. The average years of experience of departing researchers during this timeframe was 19 years. Women tended to be slightly more experienced on average when they resigned (20 years) compared with their male counterparts (18 years) (Table 5).

Table 5. Years of experience of resigning researchers at their departure, 2001–10

Years of experience at departure	Female	Male	Total
2	—	1	1
5	1	4	5
6	—	2	2
9	—	1	1
10	—	2	2
11	—	1	1
12	—	2	2
13	—	2	2
14	—	1	1
15	1	3	4
16	—	2	2
17	1	1	2
18	—	1	1
20	—	1	1
22	—	4	4
23	—	1	1
24	1	1	2
25	1	—	1
27	1	2	3
28	1	1	2
29	—	1	1
30	—	5	5
31	—	4	4
Total	7	43	50

Source: Case study survey data, 2011.

4. CONCLUDING REMARKS

Departures of staff for reasons other than resignations are difficult to control and can only be managed—for example, through forward planning. Losses through resignations, however, require urgent attention focusing (1) on improving salary levels and other incentives, and (2) on improving working conditions to enable ISRA to compete with other sectors and countries.

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The Agricultural Science and Technology Indicators (ASTI) initiative compiles, analyzes, and publishes data on levels and trends in agricultural R&D investments, capacities, and institutional arrangements in developing countries. ASTI is managed by the International Food Policy Research Institute (IFPRI) and involves collaborative alliances with many national and regional R&D agencies.

Jointly convened by ASTI/IFPRI and the Forum for Agricultural Research in Africa (FARA), the conference, "Agricultural R&D—Investing in Africa's Future: Analyzing Trends, Challenges, and Opportunities," brought together experts and stakeholders from the region to contribute their expertise for the purpose of distilling new insights and creating synergies to expand the current knowledge base. The themes under focus were (1) Why African governments under invest in agricultural R&D; (2) How human resource capacity in agricultural R&D can be developed and sustained; (3) How institutional structures can be aligned and rationalized to support agricultural R&D; and (4) How the effectiveness of agricultural R&D systems can be measured and improved.

The conference was funded by the Bill and Melinda Gates Foundation and FARA.