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Challenges facing the agricultural information community in the third millennium

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**The Algerian Agricultural Information and Documentation System:
how does it support national research and training?**

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Abstract: Some ten years ago, since student enrolment was climbing rapidly, Algeria created over twenty training and research facilities devoted to agricultural sciences in the broad sense of the term. Conditions for accessing information in these establishments, which operate in a context marked by serious financial restrictions, are analysed from both a national and an international vantage point. Shortcomings in the current system make it vital for the information policy to develop new orientations primarily supported by the creation of a national network where information flows can be maintained thanks to the new technologies for information and communication (NTIC).

Keywords: agricultural information, information offer, documentary practices, network, Algeria

1. Introduction

As higher education in agriculture became decentralised in Algeria, many libraries were created in the young schools and institutions that had no inter-relations and very little funding and staff. To measure the effects of this wide dispersion, a national survey on information available in the 34 libraries that belongs to the agricultural schools and research institutes has been conducted. To supplement the survey a study was carried out on users' practices and behaviour, especially considering the documentation available at the INA El Harrach central library in Algiers.

Through the survey and an analysis of the results we are mainly seeking to define the information being offered by the current documentation system and its impact on training and research in a key sector of the Algerian economy. A diagnosis of the situation will enable us to show the proper perspective for certain avenues of work worth prioritising.

2. Very little access to international literature

We started by directing our efforts to assessing the stock of existing information available.

2.1. Available library resources

The results of the survey can be summarised as follows:

Table I : Documentary resources

Type of document	Number of responses (34 libraries surveyed)	Total number of documents on stock	Average per establishment
Algerian magazines, current	30	81	2
Foreign magazines, current	30	742	24
Magazines suspended	30	990	33
Publications	31	163,736	5,281
Books	27	50,374	1,865
University theses	25	11,174	446
Brochures	19	6,401	336
Reports	14	3,522	251
Films and micro films	34	34	1
Microfiches	31	0	0
Video cassettes	31	65	
Slides	31	7,110	229

On the national book market, because of technical importation problems and the devaluation of the Algerian currency, scientific documents are very difficult to obtain. To increase their stock of international scientific works, libraries need to have a budget in foreign currency. Only 32% of the institutions in our survey are allowed to import scientific documentation themselves.

Short budgets also constitute a factor with far-reaching consequences; the average library budget is around 250,000 DA (\approx 25,000 FF, or slightly over US \$4,000.) Since the INA El Harrach budget amounts to 56% of the total 13 million DA acquisitions budget for all the establishments combined, it is easy to understand why the other libraries have so little foreign scientific literature.

About thirty of the libraries own a combined stock of 163,736 volumes, *i.e.* a theoretical average of 5,281 per library. But this is an unreal figure since INA has 43% of all the works in the system and thus can offer its users an average 43 volumes while at the other schools of advanced studies in agriculture, the average is 4 volumes.

As concerns the 29% composed of grey literature a distinction needs to be made between the agricultural research sector, and the agricultural education sector. For the former, 14% is brochures and 11% reports, while in the latter 20% is *magistère* (more or less equivalent to a

“masters degree”) theses, practically no reports. This difference in stock composition accurately reflects the specific character of each of these sectors.

The number of foreign periodicals is still small. The aggregate figure for the institutions is 742 subscriptions, or an average of 24 per library. The shortage of resources, here again, is accentuated by the concentration of works in the INA library. The agricultural schools have over 12,000 students and teacher-scientists but only subscribe to 297 journals. The INA library has 55% of all the journals listed for a readership that only represents 13% of the total. Furthermore, its collections are not equipped for remote access.

Last, the number of subscriptions to works published in Algeria clearly reflects the low national publishing rates: only 81 Algerian publications are available in about 30 libraries. This figure is especially insignificant since it includes the daily and weekly papers. Restrictions of this sort make it impossible for libraries in this sector to specialise their stocks.

2.2. Access to international reference information

In our survey, only 21% of the libraries had a computerised bibliographic search capacity. Out of the seven libraries (remember, there were 34 in the survey) that provide this service, only three offered one of the following services: access to an international server, DSI, or ordering foreign bibliographies. Each of the other four can offer two or three services. Manual sources for access to international information are remarkably similar. Furthermore, 20% of the libraries subscribe to bibliographic reviews. The situation is especially alarming in the university world, with its 12,477 teachers, scientists and students since 75% of the libraries do not receive any bibliographic reviews and have no electronic documentary search capacity. The scientists-cum-professors may be able to develop personal information networks but students, as soon as they start doing research, are completely helpless.

2.3. International partnerships

Thought might have been given - but wasn't - to developing information exchange and cooperation networks to make up for the insufficient access to international information; 80% of the libraries have no exchange agreements with foreign libraries.

Only 12% of the libraries (4 out of the 34 in the survey) have a foreign support programme. Since three of the four are part of the same Franco-Algerian cooperation project, it is easy to see how isolated these libraries are, especially the ones - the vast majority - that are unable to import documentation or log in to Internet.

3. A weak national memory

Access to national intellectual production is another problem for the Algerian documentation services to solve. Saying that unknown document cannot be accessed is platitudinous, but there is no denying that for literature produced in Algeria to be known and accessed, step one will have to be for the country to start making an inventory itself.

Applying this line of logic, the “legal deposit” (*dépôt légal*) requirement is still the most reliable and legitimate procedure for building up the national memory. Yet, data from the analysis of the Algerian bibliography indicate that it is alarmingly incomplete. Despite the great diversity in institutions liable to produce documents, there are only 225 agricultural listings on the official inventory for the last 20 years.

Two hundred of them are unpublished. The percentage of documents produced through commercial publishing channels is next to nil since the average is one per annum. Since the university publishing house has 76% of all inventoried conventional literature, “legal deposit” for the other publishers is virtually non-existent.

An analysis of this grey literature listed in the legal depositories shows that most of it is composed of the 3rd cycle “magistère” theses. This means that every year that has more than five documents in the inventory includes an important number of *magistère* theses: 81% reported in 1981, 97% in 1985, 94% in 1987, etc. Does this discrepancy between the estimated potential of intellectual output and the official inventory reflect lack of national memory or lack of written output?

To answer this question we tried to assess how complete the legal depository was by making a comparison between the number of agricultural publications in the bibliography and the number actually produced at INA El Harrach, the oldest and biggest institution. Our findings are presented in Table II.

Table II - How complete is the official inventory of Algerian agricultural literature?

Documents, etc.	Literature registered in the “legal depository” for the whole agricultural sector	INA literature registered in the “legal depository”	Litterature produced by INA and deposited in the library
Engineer thesis	0	0	2,720
<i>Magistère</i> theses	137	106	188
Studies, dissertations, etc.	88	0	530
Total	225	106	3,488

This comparative study shows that 97% of INA’s printed output is not recorded in the national bibliography.

Since only 3% of the theses defended at INA are recorded in the Algerian national bibliography, the rate for the other Algerian institutions must but even worse.

This national amnesia leads to weighty questions about investments in research since the absence of information dissemination keeps the research findings away from their potential beneficiaries. Furthermore, how can duplicated efforts be avoided when it is impossible to stay up to date on “who is doing what”?

This is the difficult context in which we now want to analyse how high level students at INA use the library reserves.

4. How INA students use library stocks

Actually, the INA library is the main source of information for all unsatisfied demand in the agricultural sector. This unusual situation makes the analysis of user and reader behaviour especially interesting.

4.1. Users from training and research institutions

As part of our survey of 34 school libraries, it was noteworthy that 68% had no exchange relations within Algeria, 88% had no inter-library loan arrangements and 82% had no photocopying service. These libraries have to send their users to other libraries, but the problem is that external users there do not have borrowing privileges and thus have to limit their work to what they can do in the reference rooms.

Considering this process of moving users rather than documents, the INA library, which has 50% of the sector's resources, is the main place for users to go when they are not satisfied with their local resources. Hence, in numbers, outside users amount to close to half the number of INA students. These data are detailed in Table III.

Table III - INA library users

Year	Number of INA students			Number of external users registered at the INA library		
	Common core	Specialisation	Total	Total number	% / specialisation	% / Total INA
1985-1986	655	236	891	215	91	24
1986-1987	812	280	1,092	411	146	37
1987-1988	976	448	1,424	584	130	41
1988-1989	976	448	1,424	750	167	52
1989-1990	1,017	473	1,490	928	196	62
1990-1991	1,187	582	1,769	946	162	53
1991-1992	1,214	602	1,816	855	142	47
1992-1993	1,342	682	2,024	694	101	34
1993-1994	1,102	602	1,704	560	93	33
1994-1995	1,079	645	1,724	422	65	24
1995-1996	678	775	1,453	488	62	33
1996-1997	460	679	1,139	549	81	48
1997-1998	188	618	806	623	100	77
1998-1999	147	453	600	465	103	77
Annual average	845	537	691	606	113	87

Quite significantly, the demand from schools inland is going down because of travel problems, which means that the users who are closest to INA are the ones who go to the library most often. Inevitably, geographical location can make opportunities to access information become even more unequal.

4.2. Habits of INA common core students

At INA, common core students only have access to the central library where they can use special reserves indexed apart from the rest of the library's collection, but none other. Despite the importance of this three-year training cycle, the analysis in Table IV shows that the common core curricula is supported by library stocks whose main characteristic is that it is aging!

Publication dates are somewhere between 1904 and 1990. Apparently 78% of the works were published between 1960 and 1979 and 17% in the 1980s. The percentage of references dated after 1990 is next to nothing, *i.e.* one!

Table IV - Age of library stocks available to INA students

Works published between 1970 and 1979			Works published between 1980 and 1989		
Year of publication	Number of works	%	Year of publication	Number of works	%
1970	38	8	1980	34	24
1971	40	9	1981	25	18
1972	49	11	1982	23	16
1973	41	9	1983	12	8
1974	42	9	1984	7	5
1975	53	11	1985	12	8
1976	53	11	1986	11	8
1977	64	14	1987	5	3
1978	42	9	1988	5	3
1979	23	5	1989	4	3
Total	445		Total	138	
Average 1970s	44		Average 1980s	13	

These results are instrumental in evaluating the consequences of the financial crisis on the scientific currency of library stocks available to students. An example: for first year students, 33% of the demand concerns chemistry and for second year students, 41% concerns hydrology while the age of publications in these two fields is 15 and 25 years old, respectively.

Another explanation for this situation is that when faced with the financial restrictions that made it impossible to increase its stock, the INA library decided to spend nearly all of its funds on subscriptions, in order to keep up its collection of journals, unique to the country. Financial constraints imposed this option, which is not risk-free.

4.3. Consultation habits among last-year INA students

To analyse the relation between last-year students and their sources of information at INA, we looked at their library slips (total 1,510) to obtain data on the type, year and publication place of documents they requested. These data are summarised in Table V.

Table V - Demand by last-year students at INA

Non-conventional literature					Conventional literature				
Type doc.	National	Internat'l	Total	%	Type doc.	Nat'l	Internat'l	Total	%
INA Engineer thesis	755		755	73	Works	25	384	409	85
INA Magistère thesis	62		62	6	Dictionaries		73	73	15
Univers'y reports	22		22	2	Total	25	457	482	
Studies, conf.	98	5	103	10	% of total	5	95		
Courses	86		86	8					
Total	1,023	5	1,028						
% of total	99	0,5							

First of all, we see a strong demand for unpublished literature (68%) whose main quality is that all of it is produced in Algeria. INA's output alone accounts for 88% of it. The types of documents consulted most are engineer and "magistère" theses (79%) and photocopied courses (8%).

These results make us aware of the risk that research work done by last-year students will be patently copied. How can students be innovative if 50% of the research work they consult is work done in their own institution and, thus, often under identical conditions? There is a serious risk of intellectual inbreeding!

As concerns applied research, there is an obvious need to consult national reference works, but what is less obvious, is that the "national" dimension goes no further than the institution. Not only are the library reserves growing old, but the last-year students are locked into what their home institution has to offer since there are no national memory.

Conventional literature, which accounts for 32% of the last-year students' demand is overwhelmingly dominated by foreign publications (95%). There were only 25 requests for works published in Algeria. This shows how little Algeria publishes.

An analysis of student readership indicates that although the INA library seems to have the best collection, it has also been affected by the economic crisis. There is an undeniable risk of this key sector of the Algerian economy being scientifically isolated.

In this situation, stricken with all sorts of difficulties, efforts have been made to better structure the information offer by trying to develop a common national network that can connect to international networks.

5. Efforts at networking

In 1993, four establishments joined hands to create RADA, the Algerian agricultural documentation network. Considering the embryonic state of the new libraries, RADA had to give top priority to computerising the INA library catalogue and providing remote access. The information offer had to be restructured to target a seemingly trivial objective: find out who had what and where. This would make it possible to circulate information, rather than, as was the case, forcing the users to go “library hopping”.

5.1. Sharing resources

RADA was established with considerable support from the technical assistance services of the French Embassy in Algeria and was determined to concentrate on the problem of sharing resources. The brief was to create a data base for the national bibliography, and integrate it into international and regional agricultural information systems.

By end 1999, the project had achieved the following:

- computerisation of member libraries’ catalogues and introduction of index files in the form of on-line catalogues. These catalogues should make it possible to adopt a concerted acquisitions policy;
- computerisation of the international literature catalogues available in the four RADA member libraries. The computerised catalogue at libraries of INA El Harrach, ITGC and INRA have, respectively, 5,195, 1,394 et 1,203 entries. They are currently being merged on a single shared server.
- Shared access to international sources of information. As mentioned earlier, 75% of the libraries have no bibliographic reviews and no electronic document search capacity. The RADA project has made it possible to acquire several carefully selected data bases on CD-rom, namely, Pascal, Current Contents, Agris, SÈsame, etc. The installation of these reference bases has given new thrust to the information access process. They have also made it possible to familiarise the INA students with, in particular, methods for consulting bibliographic data bases

Last, access to documentary information is being supplemented by bibliographies maximally used for the most important research subjects. These bibliographies have been updated regularly through the Selective Dissemination of Information (SDI) as part of the French technical assistance documentary support effort for national research teams. A special data base manages the photocopies and other primary documents acquired through this specific documentation support programme.

5.2. Mastering the national memory

The second data base offered on the RADA server includes all the literature produced by the network members, *e.g.* theses, dissertations, research, studies, etc. At present, it has 2,664 references for INA, 294 for ITGC, 339 for INRA and 145 for CRSTRA. Thus, we can now know “who produced what” and encourage the economic use of research by ensuring access to the users. This aspect of RADA is also being developed internationally via access to the network’s web server, which is now being installed, and CD-rom products such as Sésame, the French-language documentary network for tropical agricultural subscribed to by 42 establishment in 18 countries; it has 203,209 references. RADA member institutions provided 1,751 references for Sésame version 6 (data dated December 1999).

5.3. The production of electronic documents

Besides the grey literature, intellectual output in the teaching and agricultural research sectors have very little published support materials that meet the permanency and regularity criteria.

This does not apply to the *Annales de l’institut national agronomique El Harrach* which were started in 1939, during the colonial period. These annals were not published between 1975 and 1985, but are now put out regularly.

Further, INA has joined the electronic press consortium (CPE) initiated by CIRAD with the help of AUF (Agence universitaire de la francophonie). This project will make it possible to digitalise the whole collection of INA annals, and those of other institutions’ in Tunisia, Senegal and France. There will be over ten titles in the first core collection of the digitalised French-language library in tropical agriculture, which, moreover will be available on CD-rom and on line on the server sites of institutions that are in the project.

INA is interested in participating in the project for three reasons, *viz.* to be able to master an information production and dissemination technology, to develop partnerships, especially in the Maghreb, and to allow Algerian RADA institutions to benefit from a slate of international reviews *in extenso*.

5.4. Access to Internet

Access to Internet is centralised at CERIST (Algiers) which has the monopoly. It is very little developed, even in universities and research institutions. But the certification of new access providers and funding for new Internet network installations in schools for advanced studies in agriculture are leading to a new situation that should soon facilitate access to Internet for many of these institutions and schools.

At the INA library, access to Internet at one work station in 1998 and 1999, via the switched telephone network, was acclaimed as a precious new means of communications. But the limited capacity resulting from restriction in the consultation mode and the low network transmission rate caused more frustration than satisfaction. The importance of this experience was that it showed the stakes and values of investing in a local network at INA, with a special line to connected to the access providers. The network that interlinks all the teaching departments at INA has been completed. A UNIX (HP 9000) server in being installed to run the local network (LAN) and make the connection to Internet possible. A free-access consultation room is also being installed.

These prospects for the very near future give RADA members the hope that all their work to update the various catalogues will be put to good use and that remote access to information will be provided for establishments that are far from Algiers. And last but not least, it will give more international visibility to potential developments in Algerian higher education in agriculture and agricultural research.

6. Current situation and prospects for the future

The tight financial straits Algeria has been going through for the last 15 years have had a terrible impact on the documents and information acquisition policies of the countries' agricultural research and advanced agricultural schools. Being isolated on the information front levies heavy risks of marginalisation on a scientific community full of promise.

Interlinking available resources and mines of information was the only possible strategy. It was certainly worthwhile in terms of products (catalogued compilations of works, indexing national production, etc.) but also in terms of modernising the practices of information professions of information service users.

By installing a computerised network and connecting it to Internet, past experiences and achievements can be optimised and information can be easily circulated; these are two objectives that, when the network was first launched in 1993, were not even conceivable.

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