Report of the

CGIAR Documentation and Information Services Meeting

16-20 Jan 1989

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ICRISAT Center, India

Contents

Abbreviations and Acronyms

AAIRNET	African Agricultural Information Resources Network
AARINENA	Association of Agricultural Research Institutions in the **Near** East and North Africa
AGLINET	Agricultural Libraries Information Network
AQRICOLA	Agricultural On-Line Access
AQRINTER	Inter-American Information System for the Agricultural Sciences
AGRIS	Agricultural Information System
AIBA	Agricultural Information Bank for Asia
ARNAB	African Research Network on Agricultural Byproducts
BASIS	Battelle A Search Information System
CABI	Commonwealth Agricultural Bureaux International
CAGRIS	Caribbean Information System for the Agricultural Sciences
CD-ROM	Compact Disk—Read Only Memory
CDS/ISIS	Computerized Documentation System/Integrated Set of Information Systems
CI AT	Centro Internacional de Agricultura Tropical
CIDARC	Centre d'information et de documentation en agronomie des regions chaudes
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
CIP	Centro Internacional de la Papa
CTA	Centre technique de cooperation agricole et rurale
FID	International Federation for Documentation
GTZ	Deutsche Geselleschaft ftir Technische Zusammenarbeit
IARC	International Agricultural Research Center
IBPGR	International Board for Plant Genetic Resources
ICARDA	International Center for Agricultural Research in the Dry Areas
ICIPE	International Centre of Insect Physiology and Ecology
ICRAF	International Council for Research in Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IIMI	International Irrigation Management Institute
IITA	International Institute of Tropical Agriculture
ILCA	International Livestock Center for Africa
ILRAD	International Laboratory for Research on Animal Diseases
INRA	Institut national de la recherche agronomique
IRRI	International Rice Research Institute
IT	Information Technology
KARI	Kenya Agricultural Research Institute
NARS	National Agricultural Research System
ORSTOM	Institut francais de recherche scientifique pour le developpement en cooperation
SAARC	South Asian Association for Regional Cooperation
SACCAR	Southern African Centre for Cooperation in Agricultural Research
SAIC	SAARC Agricultural Information Center
WARDA	West Africa Rice Development Association

Report and Recommendations

1. Introduction

The participants reviewed the principles that were defined at the first meeting of the CGIAR Documentation and Information Services held in Lima in 1987, the actions that were initiated in the follow-up to that meeting, and the poll of Center Directors that was carried out by Dr L.D. Swindale in his capacity as Chairman of the CGIAR Center Directors' Committee on Documentation. They reaffirmed the principles, noted the progress that has been made at different Centers, and have agreed on new actions that would involve Centers working in cooperation as well as individually. The participants believe that the program of action that is outlined in this report will, if implemented, ensure a greater impact from the resources that Centers devote to what, generically, are known as "information services".

The Lima meeting placed special emphasis on the responsibilities of Centers with respect to National Agricultural Research Systems (NARSs): Nothing that has happened in the intervening 2 years leads us to see this as any Jess important now. While there are great differences in the strengths of the agricultural information services in different developing countries, there are many that are extremely weak. In many of the agricultural research institutes, scientists have no real access to the current journal literature and, without that, they cannot function as equal partners with their scientific peers in the Centers. (Examples of these difficulties are given in Annex 1.)

The system seeks to transfer some research responsibilities to NARSs. To achieve this objective, Centers have devoted much of their resources to research cooperation with NARSs and to many forms of training. But the devolution cannot be fully achieved until NARS scientists are provided with the same kind of information support as that which is now provided to scientists in the Centers.

In the longer term, considerable investments will be needed to bring NARSs' information services up to the level that now pertains in more developed countries and at the Centers. The resources for these investments cannot come from the Centers but, in the meanwhile, since most Centers are located in developing countries, it is incumbent on them to share what they have with their disadvantaged neighbors.

The absence of these services affects not only the efficiency of research in NARSs, but it also leads to unrecognized duplication in research, to frustration among scientists who see themselves as cut off from developments in their disciplines, and, in not a few cases, to the loss of highly trained scientists who emigrate to countries where they can more readily advance their work, and thus their careers.

The emphasis given to NARSs in this report should not be seen as an attempt to abandon existing responsibilities. The managers of the operational units represented at this meeting recognize that their responsibilities are:

  a. To provide information services to each Center's own researchers.
  b. To provide information services to research networks, and thus also to the

national scientists who cooperate with the Centers for research on particular crops and particular problems.

c. As resources permit, to work with NARS libraries and documentation centers to improve the quality and quantity of the services that they provide to their own scientists.

Although the proposals in this report call for no massive new injections of resources, we believe we should point out that the services provided to research networks and special projects (item b. above) often stretch the capacities of Center information services. In many cases, they call for the acquisition of information that is not already in Center libraries and, almost always, they call for the generation of new and additional products and services. Since many research networks are separately funded (extra-core), **we wish to flag the need to consider these obligations at the time when budgets are prepared and applications are made to funding agencies.** Such budgets should include line-items making adequate provision for the additional costs that are incurred in giving information support to research networks. Indeed, **a similar budgetary provision should also be made in all special projects,** even those that are to be carried out wholly within a given Center.

At least in the initial years, item c. will call for only modest increases in existing resources at most Centers. Much of what is needed can be obtained by extending the range of delivery of services that are already provided to Center scientists. However, the impact will be felt to different degrees in different Centers.

Some Centers have a long history of aiding NARSs in the development of their information services and in the training of NARSs' staff for information work. Others have done a little of this without having a clear Center mandate to do so. Others, again, have yet to embark on any significant activities aimed at strengthening NARSs' information services.

Thus we believe that an important policy issue needs to be addressed. Because of the great needs of NARSs in this respect, **we recommend** that Center Directors consider our proposals for **an expanded effort to strengthen the information function in NARSs and to adopt a common** position, defining this as an accepted component of the work of their own information services.

We recognize, however, that Center Directors might wish to develop a precise definition of the mission to be undertaken within the framework of a new policy. We believe that an appropriate mechanism exists in the 'Stripe' reviews that have been carried out in the past (e.g., of the training function). And we wish to record that, as professionals in our own disciplines, and as managers of the organizational units involved, **we would welcome an appropriately structured Stripe review, commissioned by TAC or the CGIAR, to examine our present activities as well as the new thrusts proposed in the present report.**

However, even if such a review were to be decided upon, it would take time to set it up, for the work to be completed, and for the system to react to its conclusions. Meanwhile, there is a momentum that should be maintained. Some of the actions spelled out in this report have already been initiated within individual Center mandates, and will continue.

Since the emphasis is very much on cooperation among Centers, some mech-

anism for consultation and follow-up is essential. **Noting the formation of a follow-up committee to pursue action and evaluate progress on the conclusions of the meeting on "Human Resources Development through Training", we believe the model is also applicable in the area of information services,** and we therefore **reaffirm recommendation 19 of the Lima meeting,** which proposed

> "a small working group with specific terms of reference. The group should be composed of information specialists from Centers, a representative of the CG Secretariat, and top-level representation of Center management and research, and should periodically report progress to the System."

Although we stress the need for such a follow-up group, it, too, will meet only at intervals, and **much of the action proposed must be pursued on a day-to-day basis. It is for this reason that,** for the different items in this report, **we have identified "Lead Centers".** A Lead Center has been proposed to *execute* an action, to *coordinate* a set of actions, or to *facilitate* actions by others where relevant. Our discussions involved not only representatives of the Centers but also resource persons from NARSs, from donor organizations, and from other agencies with relevant operational roles in the developing countries. Some of the actions will be taken by these other organizations, or by these organizations in cooperation with Centers and, particularly in these cases, we have seen a need for a Lead Center to "facilitate" the actions and to report progress to the System.

2. Progress since the Lima Meeting

I ARC representatives reported on actions taken to implement the recommendations from the Lima meeting. Highlights are as follows.

2.1 ICRAF included information components in all its outreach networking projects (the Agroforestry Research Network for Africa, India, Bangladesh).

2.2 ICRAF and ILCA provided formal training to NARS librarians and information specialists.

2.3 Informal training of NARS librarians and information specialists has been provided by CIMMYT, ICARDA, ILRAD, ICRISAT, ICRAF, CIAT, and IITA.

2.4 CIP and CIAT have provided training to researchers on accessing information.

2.5 CIMMYT has supported the development of a list of Mexican agricultural serials.

2.6 Free subscriptions to abstract journals have been given to NARSs by CIMMYT, IRRI, ICARDA, and CIAT, and the addition of new ones by ICRISAT and ICRAF.

2.7 CIMMYT assisted in setting up national information centers through the provision of technical advice on materials, methods, and relevant technologies.

2.8 Information materials in appropriate local languages have been produced by CIMMYT, ICARDA, and IIMI.

2.9 IITA organized a workshop for Nigerian research and academic librarians in November 1987, and assisted in publishing the proceedings.

2.10 ILCA, ICARDA, and ICRISAT have produced special-subject (literature) reviews in collaboration with research scientists.

2.11 Information staff of ILCA and CIP actively participated in their Centers' research networks.

2.12 The Union Catalog of Serials in IARCs was initiated by ICRISAT.

2.13 Centers participated in various CD-ROM-related projects of the CGI AR, CABI, and CIMMYT.

2.14 Sharing of information and experiences on database management systems and other information technologies has improved.

2.15 A national biotechnology information network in Mexico has been initiated by CIMMYT.

2.16 CIP became an AGRIS input center.

2.17 CIMMYT input to AGRIS has been further enhanced.

2.18 Centers' use of CDS/ISIS for various applications has greatly expanded.

2.19 Centers' support to each other's outposted staff is improving.

2.20 Inter-Center exchange of nonconventional literature is now standard practice.

2.21 The four Centers using BASIS software were in constant contact about ongoing developments.

3. Strengthening National Agricultural Research Systems

3.1 Information Networking

Under the present arrangement of Centers as autonomous institutions, each acting separately and providing its own information programs, the collective potential of information available in both IARCs and NARSs is not fully realized.

The meeting concluded that existing NARS and IARC resources could best be used, multiplying benefits and rationalizing efforts, through the creation of regional agricultural information networks. Such networks would be established as partnerships among IARCs, NARSs and regional agricultural information programs. They would assist NARSs to articulate needs and demands and, ultimately, to increase their service capacity. Building on existing resources, network activities would address the following areas:

a. Collaboration between and, among IARCs, NARSs, and regional agricultural information services' programs.

b. Strengthening links between the three types of information services programs and research networks.

c. The human resources and infrastructure needs of NARSs' agricultural information systems.

The meeting accepted the following definition of information networks: a formal association among libraries, documentation centers, archives, and global or regional information systems created with the aim of coordinating their efforts and sharing resources to satisfy information needs of users in a subject area and/or geographic region of mutual concern to network members.

The meeting proposed the establishment of an agricultural information network for Africa (see Annex 2). Centers based in Africa (ILCA, IITA, ILRAD, ICRAF, WARDA, ICIPE, and ICRISAT), several NARS representatives, as well as those from other Centers with ongoing activities in Africa (e.g., CIP, CIMMYT, IIMI), agreed to work together to further the proposed network.   **(Action: ILCA** to coordinate.)

The meeting requested CTA to facilitate the initiation of the African network by funding a feasibility study and the meeting of an African working group that will develop a detailed proposal.

 (Action: ILCA to contact **CTA** and initiate the formation of a working group.)

The meeting also proposed Center support for the revival of an agricultural information network for Latin America, building on the experience of the former AGRINTER network. The Caribbean CAGRIS network is already up and running, and should be strengthened and linked to the Latin American network as appropriate.   **(Action: CIAT** with **CIP and CIMMYT** to coordinate.)

The meeting recognized the need for a South Asian agricultural information network that would make the rich information resources in these countries more easily and widely accessible to users in and outside the region. The recent creation of a regional agricultural documentation center under the auspices of the SAARC

Agricultural Information Center (SAIC) was noted. It was recommended that efforts should be made to work with SAARC in improving networking among agricultural library and information centers in the region.   (**Action: ICRISAT** to coordinate.)

The meeting proposed that, for the Southeast Asian region, closer cooperation and coordination should be sought with the Agricultural Information Bank for Asia (AJBA). (**Action: IRRI** to coordinate.)

Participants took note of the fact that ICARDA had offered to work with the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) as well as with individual NARSs to improve agricultural information services in the countries of West Asia and North Africa.

(**Action: ICARDA** to execute.)

3.2 Human Resource Development

The meeting, particularly the NARS representatives, stressed the need of training national information professionals so that they could better support national research efforts. Centers should help develop the professional capabilities of national information specialists to serve the needs of national agricultural scientists. This will be undertaken through the networks proposed in the previous sections.

The meeting recognized the need to prepare training materials aimed at developing and enhancing the ability of scientists in developing countries to identify and acquire information. These would be used for training national scientists attending IARC training activities on how to access information from Centers as well as from national information systems. This training would enhance the ability of national researchers to obtain the necessary information to better conduct research.

(**Action: CIP** to coordinate.)

The meeting also recognized the need to make available (collect, adapt, develop) training materials aimed at developing and enhancing the ability of scientists in developing countries to write scientific information. (**Action: Follow-up Committee** to consult **IRRI, IBPGR, IITA, CIAT, and CIMMYT.)**

Centers should collaborate with CTA in the preparation of a directory of information resource persons with experience in training in developing countries. They will also collaborate with CTA in the compilation of the inventory of training courses for agricultural librarians and documentalists.   (**Action: ICRAF** to coordinate.)

To liaise with the International Federation for Documentation (FID) to acquire an inventory of training materials in information and documentation to be used in assisting national agricultural information systems better to serve their research community. (**Action: ICRAF** to execute.)

3.3 Other Services for Strengthening NARSs

3.3.1 Information resources and user needs

In view of recent improvements to the Micro CDS/ISIS software for bibliographic database management that was developed by Unesco, the meeting recommends that Centers obtain version 2.3. Interest in Micro CDS/ISIS rests on the fact that it is more readily available to NARSs through Unesco and is inexpensive. The meeting also recommends that Unesco be requested to organize a train-the- trainers course for Centers on the most recent version of CDS/ISIS. Furthermore, the meeting recommends that, at the request of NARSs, Centers demonstrate the application of Micro CDS/ISIS. **(Action: ICRAF** to coordinate.)

3.3.2 Rationalizing the distribution of center information products and services

NARSs will be invited to work together with Center library/documentation officers to identify at least one Center in each NARS that would be a national liaison office for Centers' information products. This will not exclude regional organizations, such as SACCAR or national libraries and documentation centers, or individuals in each country, from developing their own contacts with Centers. Centers would be able to distribute further sets of publications and services to other individuals or institutions in-country as they wish.

The liaison role might include:
a. receipt of CGIAR publications on deposit;
b. joint, coordinated provision of information services and document delivery to national users;
c. feedback on Center information programs; and
d. joint identification of information issues and problems.
(Action: ISNAR to coordinate.)

3.3.3 Promotion of Center information services

Centers should take a more active role in promoting their information services and agreed to collaborate in producing an audiovisual tutorial to promote Center information services. **(Action: CGIAR Secretariat** to coordinate.)

The meeting requests the Public Awareness Council to highlight Center information services as part of its agenda to promote the international agricultural research system. **(Action: Follow-up Committee** to coordinate.)

Representatives of some NARSs expressed their support for the AGLINET system, but noted that AGLINET needs to be better known. Accordingly, those CGIAR Centers that are AGLINET members should increase their efforts to promote AGLINET services. **(Action: CIAT, ICRISAT, IITA, IRRI** to execute.)

3.3.4 Impact of Center information services

The meeting recognized the necessity to characterize the information needs of NARSs through well designed formal studies. Such studies could be conducted through the proposed and existing information networks using the stronger links that such networks would have built up with NARSs.

Participants raised the issue of Center information services directly targeted to NARSs scientists bypassing NARS libraries and documentation centers. Further understanding of this issue would be beneficial to all parties concerned.

Studies of the impact of Center information services (e.g., SDI; Tables-of-Contents) on individual scientists and their interaction with any information services provided by NARS libraries/documentation centers will be undertaken.

(Action: CIAT, ILCA, IRRI to execute.)

3.3.5 CGIAR Preservation and Dissemination Project

The meeting expressed support for the CGIAR Preservation and Dissemination Project and urged that measures should be taken to continue the project to ensure the inclusion of I ARC publications after 1986, as soon as the evaluation of the prototype CD-ROM is completed.   **(Action: Follow-up Committee** to coordinate.)

3.3.6 CD-ROM

The meeting recommends that CTA continue to support its international CD-ROM working committee in order to:

a. set up a database containing details on what CD-ROM equipment is available and where; and

b. provide a forum for communication among producers of agricultural CD-ROM products.   **(Action: CGIAR Secretariat** to coordinate.)

3.3.7 Coupons

The meeting considered the difficulties faced by all users in national currency areas in the acquisition of information products for which payment of postage or full cost is required. Coupons are attractive because (a) their use does not change any procedures in book and serial distribution and sales, and (b) they enable users of information in developing countries to determine their own priorities in respect of purchases in national currencies. It is recommended that a study of existing coupon schemes be undertaken, to advise Centers on action by which a viable project proposal could be presented for donor funding.

Existing or planned coupon schemes (Unesco, FAO, Winrock, British Council, etc.) all have limitations that deny users in developing countries the degree of

access to Center publications that they seek. It has been hypothesized that the creation of a "ToT" coupon (Transfer of Technology) could increase the acquisition of Center publications by up to 300%. Modest seed finance could result in the creation of a revolving fund that would then become self-sustaining as purchases rose to a level of stable turnover.

The project proposal would address:

a. Existing schemes: advantages and disadvantages.
b. Feasibility in the IARC context.
c. Expressions of donor interest.
d. Recommendations for action by interested Centers collectively.

(Action: ICRISAT to coordinate.)

4. Strengthening Information Service Support to Center Research Programs

4.1 Centers agreed to compile an inventory of scientific and research databases available in Centers, to make them widely accessible to the research community.

(Action: ICRISAT to coordinate.)

4.2 Centers agreed to promote awareness, both within their own centers and with other Centers, regional, and national systems, of new databases that support new areas of basic research (e.g., biotechnology databases) and improve accessibility.

(Action: All Centers to execute.)

4.3 Centers agreed to work together to use new technology to speed up access to needed research data (e.g., provide in-house databases on CD-ROM or under Micro CDS/ISIS). **(Action: All Centers** to execute.)

4.4 The meeting recommends that IARCs encourage the Government of France to make available the bibliographic records that date from before 1975 of CIDARC, ORSTOM, INRA, and other allied French institutions, as a database available in machine-readable form. **(Action: Follow-up Committee** to execute.)

4.5 The meeting agreed to compile and maintain a directory of Center information services, including databases that are available or in the process of being established. At a later point in time, ways of making these databases available to NARSs should be explored. **(Action: ICRISAT** to coordinate.)

5. Strengthening Center Information Services

5.1 Defining Information Services Functions

The meeting acknowledged that semantic variation exists in the nomenclature applied to information services functions across Centers. While participants felt it could not by itself propose a new terminology to clear up the situation, it was agreed that an effort should be made to do so. Those present strongly recommended that a

broader view of information services and information management should be taken. The meeting also agreed to work with colleagues responsible for closely related functions to define and propose an agreed terminology.

(Action: Follow-up Committee to coordinate.)

5.2 Union Catalog of Serials

The meeting commended ICRISAT for the progress already made in developing a machine-readable catalog of serials held by Center libraries.

It was noted that some Center libraries had not yet submitted their records to ICRISAT. They were urged to do so not later than the end of June 1989.

ICRISAT will make the first edition of the Union Catalog available after processing all the records received.

ICRISAT will convert the Union Catalog into a BASIS-formatted file and also explore the possibility of producing a CDS/ISIS version that would be more accessible to NARS libraries.

CIDARC expressed an interest in participation in the project and would like to add its records of about 1300 titles to the Union Catalog. This can be done provided that the records are in machine-readable form.

CTA also indicated a possible interest in the project. The meeting recommended that ICRISAT request CTA to provide funds for the production and distribution of a printed version of the Union Catalog.

The meeting recommended that ICRISAT should liaise with CAB International and the U.S. National Agricultural Library to explore the possibility of incorporating this Union Catalog into their database for production of a world list of agricultural serials. **(Action: ICRISAT** to coordinate and execute.)

5.3 Nonconventional Literature

The meeting took note of the work done by ILCA, CIAT, and ICRAF to retrieve nonconventional literature available in African countries, as well as CIDARC's progress in providing access to the literature that deals with developing countries which is a'rchived in France. It also noted that other rich archives are stored in countries such as the UK, Belgium, the Netherlands, and India, and Centers agreed that they would act as intermediaries to secure access to such literature according to their subject, crop, and geographical responsibilities, and to assure its availability to NARSs.

The meeting reiterated recommendation 13 of the Lima meeting: "Each Center should be mindful of the other Centers' subject interests and should cooperate by forwarding relevant nonconventional documents that come to its attention."

The meeting also agreed that each Center having a particular regional responsibility should be mindful of its comparative advantage in acquiring the nonconventional literature of its region and in the languages of its region, (e.g., ICARDA for

Arabic), and should accept to act as a custodian of such literature in the interest of other Centers as well as in its own interest where appropriate.

(Action: All Centers to execute.)

5.4 Catalog of IARC Publications

For several years the catalog of IARC publications has been the most popular item at IARC book displays and has been produced by IRRI and GTZ in collaboration with IARCs.

The meeting agreed that the catalog should be updated annually and made widely available for distribution and sale. It recommends a methodology be evolved to ensure the continued annual publication of the catalog.

IRRI cannot be expected to bear this voluntary responsibility in the future. A way needs to be found to:

a. centralize the gathering of IARC contributions;

b. fund the production costs; and

c. arrange a production agency that can also recover or generate a sales income and distribute the catalog. **(Action: CGIAR Secretariat** to coordinate.)

5.5 BASIS Software

Four CGIAR Centers are using BASIS software for managing various databases. The new version of BASIS that will be released in August 1989 includes relational data management features that will enhance the versatility of the software considerably. The Centers involved propose the joint negotiation of the acquisition of the new version, and the organization of a joint strategy for migration to the new version that will involve the following:

a. Training of database administrators and information specialists that is required to use the new version. This training would be carried out by BASIS vendors. The user group meeting would also provide the opportunity for the Centers to standardize the structure of the databases.

b. The advantages of an integrated migration include reduced costs for the purchase of the new modules, and savings in the transfer of the databases to the advanced version.

(Action: CIP to coordinate with **IITA, CIMMYT,** and **ICRISAT.)**

5.6 Depository Libraries in Industrialized (Donor) Countries

In order to rationalize Center publication distribution programs, it was agreed that, in every industrialized (donor) country, at least one library should be identified that will:

a. accept to be designated as a depository for the publications of all IARCs;

b. agree to maintain a collection of their publications; and

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  c. permit all bonafide users, whether official or from the public, to have access to these collections.

  ICARDA will correspond with the potential depository libraries, initially the AGLINET libraries, and report the results periodically to the associated and nonassociated Centers so that these may take the necessary action to implement the arrangements.   (Action: **ICARDA** to coordinate.)

Annex 1

Case Studies on Information Needs in National Systems

Representatives of NARSs who attended the meeting provided a number of case studies €nd examples to illustrate the information needs of national agricultural research systems. Some are excerpted here, to provide background information against which the meeting's conclusions may be viewed.

Constructive Action: Beneficial Results

"International connections validate my operation"

A participant described how being an AGRIS center, recognized by FAO and invited to international meetings, validated the information services function within a ministry and unlocked resources. When asked whether connections with international Centers serve the same purpose, national representatives were unanimous in saying yes.

"Their CD-ROM helped me catalog my backlog"

One participant described how access to the U.S. National Agricultural Library AGRICOLA CD-ROM helped in a totally unexpected way. The institution had a large backlog of uncatalogued U.S. state research reports from the *first* quarter of the 20th century. One day a researcher was looking for information on natural pesticides of tobacco, and the AGRICOLA CD-ROM was searched. To everyone's surprise the best references were from the older materials, and these materials were available in the country. Since then, the library has discovered that AGRICOLA CD-ROM includes cataloguing data for much of the library's backlog, which is now organized, processed, and easily available to clients.

"Center databases are of key importance"

National representatives emphasized the importance to them of externally produced cataloguing data, since cataloguing is expensive and time-consuming. Several representatives wanted to know if Centers' cataloguing databases could be made available to them, since they hold many of the same items as Centers and could use Center cataloguing procedures and records to better organize their own collections. One participant observed that many scientists and institutes/libraries in NARSs are unaware of the resources, products, and services offered by Centers due to inadequate publicity. He urged Center information staff to make full use of available media to publicize and promote their services.

How Top-level Support for Information Services can help National R&D

"The one-paragraph ISNAR report"

There was general discussion by national representatives of the importance of ISNAR country reports to research managers in their countries. One participant, for whose country ISNAR had devoted only one paragraph to information management in its report, described the director of agricultural research as pointing to the ISNAR report and saying that libraries must not be very important \i ISNAR treated them so lightly. Others mentioned that where ISNAR had given more emphasis to information management, the national information services institutions have been seen as important partners in the research effort.

"Lots of PhD's but no books"

Several participants emphasized that while their agencies have on staff a number of highly trained and qualified researchers, few funds are allocated to provide necessary information support for these people. They described an "information vacuum" into which their researchers are dropped when returning to their countries from training and educational programs elsewhere. They described a general recognition at the working level of the importance of information resources, but a lack of recognition of its importance at senior management levels. Centers therefore have a significant role to play in demonstrating their support for information services as an integral part of research work.

Inadequacies that Centers can help to alleviate

"Even at leading national research centers there are problems"

A participant described a recent visit to the premier agricultural research institute in a developing country with a good network of libraries in which, "the library is poorly managed and does not provide a documentation service of its own due to lack of funds and trained manpower. I was informed by the Librarian that the information services from such international agencies, as FAO, CABI, and the I ARCs are used to satisfy to some extent the information requirements of the institute's research scientists."

"It costs $8 to spend $1"

A participant, discussing the purchase of Center information services, outlined the excruciating process necessary for the acquisition of a check denominated in foreign exchange. It involved a multitude of approval levels, at least half a day of time per transaction, and minimum charges of about US $8 per check. The effect of this situation in his country is that purchases requiring foreign exchange are kept to an absolute minimum. In such a situation, with such negative arithmetic, the improvement of coupon schemes as alternative currencies is seen to be of key importance.

Annex 2

Information Networking in Africa: A Framework for Action

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Introduction

It is gratifying to note that several IARCs have finally recognized the important contribution information and documentation can make toward the achievement of institutional objectives. Information and communication, along with training, showed the highest growth in CGIAR spending, accounting for 8% of 1987 operational budgets (CGIAR 1988). They are important components of Centers' long-term

strategies and external program and management reviews.

The high level of recognition of these activities did not occur by accident. It is a reflection of the key role that these programs play in strengthening the capacities of NARSs to conduct research and collaborate more effectively with the IARCs. It is also a result of several years of 'educating' center management and donors about the value of information in agricultural research and development. In this process, IARC information professionals have been greatly assisted by colleagues in such agencies as IDRC, FAO, the National Agricultural Library, CABI, and many others. The rapid development in information technology witnessed in the 1980s and the tremendous opportunities it offered to Centers to deliver timely and cost-effective services helped to justify increased investment in information programs.

Even though the present financial climate does not pose an immediate threat to information programs at the Centers, there will be more and more activities that will compete for the limited funds available to support international agricultural research. It is therefore important for us to develop mechanisms whereby collaborative activities can be undertaken among IARCs that will avoid unnecessary duplication in our effort to provide effective information services to NARSs.

Networking has been a widely practiced form of collaboration among agricultural scientists, especially to test crop germplasm and tackle specific research topics. A network approach reduces cost by reducing duplication of effort and increases efficiency through several benefits that are derived from the comparative strength of each participant. The IARCs have been playing an important role in spearheading the creation and running of several international networks, especially those set up to test advanced breeding material. More recently, other types of networks have been created to exchange information and undertake collaborative research in specific areas, such as the ILCA-supported African Research Network on Agricultural Byproducts (ARNAB).

Although libraries and information centers have been involved for decades in exchange arrangements, formal networking links among more than two I ARCs are not widespread. The purpose of this paper is to investigate the need for and the feasibility of establishing a network of information resource centers in Africa closely modeled after agricultural research networks.

Definition

In this paper, I will use 'information network' to refer to a formal association among libraries, documentation centers, archives, and global or regional information systems created with the aim of coordinating their efforts and sharing resources to satisfy information needs of users in a subject area and/or geographic region of mutual concern to network members.

Need for Information Networking

In most of sub-Saharan Africa, the infrastructure and manpower needed to provide information services to researchers and policymakers are either nonexistent or inadequate. Libraries are poorly funded and understaffed, and chronic foreign exchange shortages prohibit the acquisition of books and journals indispensable to the work of NARS researchers.

Due to the lack of adequate support and isolation from peers, morale among qualified NARS information personnel is low and they often move to administrative positions which are more influential. Facilities and services developed through bilateral and international aid usually collapse after the withdrawal of such support, since the local commitment to sustain them often does not exist. It is not unusual to notice expensive equipment, including PCs, photocopiers, microfiche cameras and readers, collecting dust at a NARS library for want of spare parts that cost a few dollars in foreign currency.

Recognizing the value of information in strengthening national agricultural research, the IARCs have developed several services and products to meet the needs of their NARS partners. Although greatly appreciated by NARSs, some of these services are duplicated across several IARCs at high cost to centers' information budgets. Centers providing services to users located far away from them face the problem of targeting users and ascertaining that the services reach the right target. And, because funds are limited, IARCs cannot provide equipment and spare parts to those NARS information units that may need such support.

Networking offers answers to most of these and other problems. Donor support could be solicited and channeled through a network to provide the foreign currency needed to purchase much needed books, periodicals, equipment, and spare parts. Periodic seminars and training courses could be sponsored through a network for NARS information personnel to help alleviate their isolation and to assist them in upgrading their skills and keeping up-to-date with advances in the rapidly changing information field.

From the IARCs' point of view, networking will reduce duplication of efforts, facilitate a two-way flow of information, help in targeting NARS information centers best placed to reach end-users, provide easy access points to acquire relevant information from NARSs, and, most importantly, help strengthen national capacities so that they will be able to support themselves in the long run.

Prerequisites for a Successful Network

Instead of looking only at the resources required to establish a successful network, I will use an adaptation of what Plucknett and Smith (1984) described as the seven prerequisites for setting up successful research networks. The first is that the problem be clearly defined and a realistic agenda for action be drawn up. From our discussion so far we can easily conclude that information services of both NARSs and IARCs in Africa face logistical, financial, human, and technical problems of

varying magnitude, which could be addressed more effectively through a network approach.

A second essential element in a successful network is that the problem be widely shared. From my personal experience with African NARSs and the discussions I have had with colleagues of African-based IARCs, I can ascertain that the problems identified are commonly shared. The third principle, closely related to this one, is that strong self-interest drives productive networks.

A fourth principle governing a successful network is that members be willing to commit resources such as personnel and facilities. Whereas IARCs may not have much difficulty allocating personnel and facilities for network activities, NARSs may lack both the human and physical resources needed for active participation. A question that we need to answer here is whether we should consider for network membership only those NARSs that are capable of making resources available for collaborative endeavors. In a way the answer is self-evident in that, unless a member undertakes certain activities for the benefit of all the members, which in turn entails allocation of resources to carry out those activities, then that member cannot become an active network participant.

Lack of foreign currency has been identified as a major constraint to the smooth functioning of information services in developing countries. A fifth element for an effective network is, therefore, the availability of external funding to establish and sustain information networks. Foreign exchange will be needed to organize periodic meetings among network members, support seminars and training courses, publish and distribute newsletters, and provide funds to purchase much needed spare parts.

The availability of trained personnel to represent member institutions and make useful contribution to the network is a sixth principle. Members should be technically competent to undertake specific tasks and participate actively in network coordination meetings. Periodic skill-upgrading workshops should be organized through the network, to expose members to new tools and methodologies.

A final and important prerequisite for a viable information network is the existence of a strong leadership consisting of a steering committee and a coordinator. All participants should be involved in the decisionmaking process affecting the activities of the network and treated as equal partners. This could be achieved through the steering committee. A full-time coordinator would be needed to carry out technical and administrative coordination, plan the work program of the network and get it approved by the steering committee, organize training courses, seminars and workshops, solicit material for and edit a newsletter, and prepare annual progress reports of network activities.

African Agricultural Information Resources Network (AAIRNET)

More than any other developing region in the world, sub-Saharan Africa suffers from inadequate information infrastructure, lack of skilled manpower, limited financial resources and almost total neglect of the information sector. Agricultural specialists

in NARSs are cut off from their colleagues within and outside Africa for lack of adequate information in their fields of specialization.

Several of the IARCs located in Africa and those in other parts of the world are providing information support to NARSs in sub-Saharan Africa largely through the distribution of their publications and the provision of current awareness services. The extent to which these services are exploited by individual NARSs depends on the strength of their research programs and the proximity of the I ARC providing the services. Most of the services offered are based on perceived rather than demonstrated needs of NARSs.

Even though several of the research networks operating in Africa have an information component attached to them, the history of information networking per se is limited to informal exchange agreements between libraries. Only two information centers in Africa, the library of the Kenya Agricultural Research Institute (KARI) and that of the International Institute of Tropical Agriculture (IITA), are members of AGLINET, which is a formal agreement of libraries around the world for inter-library loans.

Given the various problems of providing effective information support to African NARSs, and the enormous potential for collaboration among the information services of IARCs and NARSs, the establishment of an African Agricultural Information Resources Network (AAIRNET) should be seriously considered.

Objectives

The major objectives of the network will be to:

- Coordinate information activities among members to share resources, undertake joint projects, and avoid unnecessary duplication of effort.
- Assist NARSs' efforts to improve their capacities for managing and delivering information through technical advice and training.
- Assist members and donors in identifying and reaching end-users for particular information services, products, and technologies.
- Assist NARSs in identifying funding resources to develop and support their information resources.
- Organize short-term training courses, seminars, and workshops to assist in upgrading the skills of NARS information personnel.
- Initiate and develop contacts with existing national agricultural information networks in Africa.
- Publish a newsletter to facilitate the exchange of information on activities in the region, promote new information services and products, and alert members to new developments in the information field.

Network participation

Network members should be derived from both NARSs and the African IARCs that meet most of the prerequisites outlined above. Because of its expanded activity at Niamey, ICRISAT will be considered as an 'African' center. Regional organizations with strong information mandates, such as SACCAR, should also be encouraged to participate. However, care should be taken not to expand the membership too soon. IARCs outside the region but with active programs in Africa, e.g., CIP, CIAT, and CIMMYT, and key agricultural information resources such as the U.S. National Agricultural Library, CABI, and FAO, could participate as 'associate members' of the network.

Coordination and administration

Because of their resources and international character, IARCs are best suited to take the lead in initiating and developing the network. Policies affecting the network and its program of work will be laid down by a steering committee consisting of representatives of participating institutions and donor agencies. The committee will meet periodically to review progress and approve the program of work and budget developed by the coordinator. The coordinator, who would also be an ex-officio member of the steering committee, would be responsible for the day-to-day administration of the network.

Experience has taught us that administration cannot be left to a committee alone without causing several logistical problems. One of the IARCs should, therefore, take a leading role in recruiting the coordinator, providing him or her with a secretariat, supervising the day-to-day activities of the network and providing administrative backstopping.

Funding requirements

Although the network will largely rely on the existing resources of participating centers, extra funds will be required to support several activities, including coordination.

Funding should be sought to support the salary and benefits of a coordinator and one or two support staff, regional travel, training courses and workshops, steering committee meetings, publication and distribution of a regular network newsletter, and purchase of supplies and equipment for the secretariat.

Funds may be sought from a donor or contributed by participating IARCs for specific activities. For example, a group of IARCs could jointly sponsor a training course that they consider useful to their NARS partners.

The role of information technology in networking

Information technology (IT), particularly computers and telecommunications, certainly facilitate the work of networks. However, in light of the problems in Africa, we should be careful not to give undue emphasis to IT in the creation and development of the proposed information network. Moreover, since AAIRNET will be more service-oriented rather than process-oriented (i.e., collection, input, etc.), the need for common tools and methodologies is likely to be rather limited. But, whenever possible, every effort should be made to advance the adoption of compatible tools and methodologies.

On the other hand, recent advances in IT, such as the CD-ROM expert systems and electronic mail, open tremendous opportunities for information networking. Almost all CGIAR centers are now on CGNET, a computer-based messaging system (e-mail), through which messages, documents and data can be transmitted fast and at low cost to any node on the network. It is hoped that NARS and IARC outstations will be part of the CGNET in the near future.

With a storage capacity of 600 megabytes per disk, the CD-ROM has opened the way for the provision of reference materials, databases, full text retrieval, and other types of information at reasonable cost. The AAIRNET would provide excellent mechanisms for channeling to NARS CD-ROM packages that may come through special projects, such as the CGIAR Preservation Project.

Expert systems are computer programs designed to emulate human experts. They are widely used in engineering, manufacturing, business applications, education and medicine, and their potential in the agriculture field in general, and for the IARCs in particular, has been outlined in detail (Lindsey and Novak 1988). In addition, expert systems could be used in database searching, training, and data analysis. The extension of any successfully developed expert system to NARSs could be done most satisfactorily through AAIRNET.

Linkages with research networks

As far as possible, information programs should establish links with research networks that are of interest to their Center. Since one of the objectives of most research networks is to facilitate information exchange among scientists working on the same problem, provision of information services and such joint products as specialized bibliographies could be undertaken with these networks.

As an information network covering sub-Saharan Africa, AAIRNET should also develop active links with the research networks already operational in the region. For example, AAIRNET could use research networks to mount user-training courses and give seminars on information resources at research network meetings. It should also play an active role in initiating joint activities between networks that have common interests, but are supported by different Centers.

Conclusion

The need and advantages of information networking in the African context have been demonstrated. A network approach to sharing information resources could play a key role in strengthening national capacities to manage and disseminate information. Networking offers advantages both to NARSs and I ARCs. *It* would allow NARSs to get the necessary funding and expert advice to develop their information infrastructure, thus becoming self-supporting in the long run. It would also enable I ARCs to collaborate more effectively in the provision of information services, target end-users, organize joint training courses, and in general avoid unnecessary duplication of effort.

References

CGIAR (Consultative Group on International Agricultural Research). 1988. Annual report 1987/88. Washington, DC, USA: CGIAR.

Lindsey, G., and Novak, K. 1988. Information technology in international agricultural research centers: where is the payoff? Palo Alto, CA, USA: CGNET Services International.

Plucknett, D.L., and Smith, N.J. 1984. Networking in international agricultural research. Science 225:989-993.

Meeting Organization

Program

Monday 16 Jan 1989

0800-0900	Registration
0900-0915	Welcome and opening: L.D. Swindale, Director General, ICRISAT
0915-0935	Meeting objectives and methodology: L.J. Haravu
0935-0950	Introduction of participants: L.J. Haravu

Session 1: Follow-up to the first CGIAR Documentation and Information Services Meeting, CIP, Lima, May 1987

Chairperson: C. Siri. Rapporteur: P.K. Sinha

1030-1245   Presentations by centers and discussions
1300-1400   Lunch
1400-1445   Continuation of discussion

Session 2: Information Resources and User Needs

Chairperson: K.P. Broadbent. Rapporteur: J. Kinney

1445-1545   Presentations by NARS representatives
1600-1700   Working Committee 1 meets to summarize major concerns expressed by centers in Session 1 and to synthesize possible action programs to further the recommendations of the Lima meeting.
1600-1700   Special Interest Group meetings/demonstrations/Regional group meetings
1700-1800   Writing Committee meets

Tuesday 17 Jan 1989

Session 2 (continued): Seminar on Characterizing and Identifying User Needs

Seminar Director: C.G.S. Harris, University of Salford, UK

0830-1200   Seminar
1200-1300   Reactor Panel discussion on information resources and user needs
1300-1400   Lunch

Session 3: Information Services to Meet Information Needs of NARSs

Chairperson: E.G. Frierson. Rapporteur: S. Elso G.

1400-1445   Presentations by IARCs and NARSs
1445-1545   Reactor Panel discussion on information services for NARSs
1615-1730   Working Committees 2 and 3 meet to synthesize proposed action programs and recommendations relating to information resources and user needs, and information services for NARSs and the role of IARCs, respectively.
1600-1730   Special Interest Group meetings/demonstrations

Wednesday 18 Jan 1989

Session 4: Information Networking as a Means of Improving National Capacities for Information Management and the Role of IARCs

Chairperson: A.M. Dusink. Rapporteur: R. Labelle

0900-1000   Presentations by IARCs, NARSs, CTA, IDRC
1030-1230   Reactor Panel discussion on information networking
1300-1400   Lunch

Session 5: Human Resources Development for Information Management: the role of IARCs

Chairperson: G.E. Habich. Rapporteur: E.H. de Polanco

1400-1445   Presentations by NARS and IARC representatives and by CTA, CABI, IDRC
1445-1545   Reactor Panel discussion on human resources development
1600-1730   Working Committees 4 and 5 meet to synthesize proposed action programs and recommendations relating to information networking and human resources development, respectively.
1600-1730   Special Interest Group meetings/demonstrations

Thursday 19 Jan 1989

Session 6: Distribution and Promotion of Information Services

Chairperson: S.M. Lawani. Rapporteur: E.G. Frierson

0900-1000   Presentations by IARC representatives

Session 7: Cooperation among Centers

Chairperson: J.E. Woolston. Rapporteur: P. Ballantyne

1030-1130   Presentations by IARC participants
1130-1230   Reactor Panel Discussion on distribution and promotion of services and cooperation among centers
1300-1400   Lunch

Session 8: CGIAR Preservation and Dissemination Project

Chairperson: M. Hailu. Rapporteur: L.M. Vergara

1400-1445   Presentation of status report and discussion
1445-1630   Working Committees 6 and 7 meet to synthesize proposed action programs and recommendations relating to distribution and promotion of information services and cooperation among Centers, respectively
1730-2100   Writing Committee meets

Friday 20 Jan 1989

Session 9: Presentation by Working Committees

Chairperson: L.J. Haravu. Rapporteur: S. Prasannalakshmi

0900-1000   Presentations by Chairpersons of Working Committees
1030-1230   Writing Committee works on finalizing the findings and recommendations of different Working Committees
1300-1400   Lunch
1400-1500   Presentation of findings and recommendations to L.D. Swindale, Chairman, CGIAR Center Directors' Committee on Documentation
1500-1530   Concluding Session

Contributed Papers

Abraham, W. Interwoven problems requiring interwoven solutions in agricultural information systems: Ethiopia's case.

Broadbent, K.P. Networking in agricultural information: needs, possibilities and methodologies-a donor's view.

Chaudhry, A.A. Innovative use of CDS/ISIS at ICIMOD.

Dusink, A.M. CTA's efforts to improve international cooperation in training of agricultural librarians and documentalists, and how CG-Centers can help.

Elso G., S. Networking in Latin America and the Caribbean.

Eswara Reddy, D.B. Information networking among agricultural libraries in India.

Habich, G.E. IARCs information-training for the national agricultural technology generation and transfer systems: scope for intercenter cooperation.

Hailu, M. Information networking in Africa: a framework for action.

Haravu, L.J. AGRIS utilization at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).

Haravu, L.J., and Jotwani, D. Automated SDI service of ICRISAT.

Kinney, J. National networking: the case of Malawi.

Labelle, R. The experience of the International Council for Research in Agroforestry (ICRAF) in networking national information centers.

Ogbourne, C.P. Progress report from CAB International.

Polanco, E.H. de, and Meza, R.H. An integrated system approach to scientific *information* services at CIMMYT.

Ramanatha Rao, V., and Mengesha, M.H. Genetic resources data management and the possible role of the Library and Documentation Services Division (LDSD).

Shoaib Ahsan, A., and Chhotey Lai. The problems in the development of agricultural libraries and information centres in developing countries through computer networking.

Siri, C. Collaborative activities concerning information networking that could be undertaken jointly by international agricultural research centers.

Siri, C. Follow-up activities undertaken by the International Potato Center in relation to the first CGIAR Documentation and Information Services Meeting held at CIP, May 1987.

Siri, C, and Pina, M. Human resource development activities in the area of information that could be undertaken jointly by international agricultural research centers.

Stapleton, P. The role of information and documentation in the activities of IBPGR.

Vergara, L.M. IRRI: rice information networking.

Woolston, J.E. Depositories for IARC publications in industrialized countries.

Xuan, V.T. Information needs of national agricultural research centres in developing countries.

Reactor Panels

Panel for **Session 2:** Information Resources and User Needs

K.P. Broadbent (Moderator)   S.M. Lawani
S. Elso G.   K.F. Nwanze
W. Abraham

Panel for **Session 3:** Information Services to Meet Information Needs of NARSs

E.G. Frierson (Moderator)   J.E. Woolston
R. Salami   M. Hailu

Panel for **Session 4:** Information Networking as a Means of Improving National Capacities for Information management and the Role of IARCs

A.M. Dusink (Moderator)   S. Elso G.
R. Labelle   CM. Pattanayak
K.P. Broadbent

Panel for **Session 5:** Human Resources Development for Information Management: the Role of IARCs

G.E. Habich (Moderator)   J. Kinney
B. Diwakar   I.R. de Silva
C. Siri

Panel for **Sessions 6 and 7:** Distribution and Promotion of Information Services and Cooperation among Centers

J.B. Wills (Moderator)   J.E. Woolston
P. Stapleton   C.P. Ogbourne
C. Siri

Working Committees

Working Committee 1: Follow-up to Lima Meeting

C. Siri (Chairperson)   L.M. Vergara
E.H. de Polanco   P.K.   Sinha
R. Labelle   W.M. Umbima

Working Committee 2: Information Resources and User Needs

S.M. Lawani (Chairperson)   M. Hee Houng
E.G. Frierson   P. Ballantyne
J. Kinney

Working Committee 3: Information Services to Meet Information Needs of NARSs

J.F. Giovannetti (Chairperson)   A. Shoaib Ahsan
E.G. Frierson   J.E. Woolston
E.H. de Polanco

Working Committee 4: Information Networking as a Means of Improving National Capacities for Information Management and the Role of JARCs

R. Labelle (Chairperson)   D.B. Eswara Reddy
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Working Committee 5: Human Resources Development for Information Management-the Role of IARCs

G.E. Habich (Chairperson)   N. Nsubuga
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Working Committee 6: Distribution and Promotion of Information Services

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Working Committee 7: Cooperation among Centers

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Writing Committee to Finalize Findings and Recommendations

LJ. Haravu (Chairperson)   R. Labelle
E.G. Frierson   G.E. Habich
J.E. Woolston   M. Hailu
C. Siri   E.H. de Polanco
S.M. Lawani   P. Ballantyne

Special Interest Groups

 Meetings of the following Special Interest Groups were arranged during the week, to provide a forum for the exchange of information and views, and to establish contacts that can be strengthened in an ongoing basis.

Accessing nonconventional literature in the IARCs: possible modes of cooperation

       Moderator: M. Hailu

CD-ROM and Optical Disks

       Moderator: E.G. Frierson

Sharing information on software, new information technology, and applications at IARCs

       Moderator: *P.K.* Sinha

CDS/ISIS Users

       Moderator: R. Labelle

BASIS Users

       Moderator: S.M. Lawani

Nonbibliographic information systems and applications

       Moderator: C. Siri

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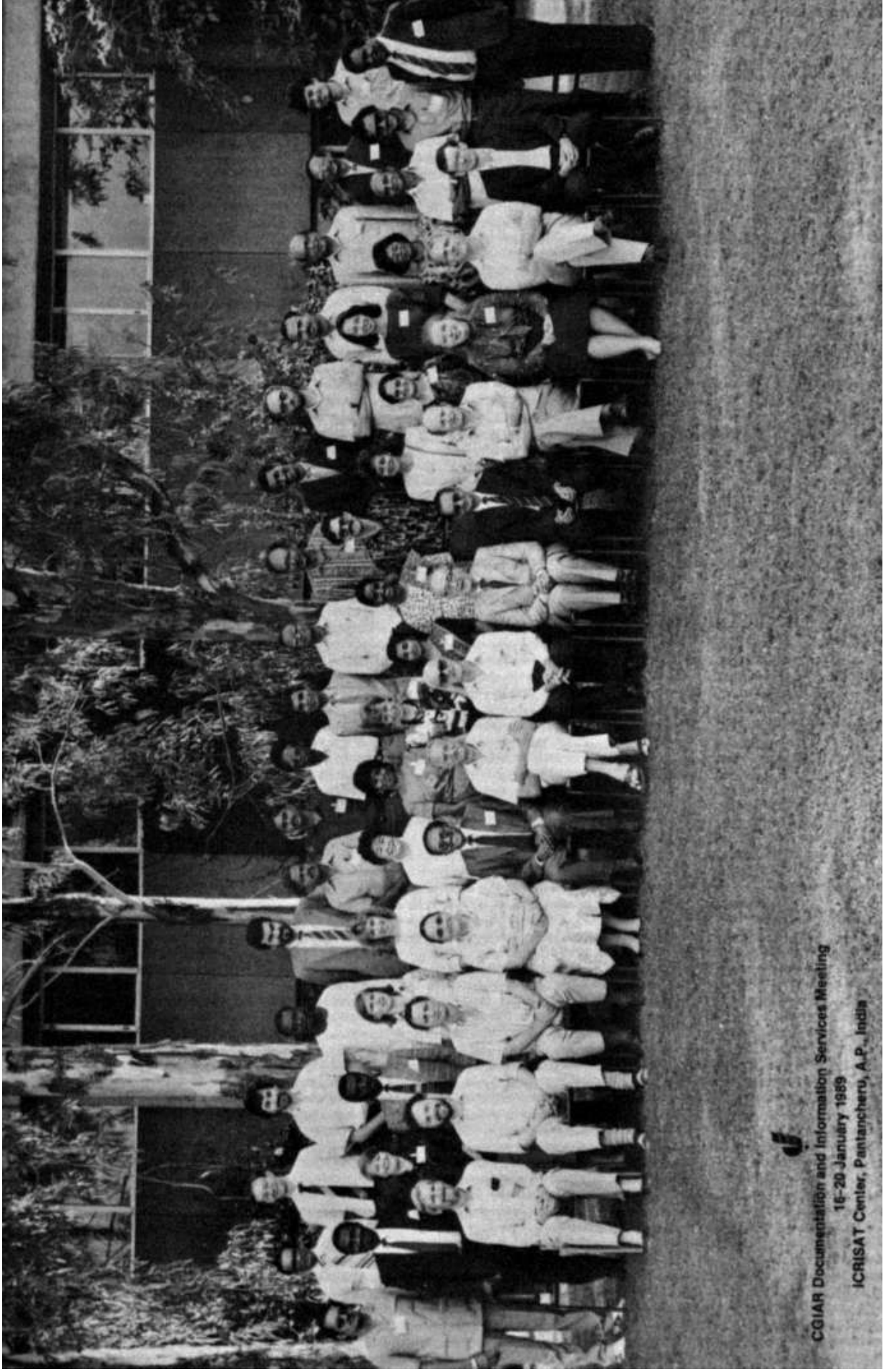 Senior Documentation Officer II

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