

INTERNATIONAL FRONTIERS IN  
AGRICULTURAL INFORMATION SERVICES

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We, involved in the field of agricultural documentation and information, are as guilty as the followers of any other discipline to the crime of adding needlessly to the vast accretion of publications; publications which we ourselves at times rail against. (If I may be allowed to digress after speaking for one-and-a-half sentences, it is a totally unsubstantiated belief of mine that what we are all up against is not so much an 'information explosion' as a 'publication explosion'. They are by no means synonymous. I hope to return to this point later, when it will no longer be a digression.)

Be that as it may, when one is invited to present a paper, on such an august occasion as this, on 'International Frontiers in Agricultural Information Services' - albeit changed, I must admit, at my own request from 'International

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Frontiers in Agricultural Librarianship' - the first question one asks oneself is: "What can I say that will not be condemned as yet another addition to that rapidly-growing pile of documentation on agricultural documentation?" Even four long years ago, when Jacques Tocatlian was preparing his review of international information systems (1), he was able to say that the documentation on just one system, AGRIS, was voluminous.

So, as our starting point for looking at some of the aspects implied by the 'international frontiers' of the title, let us take the year 1975. In that year, not only was Tocatlian's paper published, but there were other landmark publications concerning agricultural information in the world picture: Philippe Ariès took the development of agricultural information services in the world as the theme for his presidential address to the Mexico Congress of the International Association of Agricultural Librarians and Documentalists (2); the proceedings were published of a symposium on international information exchange, jointly sponsored by FAO, the International Atomic Energy Agency and Unesco (3); and AGRIS moved into an operational phase and began the on-going publication of *Agrindex*.

Viewed from the international viewpoint, agricultural

information covers many things and involves many different types of services, catering to widely different sorts of users. We all remember two compilations of data on such services, both issued before 1975: Frauendorfer's survey of 1969 (4) and Boyle and Buntrock's survey of 1973 (5). These made us all aware of the number of services available and of the great differences between them: differences in scope, in the types of user, in funding and organizational structure, in output products, in language, in depth of treatment; differences, in short, in any area one cares to mention. And yet, and this must not be understated, the great majority of those services were fulfilling a need.

It is almost axiomatic, except that we at times tend to forget it, that the main use of agricultural information is to provide more and better food for mankind. Whether one is a phytopathologist attempting to elucidate the physiology of resistance to a disease in maize, a rural economist concerned with raising the living standards of migratory workers, or a dairy farmer worried about increasing milk production from his herd because he wants a corresponding increase in income, the fundamental information requirement is the same. It has become fashionable to speak of 'mission-oriented systems', and in the

case of agricultural information systems the mission is, in the broadest sense, staring us in the face.

Is that enough? It could be thought to be enough, were it not for one hard fact that persists in creeping into the picture. It is one thing to list information in well-conceived classifications, to gather together as much as possible, and even to make it more useful by providing abstracts in a variety of languages; but what if the people who would most profit from that knowledge are still unable to get at these sources? The barriers do not follow a common pattern. In one country, the barrier to access may be a financial one: the information may be acquired by a hard-currency payment, but hard currency just is not obtainable. A researcher in another country may face the language barrier: he knows of the existence of a very pertinent paper, but it is written in a language that he does not understand. Perhaps the commonest barrier is that raised by inaccessibility of documents: how frustrating it is to be notified of a paper that would appear to be of the greatest interest, and yet not to be able to locate a copy of it. A different type of obstacle is that of comprehension: relevant literature exists, but the potential user lacks the understanding to appreciate it. Scientific history is full of instances of this, but away from the

academic level we have the greater problem of transferring information from the researcher to the planner, the extension worker, the farmer.

These and other barriers are not necessarily insurmountable, but they do gravely hinder the flow of information, particularly in the international context and even more particularly in the developing countries. Most systems that lay any claim to be providing an international service are actively looking into ways by which these hardships may be alleviated. AGRIS should take a lead in removing these frustrations, for a system based within an agency of the United Nations could be in a more advantageous position than many others to take the appropriate actions. The International Nuclear Information System (INIS), for example, operating from the International Atomic Energy Agency, microcopies the full texts of non-conventional documents reported to the system and makes these available on demand. The AGRIS Coordinating Centre, acting on feedback from national and regional centres, is investigating the organization of a service of that type; but it has from its beginning insisted that, when a non-conventional document is entered into the system, the citation must be accompanied by a statement indicating whence a copy of the full text may be obtained.

Access to conventionally-published material, of which journal articles form the greater part, is assisted by many services (such as the Commonwealth Agricultural Bureaux (CAB), and the *Bibliography of Agriculture* in conjunction with the National Agricultural Library), but here again the question of hard currencies sometimes presents problems, despite the Unesco-coupon scheme.

One step towards the improvement of this sort of situation was taken by FAO in the setting-up of AGLINET, whereby at present seventeen agricultural libraries of major importance in the various regions of the world (including the National Agricultural Library as the only member so far in North America) provide an inter-library loan and copy service. AGLINET still has a long way to go, and one step is now being taken in the compilation of a union list of serial holdings. Much will depend on FAO for the successful operation of AGLINET; but ultimately (as with most international undertakings) the value of AGLINET will depend on the active cooperation of its constituent libraries. Meanwhile, libraries in many surprisingly out-of-the-way places in the world rely to a considerable extent on the copy services of the Lending Division of the British Library.

So far we have considered some of the barriers that exist to getting hold of known documents, known information. How does the world stand concerning access to unknown information?

I do not want to go too far back into even the recent past; but I guess it can bear repeating in the present context that the idea of AGRIS began to take form when, in 1969, it was realized that the two main agricultural data sources - the National Agricultural Library with its CAIN tapes and the *Bibliography of Agriculture*, and the Commonwealth Agricultural Bureaux with their series of specialized abstract journals - not only had a wasteful degree of overlap between them but, more importantly, were missing much pertinent documentation. The heads of these services at that time, John Sherrod (6) and Sir Thomas Scrivenor, respectively, approached FAO with their problems, as the FAO constitution declares that the collection, analysis and dissemination of information relating to nutrition, food and agriculture is one of the cornerstones of that UN agency. From these approaches emerged AGRIS, the early stages of which were succinctly described by the late Herbert Coblans (7). The Director-General of FAO nominated a Panel of Experts to advise him; it met at first under the chairmanship of Sir Thomas Scrivenor and latterly under that of John Woolston, Director

of the Information Sciences Division of the International Development Research Centre.

The system was designed as a decentralized operation, with essentially each country undertaking the responsibility for inputting its agricultural documentation. In this, as in many other aspects, AGRIS adhered to the successful pattern earlier established by the International Nuclear Science Information System (INIS). Decentralization has several benefits. Firstly, such a territorial formula virtually eliminates any possibility of duplication. Each country only inputs material issued in that country. Secondly, information is usually available more promptly in its country of publication than elsewhere. Indeed, I am not exaggerating when I say that many non-conventional documents will only be found by someone working within the national institutions. Thirdly, translation to English (the carrier-language of AGRIS) is perhaps easier and cheaper when it is done only once, and without the need for a polyglot team. Fourthly, and I think most importantly, this type of system directly involves all the partners in it, which is a very healthy exercise. The number of countries cooperating continues to increase; and, correspondingly, output requirements are being more forcibly voiced.



Systems of the INIS-AGRIS type, transcending national frontiers, are naturally subject to many pressures; but let us not assume that these pressures are necessarily injurious. Perhaps the strongest pressure is the political one. That pressure was directly responsible for the establishment of INIS, but in the agricultural field decision-making becomes diluted because of the many and diverse interests involved. John Woolston (8) has described something of the process, as well as something of the qualms that existing services quite naturally have when faced with a healthy newcomer. Political pressures, however, are not constant in their direction, and it is in this area that the virtues of linking international information endeavours with the political forum of international agencies become most apparent. The information needs of the developing countries have not until recently had political impact, but we are now witnessing a fundamental change in this respect as the themes of the New International Economic Order assume reality. Woolston (loc. cit.) has looked a little way into the future:

"From each according to his wealth, to each according to his needs - this is the INIS-AGRIS formula, where wealth is measured by a country's production of information and needs are measured by its requirements for information. The Rich countries are not seeking to

retain a monopoly of knowledge and then exploit it to widen still further the gap between themselves and the Poor. But will the Poor believe that? Only if the Rich demonstrate a willingness to put their knowledge in the pool."

The Rich are indeed showing this willingness. The European Communities together supply the largest volume of input to AGRIS, Japan is inputting its agricultural information almost 100 per cent, and Richard Farley (9) and the U.S. Secretary of Agriculture, Bob Bergland (10) have indicated their belief that the U.S.A. must match this sort of performance. National attitudes towards AGRIS have, as we might expect, been extremely varied, ranging from all-out commitment to no response at all. After all, it is asking a lot of countries, particularly those with long-established and proven agricultural information services, to change to a new system that has yet to prove its worth. Arguments concerning the good of the world as a whole, the advantages of following UNISIST recommendations, and so forth, carry little weight under the circumstances.

We are now in November, and this month will hopefully see a basic change in the attitudes towards AGRIS. A system

designed on such a challenging scale invites caution while its future remains uncertain. At the 19th FAO Conference Session this month, that future will be decided upon. Evaluation studies of AGRIS have been carried out, and the results published in time for consideration by the Conference. It may be said that the system is still too young to be evaluated, but there is a spirit of cooperation alive in the world, and the international agricultural information community would be irresponsible not to take advantage of it for the sake of the future of mankind. I remember being very impressed a few years ago when the AGRIS ~~advantage of it for the sake of the future of mankind. I~~ ~~remember being very impressed a few years ago when the AGRIS~~ regional centre for Southeast Asia, located at the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), was being organized for continued operation. The Director of SEARCA, J. D. Drilon, said that the region had such a need for inventories of its agricultural documentation and means of access to it that, even if AGRIS as a world system failed, the Southeast Asian component would 'go it alone' (11).

For the evaluation of AGRIS, Unesco was formally invited by FAO to arrange for the independent evaluation of the system. Unesco's responsibilities were to establish terms of reference

for the appraisal, to ensure that the UNISIST principles concerning international information transfer were adhered to, and to designate the members of the evaluation team. The team appointed consisted of two information-system specialists - Professor F. W. Lancaster of the University of Illinois School of Library Science and John Martyn of Aslib in the United Kingdom - and two agricultural experts - Professor Osman Badran of the University of Alexandria, Egypt, and Professor Janusz Haman of the Polish Academy of Sciences. As their report is available (12), I do not propose going into the details of it here; but it will I think be useful to summarize the team's final recommendations. They endorsed the AGRIS concept and recommended as a top priority that FAO and other interested organizations should commit resources for the on-going operation and development of the system. Another top priority was accorded to the need, "failing a more complete commitment of resources on the part of the United States", to develop a program for the transformation of NAL formats to those approved by the International Organisation for Standardisation. It was stated that full input of U.S. documentation was essential to the survival of AGRIS.

As secondary priorities, the team recommended that increasing attention be devoted to the provision of outputs and

services in exploitation of the data base; that communication among the AGRIS centres and between them and the AGRIS Coordinating Centre be improved; that a more aggressive approach be made to the promotion of the data base on magnetic tape and in the printed form of *Agrindex*; and that meetings of national liaison officers should be arranged on a regular basis.

Other recommendations included the need for a refined approach to indexing and information *r*etrieval, the need for incorporating multilingual-access devices, the need for developing a sub-system for the supply of documents, and the need for continued monitoring of input quantitatively and qualitatively.

Following receipt of this evaluation report, the Director-General of FAO is proposing to the FAO Conference that the central coordination of AGRIS, its central processing and maintenance, and the costs of some development be included in the agency's regular Programme of Work and Budget for 1978-79. He is also pointing out that the full implementation of the evaluation team's recommendations, the need for which he agrees, will only be achieved with the cooperation of, and provision of external resources by, other organizations.

I earlier referred to 'evaluation studies' of AGRIS, rather than 'an evaluation study'. Concurrent with the evaluation arranged by Unesco, the Agricultural Working Group of the European Communities requested a somewhat different type of evaluation. It was conducted by the German Centre for Agricultural Documentation and Information (ZADI) in Bonn and the Dutch organization PUDOC in Wageningen, and essentially it compared the values of the CAIN and AGRIS magnetic tapes to the user. (Incidentally, how often we fall into error here. There is always talk of considering users' needs in the design and development of an information system, but so seldom are those users meaningfully consulted. Of all the advice proffered during the design-stage of AGRIS, some of the most pertinent derived from a meeting convened in Rome by the IDRC and FAO which brought together an important group of users of agricultural information from eleven less developed countries (13).) I understand that in the European Communities evaluation, a comparison was made between the two tapes on grounds of coverage, scope and timeliness. I have been informed that the evaluation indicated that in all the parameters examined there was near-equality between CAIN and AGRIS, equality that is all the more remarkable when one remembers that the performance of an established system was being compared with that of a youngster, a system whose data base was only two years old.

Although the AGRIS and AGRICOLA tapes are searchable in a variety of ways, they contain little more than references to documents. Their printed products, *Agrindex* and the *Bibliography of Agriculture*, are similarly restricted in their information contents. The subject content of the items cited may be broadly determined from their placement within categories in either system. Somewhat finer subject control for retrieval is provided in the *Bibliography of Agriculture* by a subject index using words derived from titles and title enrichment, and in *Agrindex* by a commodities index derived from coding selected at input. Both methods have been criticized, and no doubt will be improved from time to time. Nevertheless, neither system was designed to provide deeper selection. There are services that provide detailed abstracts and that select material qualitatively, rejecting much that is ephemeral or poor in intellectual quality. I need not describe such services to the present audience, but I will exemplify them by the Commonwealth Agricultural Bureaux which, so far as they go, provide English-language services second to none in the world. The selection of worthy material from the unselected mass is a primary role of these deeper services, and it is to be hoped that the AGRIS data base will vice versa provide them with the fullest coverage to ease their selection burden. Much that is

being published today scarcely warrants being called 'information'; it is repetitive, trivial and often third-rate. A decentralized system such as AGRIS will inevitably, despite guideline advice on identifying documents that should not be input, collect the bad with the good; but in doing so it provides access to valuable information that has in the past been missed altogether.

The abstracting and information-packaging services with which we are familiar are themselves undergoing change, as also are some of the patterns of agricultural research, and these changes should be reflected in the arena of agricultural information services as a whole. To take the example of CAB once again, the diverse approaches of its constituent institutes and bureaux are now mechanized and becoming standardized, which makes the CAB data base more flexible in operation. One spin-off is the production of abstract journals on specific topics, culled from their primarily discipline-oriented main series of abstract journals. An extension of this sort of activity is the establishment of information centres concerned with individual crops, groups of crops, or processes; information centres that not only possibly gather together abstracts of the literature on their speciality but take the information process considerably



further. The Cassava Information Centre, located at the Centro Internacional de Agricultura Tropical (CIAT) in Colombia, is a case in point. A bold attempt has been made to gather together as complete a collection as possible of the documentation on cassava, a crop of significant potential in the Tropics that had been neglected for years. The retrospective material is abstracted, as are current additions, and the abstracts published in book form and also distributed on cards to a world-wide network of specialists. Subject access to the whole collection is provided by an optical coincidence indexing system based on a thesaurus compiled for the purpose (14), so that enquiries may speedily be answered. The Centre issues a semi-annual newsletter of topical interest, a directory of workers on cassava problems, and a polished series of manuals of value not only to the researcher but also to the extension agent.

The Cassava Information Centre, as I have said, is located within CIAT, which is itself a manifestation of the new approach to research. CIAT is one of the eleven research centres set up under the auspices of the Consultative Group for International Agricultural Research. Its role is to foster agricultural development in the lowland tropics, and one area of its expertise is tropical root crops, with outreach programs in many

parts of the developing world. Many of the Consultative-Group centres have good library facilities, and the establishment of specialized information centres in such an environment means that the information centre has access not only to the relevant documents but also to the expert knowledge of researchers. Thus research teams participate in the information function, with benefits to all parties. I do not want to leave you with the impression that specialized centres are necessarily best located within institutions of the CGIAR: but they are best located in centres of recognized excellence.

The work of such specialized centres cuts right across national boundaries, engendering reciprocative efforts around the world. Aware of the advantages of using computer-assisted systems, they and AGRIS regional centres are forging ahead towards the integrated use of fully-compatible data bases. The process is most obvious in Europe, Latin America and South-east Asia, but it is to be hoped that other regions of the world will not be slow to realize the potential benefits of full co-operation in these allied activities in agricultural information.

Footnotes:

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- (2) Ph. Ariès, 1975, Evolution of agricultural information services  
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*Quarterly Bulletin IAALD*, 20(3/4) : 105-110.
- (3) International Atomic Energy Agency, 1975, Information  
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- (4) S. von Frauendorfer, 1969, Survey of abstracting services and  
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- (6) John Sherrod, 1972, The role of NAL in the developing world information systems. Actas y trabajos de la Tercera Reunion Interamericana de Bibliotecarios y Documentalistas Agricolas, Buenos Aires, 10 - 14 abril 1972, pp. III-B-2:1-11. Buenos Aires: AIBDA.
- (7) Herbert Coblans, 1974, Librarianship and documentation: an international perspective. London: Andre Deutsch.
- (8) John Woolston, 1976, Sharing knowledge: a key to détente between the rich and the poor. *Focus: technical co-operation*, Washington, D.C., 1976 (4) : 3 - 6.
- (9) Richard A. Farley, 1977, International information systems: practical reality. *Bulletin American Society for Information Science*, 3 (3) : 13 - 14.
- (10) Bob Bergland, 1977, The world food situation. *Bulletin American Society for Information Science*, 3 (3) : 3.

- (11) J. D. Drilon, Jr., 1975, In Proceedings of a Workshop/Seminar on Regional Cooperation in Agricultural Information, held at College, Laguna, Philippines, March 3 - 12, 1975. pp. 229 - 235. College, Philippines: SEARCA.
- (12) O. A. Badran, J. Haman, F. W. Lancaster and J. Martyn, 1977, UNISIST Report on the Independent Appraisal of AGRIS organized by Unesco, November 1976 - March 1977, at the request of the Food and Agriculture Organization of the United Nations. SC/77/WS/20. Paris: Unesco.
- (13) International Development Research Centre, 1974, AGRIS and the Developing Countries. IDRC-025e,f,s. Ottawa: IDRC.
- (14) Donald Leatherdale, 1974, Cassava Thesaurus. Cali: Cassava Information Centre, CIAT.