INIS and AGRIS - Their Use and Potential in Developing Countries

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General Introduction to INIS and AGRIS

Of the many bibliographic information systems which exist throughout the world today, there are two that are unique in the way in which they involve both the developed and developing countries in their operation. The first, the International Nuclear Information System (INIS), is co-ordinated by the International Atomic Energy Agency. INIS became operational in 1970. The second is the International Information System for the Agricultural Sciences and Technology (AGRIS) and is co-ordinated through the Food and Agriculture Organization of the United Nations (FAO). AGRIS started in 1975.

What makes these information systems unique is the decentralized manner in which they are both organized and operated. Decentralization, in this case, means that the member countries in each system have the responsibility for identifying, cataloguing, indexing and inputting records for the documents published within their borders. Member countries also have the responsibility for providing specialized output services from the systems for the users within their borders.

The IAEA and FAO are responsible for the general administration and centralized data processing for INIS and AGRIS. Each member country has an equal voice in overall system management and formulation of general policy. Costs for input preparation and special output services are thus borne by each member. The centralized processing and administrative costs are shared according to the normal UN cost sharing formulas by Member States of IAEA and Member Nations of FAO.

The major benefits of such a decentralized system may be summarized as follows:

- duplication of input is virtually eliminated as each country is responsible only for its own documents;
- the delay between time of publication and the appearance of the document reference in each system is reduced;
- coverage, especially for the non-conventional literature, is improved;
- the combined input of all the countries is available equally to each member;
- the cost of data gathering and processing is distributed equitably between large and small producers and users of the literature;

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- all members have an equal voice in the operation of the system;
- through their active participation, the countries have a keen interest in improving and expanding the overall system as well as in the improvement of their own national information infra-structures.

The collaborative efforts which form the basis for both these information systems are directly inspired by the concept of UNISIST, which aims at promoting a worldwide network under the current sub-title, Intergovernmental Programme for Co-operation in the Field of Scientific and Technological Information.

The basic subject scope of INIS is the peaceful applications of nuclear science and technology. The system currently has 62 participating countries and international organizations that send input and disseminate output products. The total number of items in the system, through 1978, is approximately 420 000. It is estimated that approximately 95% of the currently published literature in the subject field is reported to the system.

The success of INIS led FAO to select a similar pattern for the development of AGRIS. AGRIS has adopted, with minor modifications, the standards and procedures used by INIS. An AGRIS Co-ordinating Centre was established at FAO Headquarters in Rome where overall system policy and management, planning and development are carried out. The Centre includes an outposted liaison unit – the AGRIS Input-Unit – established in Vienna with the co-operation of IAEA, in order to take advantage of the Agency's computer software and facilities. The use of IAEA facilities and of its computer is charged to FAO on a cost-recovery basis.

The subject scope of AGRIS is quite broad and mirrors the wide range of FAO activities. In addition to general agricultural subjects such as plant production and animal husbandry, these include forestry, the aquatic sciences, human nutrition and water resources. Other subject areas, such as economics, natural resources, pollution, etc., are also covered when they relate to agricultural activities.

There are currently 94 countries and international organizations participating in AGRIS. In 1978 there were over 130 000 items processed bringing the total number of items in the system to approximately 355 000.

Both INIS and AGRIS distribute the information they collect in the form of two major output products – magnetic tape and printed indexes.

The magnetic tapes, distributed bimonthly by INIS and monthly by AGRIS, contain all records submitted to each system. They are currently made available to countries that are members of INIS and to countries and multinational participating centres for AGRIS* and are distributed in a variety of formats, according to the needs of each recipient. National or multinational centres may then utilize the tapes in the provision of specialized information services. The services provided vary by country or region depending upon their own needs, priorities and degree of technical advancement.

INIS publishes a bimonthly abstracting journal **INIS Atomindex,** available from IAEA on subscription. **Agrindex** is published montly for AGRIS by APIMONDIA in Bucharest, Romania. Both publications are prepared from magnetic tapes by computer-driven photo-

* AGRIS tape distribution policy is being defined at present.

composition. Each issue of **Atomindex** and **Agrindex** consists of a main entry section and a number of indexes. The main entries are arranged by broad subject categories to permit users to scan quickly through the sections that are relevant to their subject interests in order to locate new information in their fields.

A special feature of both systems is the input of references for the so-called non-conventional literature. This is the type of literature which is not generally available through normal distribution channels. It consists of such items as technical reports, patents, preprints, standards, theses, etc. Approximately 20% of the total input to INIS and 30% to AGRIS is for this type of literature.

INIS operates a Clearinghouse for this non-conventional literature which ensures its availability to all users. Inputting centres must submit a full-sized normal copy of each non-conventional document for which an entry is prepared for the system. INIS produces a microfiche copy of each document and further copies are then available upon request. AGRIS does not as yet operate such a centralized clearinghouse, but each document reference for non-conventional literature input to the system carries an availability note specifying the centre from which a copy of the full document is available.

Over 80% of the input from the participating centres in each system is submitted on magnetic tape for processing. Some centres, however, prepare their own input for processing through an optical character recognition (OCR) machine, located at IAEA, which converts the data to machine-readable form. Still other centres, not having the resources available for either magnetic tape or OCR input preparation, send their input on pre-coded worksheets. This data is entered into the computer by INIS and AGRIS staff using on-line computer terminals.

Both systems use English as the carrier language. This means that all document references for non-English language publications must have an English translated title and, for INIS, must have an English abstract.

It is a requirement of INIS that all items reported to the system should be accompanied by an abstract, the only exception to this rule being short communications. The abstracts are printed in **Atomindex** and are available on the magnetic tapes. Beginning in 1979 abstracts will be available for some AGRIS records on the magnetic tapes but will not appear in **Agrindex.**

Both INIS and AGRIS regularly conduct training seminars for staff from participating centres. All aspects of the system operation are taught, including document selection, descriptive cataloguing, abstracting, indexing, and retrieval. In recent years both INIS and AGRIS have co-operated in holding joint seminars. Special courses have also been given for systems analysts and programmers.

The basis for both these systems is international co-operation. Both represent the first international information systems in which the collection of input and the dissemination of output are completely decentralized.

Having described, in very general terms, how both INIS and AGRIS operate, the next two sections will focus on each of the systems' particular relevance to developing countries and how they are utilized in these countries to provide the necessary information services to their own users.

INIS

As laid out in its Statute, the IAEA has a responsibility towards its Member States to ensure that the benefits which can be derived from nuclear energy will be made available to all countries This implies the establishment of means for transferring the know-how, experience and technological advancement from the more highly developed and industrialized countries to the less developed countries. This transfer of knowledge was indeed one of the driving forces behind the establishment of the International Nuclear Information System.

Of the 62 countries now participating in INIS, 38 can be considered as developing countries. Although these countries provide only 7.4% of the input to the system, one should not be misled into the belief that this is indicative of the amount and level of research and development work in nuclear science and technology being performed in these countries Many research workers from small countries frequently have their best work appear in journals published in countries other than their own and thus these publications become the responsibility for input of the country where the document is published and not where the work was done. The developing countries, however, are users of information, irrespective of its origin and thus, though their input may be small, their need for exploitation of the output products is no less than that in the more developed countries.

To help satisfy this need, the IAEA has paid special attention to the particular requirements of the developing countries in the development of INIS. When the system first became operational in 1970, the Member States felt it would not be possible to start covering all the world's literature in the full subject scope of INIS right from the start. Rather, certain areas would be selected and only literature in those areas would be input at the beginning. As the first few years passed, the number of areas was increased until finally the full scope was covered. In the selection of those sections to be included from the start, primary consideration was given to the interests of developing countries Thus, areas such as atomic energy in agriculture, in medicine (in so far as it was in INIS' scope at all) and the more applied aspects of nuclear technology such as engineering applications, were introduced from the start, leaving such areas as high-energy physics, neutron and nuclear physics, etc. for later expansion.

Although INIS was designed as a computer-based mechanized information system and some of its characteristics are necessarily suited primarily to machine processing, it was recognized from the very beginning that its usefulness in developing countries would be limited if other non-mechanized techniques were not available for exploiting the output products. Hence much attention has always been paid to the printed **INIS Atomindex.** Here, through the main section and the broad subject categories, but in particular through the various indexes following the main section, users can perform manual searches to find those documents matching their particular interests. In this approach to retrieving relevant documents, the subject index enabling manual searches to be made on very specific topics is of special importance The subject headings in this index, which form the points of entry for the search, are chosen from among the descriptors or key words assigned to each document at the time of input preparation. They can be as specific as the full terminology of the INIS Thesaurus allows and therefore provide a powerful tool for manual searching.

Training has always featured prominently in the INIS programme at the IAEA and much of this effort has been specifically aimed to benefit the developing countries. The training

of manpower in input preparation and output exploitation has been carried out in formal seminars, from Bombay to Buenos Aires (see Figure 1), in in-house training for individuals from developing countries who spend up to three months working together with the INIS staff in Vienna, or in short two – to four-day seminar-workshops in different Member States where one or two staff members from INIS headquarters in Vienna have gone to provide brief, intensive training. Some of the larger national INIS centres have themselves provided training opportunities for individuals from developing countries and it is planned to strenghten this type of co-operation among INIS Member States.

The Agency's document delivery service, though it is of course available to all Member States, is of particular usefulness to developing countries who have special difficulties in obtaining copies of the full text of documents reported in the INIS output products. The difficulties arise both from geographical reasons, as well as financial reasons since many developing countries have strong limitations on the availability of foreign currency. In this last respect the INIS Clearinghouse offers a particular advantage to the developing countries in that the full texts of documents can be purchased in the form of microfiche by using IAEA coupons (and also UNESCO coupons) which can be bought by each Member State in its own currency.

Because of its computerized nature, the most efficient method for processing input to the system is to have it submitted in machine-readable form, i.e. on magnetic tape However, two different options, of particular interest to developing countries, are open for those centres which do not have the capability of submitting input on magnetic tape. The simplest merely requires typing all the information concerning each piece of literature on a pre-printed worksheet. Upon receipt of the worksheets in Vienna, the information contained on them is entered directly into the IAEA computer. The second option is to type the information on special sheets with a special typewriter. These sheets can then be read by the optical character recognition (OCR) machine at the IAEA which produces a magnetic tape for further computer processing. If this option is to be used, the only special equipment required is a particular type of electric typewriter.

The extent to which INIS is being used in developing countries varies tremendously. For example, the INIS centre in Brazil has for many years been providing its scientists and other users with a computerized information retrieval service based on INIS magnetic tapes Original retrieval software was developed in Brazil for a very small computer. It has been adapted and improved as the computing equipment available has become more advanced. Selective Dissemination of Information (SDI) services, now offered to 1600 subscribers, have regularly produced references relevant to each query in the convenient form of cards that can be immediately entered by the user in a private card file The efficiency of the Brazilian retrieval services have enabled them to offer these services also to users in other Member States with the approval of the authorities in those countries. In this way Portugal as well as a number of South American countries such as Chile, are currently receiving retrieval services from Brazil. Mexico also has developed mechanized retrieval of information from the INIS magnetic tapes and it provides SDI services to 55 users with the number increasing. Specialized bibliographies are compiled manually using **INIS Atomindex** as the source.

For many other developing countries, however, the printed **INIS Atomindex** is the only source of bibliographic information to the world's nuclear literature. Libraries in those

countries, such as, for example, Pakistan and the Philippines, provide reference services, make short literature searches, compile bibliographies for internal use, and select items for purchase, all based on **Atomindex.**

The INIS/AGRIS Direct Access Project, although dependent on modern computer and telecommunication techniques, is a recent innovation that could become very useful for the developing countries. The full benefit of a large computing facility such as that now operating at the IAEA, can be put at the disposal of any of the developing countries for performing mechanized searches of the INIS data base merely through the acquisition and installation in the country itself of a small teletype terminal. Distance is again an obstacle inasmuch as this terminal must be linked with the computer in Vienna by a good quality line, say a telephone line. Unfortunately the quality of many telephone connections to distant countries is at present not good enough for data transmission. The alternative of a connection using a dedicated line is usually too costly. However, with the improvement of telephone connections and, looking even further into the future, with the possibility of telecommunication via satellite, direct access may prove to be the best solution for providing rapid and effective retrieval services to scientists and technologists in many of the world's developing countries.

AGRIS

As mentioned earlier the activities of the FAO/AGRIS Co-ordinating Centre (ACC) are carried out in Rome and Vienna. In Rome, the ACC has responsibility for the overall system policy and management, planning and development; it also maintains liaison and co-operates with AGRIS participants through the national or multinational Liaison Offices and/or Centres designated by Member Nations upon joining the system. Data input, central processing, the photocomposition for the monthly **Agrindex,** and services provided on request are handled by the ACC liaison unit in Vienna, the AGRIS Input Unit. This Unit is also responsible for liaison with the IAEA in whose Headquarters it is stationed.

In addition to overall system management, the ACC is responsible for the publication of reference manuals, training, the preparation of teaching materials and AGRIS promotional materials such as brochures and a filmstrip. To date there are 19 publications in the FAO/AGRIS Reference Series. These range in subject from guidelines for descriptive cataloguing to format specifications for AGRIS magnetic tapes.

AGRIS has also recently issued an **AGRIS Input Pack: Self-Instructional training for AGRIS input preparation.** This is an extremely valuable tool for participating centres since it is a programmed learning kit which includes a workbook, answer book, transparencies and a cassette sound tape that guides trainees through the various exercises. This Input Pack may be used either on an individual basis or with a group of trainees participating in a regular training seminar or workshop. Two similar packs for the training of AGRIS users will be issued in 1979. One will be a self-instructional pack for users of AGRIS output products, and the second an audio-visual promotional pack.

Training seminars, primarily on an international or regional level, have been organized by the AGRIS Co-ordinating Centre. These seminars are held in co-operation with another international organization, such as IAEA, or with regional or national centres. A list of these is given in Figure 1.

Figure 1. INIS and AGRIS Training Seminars*.

Name of Seminar	Date	Place	Number of Participants	Number of Countries & Intern. Organizations
INIS Training Seminar	23 Aug.–18 Sep. 1970	Vienna	28	19
Regional Seminar	23 Nov.–11 Dec. 1970	Bombay	34	9
Regional Seminar	22 Nov.–10 Dec. 1971	Buenos Aires	26	7
INIS Training Seminar	19–23 June 1972	Vienna	40	28
INIS Training Seminar	25–29 June 1973	Vienna	38	32
FAO Training Course	29 Apr.–3 May 1974	Rome, FAO	4	2
INIS Training Seminar	25–28 June 1974	Luxembourg	34	24
FAO/AGRIS Input Training Session	5 December 1974	Rome, FAO	9	6
IICA/CIDIA Inter-American Training Course on AGRIS/ AGRINTER	17 Mar.–14 Apr. 1975	CIDIA Turrialba (Costa Rica)	17	13
INIS/AGRIS Training Seminar	12–20 June 1975	Ankara	51 INIS 34 AGRIS	29 INIS 15 AGRIS
EURAGRIS Input Training Seminar	17–18 July 1975	Luxembourg	8	8
EURAGRIS Workshop	7–8 October 1975	Luxembourg	12	8
AIBA/AGRIS Training Programme for SEA countries	16–29 February 1976	Los Baños (Philippines)	27	13

INIS and AGRIS Training Seminars (contd.)

Name of Seminar	Date	Place	Number of Participants	Number of Countries & Intern. Organizations
EURAGRIS Workshop	April 1976	Luxembourg	23	8
INIS/AGRIS Training Seminar	24 May–4 June 1976	Vienna	80 INIS 52 AGRIS	32 INIS 39 AGRIS
EURAGRIS Workshop	February 1977	Luxembourg	20	8
INIS/AGRIS Seminar Workshop	25–29 April 1977	Washington, DC	10 INIS 7 AGRIS	1 INIS 1 AGRIS
AGRIS and Related Information Systems	16–28 May 1977	Muguga (Kenya)	35	13
INIS/AGRIS Training Programme	31 May–24 June 1977	Vienna	6 INIS 6 AGRIS	6 INIS 6 AGRIS
INIS Seminar Workshop	12–16 Sep. 1977	Moscow		1
SCANDIA AGRIS Training Seminar	22–23 November 1977	Ås (Norway)	8	4
EURAGRIS Workshop	11–12 January 1978	Luxembourg	20	11
INIS/AGRIS Direct Access Project On-Line Training	24, 26, 31 Jan. 1978	Vienna	8 INIS – AGRIS	4 INIS – AGRIS
	6–9 March 1978	Netherlands	15 INIS 6 AGRIS	11 INIS 5 AGRIS

INIS and AGRIS Training Seminars (contd.)

Name of Seminar	Date	Place	Number of Participants	Number of Countries & Intern. Organizations
	4–5 April 1978	Harwell (England)	11 INIS 9 AGRIS	11 INIS 8 AGRIS
	20–21 April 1978	Lysebu (Norway)	6 INIS 3 AGRIS	6 INIS 3 AGRIS
	10–11 May 1978	Saclay (France)	10 INIS 3 AGRIS	2 INIS 1 AGRIS
	29–30 June 1978	Prague (Czechoslovakia)	8 INIS 1 AGRIS	3 INIS 1 AGRIS
	10–11 July 1978	Budapest (Hungary)	7 INIS 3 AGRIS	4 INIS 1 AGRIS
AGRIS Users Training for Yugoslavia	20–21 September 1978	Poreč (Yugoslavia)	58	1
EURAGRIS Workshop	24–25 October 1978	Luxembourg	18	8
INIS/AGRIS Training Seminar	30 Oct.–3 Nov. 1978	Vienna	60 INIS 20 AGRIS	29 INIS 17 AGRIS
AGRIS Training Seminar	7–11 November 1978	Prague (Czechoslovakia)	28	15
African AGRIS Training Seminar	23 Apr.–4 May 1979	Nairobi (Kenya)		

* Organized by or in co-operation with the IAEA and FAO

These training seminars comprise an important part of the total AGRIS system. They not only offer training opportunities in methods of input preparation and in the use of AGRIS but also provide instruction in basic bibliographic practices. This training is important, especially for developing countries, as it is not just a theoretical exercise but can be of immediate practical benefit when the trainees return to their own countries.

AGRIS and Multinational Centres

Many of the AGRIS member countries have joined together to form multinational centres. These multinational centres co-ordinate the input preparation, develop special regional and national training programs, issue translated editions of reference manuals and issue additional manuals for their own regional systems. They also provide additional special output services, such as special regional bibliographies, retrieval services, etc.

The two main multinational centres for developing countries are the Agricultural Information Bank for Asia (AIBA), located in the Philippines and the Inter-American Centre for Agricultural Documentation and Information at the Inter-American Institute of Agricultural Sciences (IICA/CIDIA), in Costa Rica. There is, in addition, a third important centre in Luxembourg for countries that are members of the European Community.

The Agricultural Information Bank for Asia (AIBA) has its headquarters at the Southeast Asia Regional Centre for Graduate Study and Research in Agriculture, Laguna, Philippines. Input for the following countries and territory is being submitted through this organization: Bangladesh, Hong Kong, Indonesia, Malaysia, Philippines, Republic of Korea, Singapore, Sri Lanka, and Thailand. AIBA was an early participant in AGRIS and has submitted approximately 14 000 records since 1975. Almost 60% of the input has been for non-conventional documents.

AIBA receives input from its member centres as well as preparing input itself. This is received on pre-coded worksheets and the data is transferred to typed OCR forms which, in turn, are sent on to Vienna for processing.

A regional information system has been developed and AIBA also issues a regional bibliography entitled **Agriasia**. This bibliography contains AGRIS entries relating to the region and also document references not input into the regular AGRIS data base because they are not considered relevant to international users either for reasons of language or content. Such input may be a simple diagram of a solar heater for small farm use or merely a short account of a bio-gas digester. The format may be in comic book form with material re-written in vernacular languages. This bibliography is produced by merging a magnetic tape containing the regional material with a regular AGRIS magnetic tape from which references for documents published within the region or which are about the region are taken. **Agriasia** is thus a specialized bibliography, compiled by the region for the region.

Using the same procedure, AIBA is beginning to issue individual national bibliographies. The **Philippine Agricultural Bibliography** (1975–1977), has recently been published and is the first of this series.

Work at AIBA is underway to provide retrieval services using the output tapes produced by AGRIS, supplemented with local data processed for **Agriasia.**

Of course, it does little good to provide a researcher with just a document reference if he cannot get access to the document itself. To supplement the efforts underway within AGRIS to provide document delivery services, AIBA has been active in organizing its own regional system with depository libraries. Plans are to have each country make available microform copies of the non-conventional literature which they have selected for input.

A set of simplified guidelines for input preparation were prepared and issued by AIBA. They have also been active in co-ordinating training seminars and in providing assistance for training in the individual centres.

The Inter-American Centre for Agricultural Documentation and Information of the Inter-American Institute of Agricultural Sciences (IICA-CIDIA) in San Jose, Costa Rica, has been equally active in co-ordinating the input and in providing specialized services to its member states in Latin America and the Caribbean. Input from the following countries and territory is processed by IICA/CIDIA: Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guadeloupe, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago, Uruguay and Venezuela.

IICA/CIDIA has also developed its own regional information system called AGRINTER, the Inter-American System for Agricultural Sciences. Following the basic AGRIS "territorial formula", publications are identified and input by the various member centres. This data is integrated and processed by IICA/CIDIA together with data gathered by IICA/CIDIA itself. The principal product is the **AGRINTER Indice Agricola de America Latina y el Caribe.** This quarterly index is available in printed form with the data also made available to the national centres on magnetic tape which they can then use for their own national information services. IICA/CIDIA selects from this combined input those records that are considered of interest for all AGRIS users and these are sent to Vienna on magnetic tape. From 1975 through 1978, this totaled approximately 28 000 records input to AGRIS. Over 50% of these were for non-conventional literature. An additional 12 000 records were prepared for the regional Index.

IICA/CIDIA has been very active in promoting the system in its various member countries by preparing promotional literature, organizing training programs and publishing regional lists and manuals An excellent promotional film "Links for Development" has been produced and widely shown.

Special publications have included a regional **Core List of Serials, AGRINTER/AGRIS Selection Criteria, Data Bank of Bibliographies** and **Criteria for Title Enrichments.** An agricultural vocabulary in Spanish has also been issued and is utilized in the AGRINTER system

To assist in document delivery, an AGRINTER Services Network has been developed. A system of coupons for the international exchange of photocopies has been created Efforts are also underway to promote more participative efforts among the member states in the areas of document procurement, processing and the provision of new methods of access to agricultural information.

IICA/CIDIA has a project underway to develop a computer software system for subject retrieval services. Once operational, this system could be utilized not only on the regional level but also on the national and local levels to provide computer search services on the

AGRINTER and AGRIS files. The system would also be utilized in the production of individual national bibliographies and other special catalogues or bibliographies.

Like its counterpart, AIBA in the Philippines, IICA/CIDIA provides an invaluable service in co-ordinating the efforts of its members in their work to develop their own national systems, while at the same time, collaborating in a regional system and, in turn, in the international AGRIS system. Both AIBA and IICA/CIDIA serve their regional members in much the same way as the AGRIS Co-ordinating Centre serves all AGRIS member states, by assisting in promoting the system, in training, in translating and publishing reference manuals, in providing retrieval services and, most importantly, in providing a forum where each member may participate in working for the development and greater utilization of the system

AGRIS national centres

No matter how successful efforts are at the international or multinational level, it is the work done at the national level, and at the co-operating institutions within a country, that is the key to the usefulness of the system These national centres have a two-fold responsibility: the identification and collection of documents and input preparation is one; the provision of user services, the second. Since this responsibility is left to each member country, it may develop whatever organization best fits its individual needs.

In some countries the responsibility for all input preparation is given to one institution. In many cases this may be at the national agricultural ministry but it could, on the other hand, be at the principal agricultural university library. This varies from country to country. Other countries utilize the same decentralized approach as is followed by AGRIS on the international level and designate one central AGRIS national centre with auxiliary centres established at other institutions. The national centre co-ordinates national activities with the auxiliary centres being responsible for input preparation in specified subject areas or for inputting records from documents published by their own institutions. All input is processed through the national centre and forwarded to Vienna. The same approach may be followed in the provision of user services.

The national AGRIS centres in Egypt and the Philippines may serve as examples of the more centralized approach; in their respective countries, the Egyptian Documentation Centre for Agriculture and the University of the Philippines Los Baños Library are responsible for input and overall co-ordination of user services activities. Staff from both these institutions make regular trips through their own countries to identify and collect documents which fall within the AGRIS scope. At the same time, they give lectures or seminars to researchers and other users describing the system and its services. Both centres have also issued national printed bibliographies which contain citations to documents published in or which are about their countries. Both national centres are planning to implement computer systems for providing subject retrieval services from the AGRIS tapes. The Philippines centre, part of the AIBA regional network, provides input through the Agriasia system.

In India, the Agricultural Research Information Centre of the Indian Council of Agricultural Research, prepares AGRIS input. In addition, they have implemented their own computer retrieval system to provide users with retrospective subject searches against the entire

AGRIS data base. Individual scientists may also receive results from monthly searches which are based on their current research interests.

This centre also plans to use its computer system to produce an agricultural index of documents published in India or about India, special annotated bibliographies on topics of current interest and special literature reviews. Work is also underway to train staff at other institutes and universities in order that a more decentralized system can be developed for both input preparation and for user services.

Yugoslavia developed one of the earliest current awareness systems based on the AGRIS magnetic tapes and provides almost 2 500 users with monthly listings containing citations within their subject interests. The Yugoslav national centre at the Savezni Centar za Obrazovanje Rukovodecik, Novi Sad, also organized and held one of the first national seminars for AGRIS users. This was held on 20–21 September 1978 and over 55 participants attended.

Brazil, Bulgaria, Poland, Tunisia and Spain have implemented current awareness systems for scientists and other users. Brazil's monthly current awareness service, operated by the National System for Agricultural Information and Documentation (SNIDA), has around 2000 users. Brazil serves as an example of an AGRIS member country which established its own information network with the National Agricultural Library (BINAGRI) serving as the co-ordinating body and with 152 libraries in the country acting as co-operating centres. SNIDA developed and produced its own training materials on input preparation which include 300 colour transparencies and slides. Input is prepared both for the national system and for AGRIS. Brazil has therefore developed on the national level a system similar to the AGRINTER and AGRIASIA regional systems.

SNIDA has also issued a number of national retrospective bibliographies by product and in specific subject fields of interest. It has the responsibility for preparing and publishing the current Brazilian agricultural bibliography with the first volume covering the years 1975–1977.

Bulgaria's National Centre for Scientific and Technical Information in Agriculture offers similar services along with providing retrospective searches over the entire file. In Poland this type of service is being co-ordinated by the AGRIS centre, Centralna Biblioteka Rolnicza, in Warsaw, with the computer processing done at the University of Cracow. The University has offered computer search services for 8 other data bases and has just added the AGRIS files in 1979. The Instituto Nacional de Investigaciones, Madrid, was an early participant in AGRIS and has long been providing computer retrieval services to its users.

The Centre National de Documentation in Tunisia has also been active in developing a national current awareness service. The first in a series of special bibliographies, on olives and olive products, has been published; these bibliographies include document references from Tunisian national literature along with references from the AGRIS data base input by other members.

There are currently 21 centres, both national and multinational, which receive the monthly AGRIS magnetic tapes. In addition, 12 other centres have requested test tapes and are working to implement their own retrieval systems. This type of service will spread at an even more rapid pace with the increasing availability of both computer software and hardware at less cost.

The preceding has been but a short review of some information activities underway in several regions and developing countries which comprise an important part of the international AGRIS activities. A comment from the AGRIS centre in Cyprus perhaps summarizes best the relation of AGRIS to the developing countries: ... "AGRIS is not just what it is meant to be, a current awareness service, but it has also generated in developing countries, like Cyprus, an awareness and interest in agricultural literature, both international and national. Such interest has grown stronger than in other fields of literature, and thus AGRIS has assumed a leading role in current awareness and documentation in general This is a very important side-effect of AGRIS not fully appreciated"...

Summary

Both INIS and AGRIS have proved that co-operative, decentralized information systems can be successful; that this type of organization allows all the participating countries in each system to have an equal share in the formulation of policy and in system management; that the information input by one member can be made equally available to all.

Both INIS and AGRIS serve as excellent examples of successful systems operating within the conceptual and operational framework of UNISIST, the Intergovernmental programme for co-operation in the field of technological information. Both have made significant contributions to all the objectives of the UNISIST work plan by:

- improving the tools of systems interconnection through the adoption of existing standards and the development of new ones;
- stimulating the development of national information systems and improving the institutional components of the information transfer chain through their reliance on decentralized input and output;
- assisting in the development of specialized information manpower through their training programmes;
- giving special attention to the information needs of developing countries.