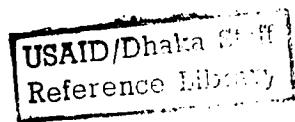


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Implementing the National Agricultural Information System Phase III

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Consultancy Report for 16 November-14 December 1990 Trip
under the
Agricultural Research Project-II (Supplement)



Dhaka

Bangladesh Agricultural Research Council
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Contents

Acknowledgements	ii
Executive Summary	iii
Goals Accomplished	iii
Future Needs	iii
Introduction	1
Tasks - Trip 3	1
Activities	
Microcomputer Hardware and Software Installation	1
Training Course in Utilizing NAIS Databases	2
Training Course Follow-up Activities	4
Bangladesh Agricultural Research Institute	4
Bangladesh Rice Research Institute	5
BARC Agricultural Information Centre	5
Other Participating Institutes	6
Rebuild NAIS Database	6
Build UCAT Database	7
Design and Implement Additional Databases	
for AIC Library	7
Revise Records for 1989 <i>BAB</i>	8
Research Projects Database Cooperation	8
Linkages with Agencies Outside NARS Institutes	9
Institute of Postgraduate Studies in Agriculture (IPSA)	9
Master Planning Office, Ministry of Irrigation	10
Recommendations	
Leadership	10
Accountability	11
Increased Personal Commitment	11
Guidelines for Additional Institutes	
Joining the NAIS Network	12
Equipment for Data Transfer and Updates	12
Conclusions	13
References	13
Appendices	15
I Utilizing National Agricultural	
Information System Databases	17
II List of Participants	19
III Overview of NAIS Databases and SearchMAGIC Instructions	21
IV Sample Follow-up Letter to Training Course Participants	27
V <i>UCAT Database Input Manual</i>	29

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Mr. Mostaque Ahmed, Ms. Shahina Sultana, and Ms. Hosne Ara Ferdous from the AIC Library Section are to be commended for their interest in establishing additional databases to meet specific needs within the library. Ms. Shahina, in particular, is to be complimented on the leadership role she has taken in working with the consultant and Mr. Kamal on the design and implementation of these databases.

My appreciation is again extended to Mr. Ken Swann, Communications Specialist on the ARP-II Project (Supplement), for the daily support he provided during this trip. His willingness to modify plans during the uncertainties of strikes and curfews made this trip quite a productive one in spite of all the political unrest.

Lastly, I wish to thank everyone who attended the end-of-trip seminar. It provided an excellent opportunity to demonstrate the progress which has been made to date and to bring to administrators' attention some of the challenges to be faced in the future.

Executive Summary

Goals Accomplished

The individual activities defined for the information consultant's third trip included the following: (1) work with staff in the Library and Documentation Sections of the Agricultural Information Centre (AIC) to install new computer equipment and the accompanying software; (2) plan and conduct a five day training course for trainees from the five participating NARS institutes; and (3) pay follow-up visits to the five NARS institutes to install word processing and retrieval software and the AIC databases on their equipment. Activities 1 and 2 were completed as designed. Activity 3 was only partially completed due to transportation and work constraints from political unrest in the country during the 4-week visit. However, ancillary projects for the AIC library were designed and implemented when library staff took advantage of the extra consultant time made available to them during the visit. Thus, accomplishments during the 4-week consultancy include the following:

- Install new computer hardware, software and AIC databases in the AIC Library and Documentation Sections and at BARI.
- Conduct course for trainees from the AIC Library and Documentation Sections and librarians from the five participating NARS institutes.
- Complete computerization of records from the *Union Catalogue of Periodicals in Agricultural Libraries in Bangladesh* and train participants to update their holdings in this database.
- Design and implement additional databases for AIC Library.
- Work with AIC staff and institute librarians to increase subject analysis capabilities and quality of data prepared for coordinated information system.

Future Needs

The overall results from this third trip strongly reinforce recommendations which were made in the report of the previous trip — leadership, management, accountability and personal commitment are still the keys to a sustainable NAIS network. Technical skills of AIC Library and Documentation Section staff continue to increase at a reasonable pace. Increased personal commitment on the part of each individual participant will only escalate the speed at which goals are accomplished.

What is critical at this point is the need for the AIC Director to provide active leadership. The AIC Director also must coordinate with BARC officials and upper echelon administrators at participating NARS institutes to establish an environment conducive to better utilizing and expanding the NAIS system. In addition, these same administrators should be concerned with the manner in which their respective information staffs are applying this specialized training. It may be necessary to develop a system whereby institute librarians are held accountable for active participation in the NAIS. In relation to this accountability, administrators must be willing to take a leadership role in resolving conflicts which obstruct progress.

Implementing the National Agricultural Information System Phase III

Jane S. Johnson
December 1990

Introduction

This trip to Dhaka was the third in a series of four in which the information consultant worked with Agricultural Information Centre (AIC) staff at the Bangladesh Agricultural Research Council (BARC) to refine their computerized information systems. Reports from the first two trips (Johnson, 1989 and Johnson, 1990) should be consulted along with this report to acquire an overall picture of the progression of work from September 1989 to date.

Tasks - Trip 3

The major tasks to be performed during this trip include the following:

1. Work with Documentation Section staff to set up new computer equipment in the AIC Library and Documentation Sections, including installing software and AIC databases.
2. Plan and conduct a training course for AIC staff and Bangladeshi staff from the five National Agricultural Research Stations (NARS) institutes participating in the coordinated National Agricultural Information System (NAIS) network.
3. Visit participating NARS institutes to install word processing and search software and AIC databases on their computer equipment.

Activities

Microcomputer Hardware and Software Installation

Microcomputer equipment which had been procured under the Agricultural Research Project-II (Supplement) arrived in November. During the first week of the consultant's visit, the equipment was set up by Beximco, the local computer firm responsible for service on the new machines. The next day the information consultant and Mr. Kamal installed the word processing, database management, and search software along with the various AIC databases on each of the new machines in the Library and Documentation Sections. All data from the hard disk of the leased 386 machine was transferred to one of the new machines in the Documentation Section.

*Training Course
in Utilizing
NAIS Databases*

The training course, *Utilizing National Agricultural Information System Databases*, was scheduled for 24-28 November. The week prior to the course, the information consultant worked with documentation staff to prepare for the five-day training course. Mrs. Mansura Begum and Mr. Kamal had already reserved the training room in the BARC Computer Centre, made the necessary administrative arrangements, and purchased basic supplies prior to the consultant's arrival. The information consultant worked with Documentation Centre staff to refine the AIC databases in preparation for use in the training course. Search menus were defined for three databases — NAIS bibliographic database; JCAT union catalogue of periodicals in agricultural libraries database; and CARIS database on current agricultural research projects. Training materials were prepared for participants. A brief overview of the course is presented in Appendix I.

Mr. Kamal assisted the information consultant in installing Word-Perfect 5.1 on all the computers in the training room. Unfortunately, it was not possible to use these machines for training in database use for a combination of reasons: (1) the demand for the machines was so great that time was scheduled to accommodate needs of the training course and Computer Centre staff; floppy disk drives and serial ports on the machines in the training room were either unreliable or non-existent making it extremely difficult and time consuming to load the databases on all the machines. Consequently, the newly installed computers in the AIC Library and Documentation Sections were used for training to search the databases.

The first day of the course trainees (see Appendix II) presented an overview of the progress each had made over the past year. Next the instructor reviewed procedures for worksheet preparation and data entry. Skill levels varied greatly among the participants, due mostly to their access to computers throughout the past year and their personal commitment to contributing to the coordinated system. Participants from the AIC had gained the most experience in completing worksheets and in preparing computerized files for data entry. Participants from the NARS institutes had gained little facility for data entry, a direct result of the lack of access to computers at their respective institutes. Unfortunately, some of the participants also revealed their lack of personal commitment to utilizing this series of specialized training when they brought only a few worksheets which they had completed during the year's time between formalized courses. In general, participants other than those in the AIC Documentation Section remain weak in their ability to assign subject descriptors for documents. This capability only increases through cataloguing numerous items on a regular basis and gaining feedback from Documentation Section staff.

On the second day, trainees were introduced to SearchMAGIC, the software used to retrieve information from the AIC databases. (See Appendix III for training materials on SearchMAGIC and the three AIC databases.) Participants were somewhat familiar with the NAIS bibliographic database from their data input efforts, so this was the first database they searched. Strategies for formulating searches from researchers questions were discussed. Limitations of coverage of materials in the database were reviewed. Methodologies for utilizing electronic databases, reference materials, as well as human resources were demonstrated. In general, participants exhibited a great deal of enthusiasm for being able to locate relevant records with a minimal amount of training. Again it was stressed that success in retrieving useful records comes with regular experience in searching the databases.

The UCAT database of periodicals holdings in 16 agricultural libraries was introduced on the third day of the course. As records in this database are current only as of 1985, procedures for updating a library's holdings were reviewed. The *UCAT Database Input Manual* was distributed along with worksheets to aid participants in notifying the AIC of additions and changes. Of the five NARS institute libraries, only BLRI is not yet represented in the UCAT database since their institute was created after the original data was collected. Thus, BLRI will need to prepare worksheets for all their periodical holdings while the other four institutes and the AIC will simply need to prepare worksheets for those titles which require revision or are not yet included in the database. Trainees were charged with reviewing their periodicals holdings and sending changes and/or additions to the AIC Documentation Section over the next year.

The fourth day (and last day as it turned out) of the course emphasized practice in gaining searching skills using the NAIS database and then identifying libraries that hold the journals by searching the UCAT database. Training was cut short as transportation became scarce due to a strike and participants returned to their lodging when colleagues left BARC.

On the final day, no one was allowed to attend the course as Dhaka was placed under 24 hour curfew due to political disturbances. The wrap-up activities which had been planned were thus delayed until Documentation Section staff could arrange visits to each of the institutes.

As in the past, the training course introduced participants to a new set of skills for retrieving information from the various databases coordinated by the AIC. These skills will become refined only if participants apply them daily to their routine work. A follow-up letter (see Appendix IV) was sent to participants at each institute

along with revised copies of the *UCAT Database Input Manual* (see Appendix V) and a working copy printout of all their institute's holdings currently recorded in the UCAT database. Each participant has been charged with two tasks: (1) to reinforce and utilize their training from the course by providing retrieval services for researchers at their institutes; and (2) to increase the number of records and accuracy of information available in the NAIS databases by preparing input for their institute's publications and other journals for which they have been assigned responsibility for producing analytical records.

***Training Course
Follow-up Activities***

During the two weeks after the training course, it was originally planned that the information consultant would visit each of the five libraries at NARS institutes participating in the coordinated information system. With the political turmoil and ensuing emergency with extended curfews, it was not possible to complete all these visits. A packet of follow-up materials was prepared for librarians at each institute as discussed in the section above. The delegation representing the AIC — Mrs. Mansura Begum, Mr. Kamal, Mr. Ken Swann and the information consultant — delivered these packets to BARI and BRRF and met with the librarians and Director General at each institute to discuss the ramifications of the training course and follow-up activities. This same group, with the exception of the information consultant, will visit each of the three remaining institutes to install software and AIC databases and discuss expectations for participating in the coordinated information network.

With travel outside Dhaka was severely restricted, the information consultant took advantage of this released time to work extensively with AIC Library Section staff to develop additional computerized databases to meet their other information management needs.

***Bangladesh
Agricultural
Research
Institute***

One of the new computers supplied through Agricultural Research Project-II (Supplement) funding was set up in the Publications Section at the Bangladesh Agricultural Research Institute (BARI) for use by staff in both publications and the library. Mr. Kamal and the information consultant installed the retrieval software, AIC databases, and an overall menu program to simplify usage of the new computer. In addition, the AIC group met with BARI's Director General, editor and librarian to discuss joint usage of the computer and review training activities and expectations for applying training to daily activities by staff in each section. The Director General expressed his support for establishing a successful working relationship between the two sections to fully utilize this new equipment.

However, on the way out of the Director General's office at the close of the meeting, the BARI librarian began to voice the difficulties he faced in not having the new computer physically located in the library. It has been extremely distressing to both the information consultant and Mr. Swann to observe the reluctance to share equipment in an efficient manner. Mr. Fazlur Rahman promised that he would work with Mr. Rahim to develop a weekly schedule to give each section equal access to the computer. It is important that AIC staff check to make certain that the BARI librarians start utilizing skills introduced in the training courses by preparing new records in disk format for the NAIS database and maintain statistics of searches performed using the AIC databases. If unwillingness to cooperate in using the equipment continues, the problem should be brought to the attention of the BARI Director General for resolution.

***Bangladesh
Rice
Research
Institute***

A follow-up visit was made to the Bangladesh Rice Research Institute (BRRI). We had been unsuccessful in contacting BRRI prior to the visit and, unfortunately, Mr. Talukdar, the BRRI librarian, was not available. The AIC group did meet with Ms. Saleha Khatoon, assistant librarian who attended the training course, and the BRRI Director General. The training course was reviewed and expectations for the BRRI library's contributions to the coordinated system were discussed. Search capabilities of the AIC databases were demonstrated with the use of a portable microcomputer. The Director General asked what was required to use these databases at BRRI. It was explained that the AIC would like to load the databases and accompanying software on one of BRRI's computers so the librarians could provide retrieval services for BRRI's researchers. The Director General made it quite clear that since BARC had not provided a microcomputer for their library, there was not a computer at BRRI available for this purpose. Consequently, it was not possible to leave an installed copy of the databases for BRRI's use. It will require some mediation between BARC and BRRI administrators to remove the barriers for the librarians to effectively utilize skills from the specialized training courses. However, in the meantime, the librarians should continue to complete worksheets (including subject descriptors) and send them to the AIC on a monthly basis. This activity does not require access to a computer and it will assure BRRI that literature of importance to their researchers will be included in the database when they do obtain access to the necessary equipment.

***BARC Agricultural
Information
Centre***

Staff in the Documentation Section will continue to work with librarians at the participating institutes to increase the quality and quantity of their input into the coordinated databases. Mrs. Mansura Begum and Mrs. Dil Afroz will concentrate on increasing

capabilities in subject analysis of materials. Mr. Kamal will provide backstopping support in the technical aspects of computerized data entry and retrieval and Mr. Sukumar will assist those in the AIC with data entry using WordPerfect.

Library Section staff will work with Documentation Section staff to raise the quality of subject analysis for records in the database of library materials as well as for those records which the library contributes to the NAIS database. With technical assistance from Mr. Kamal, library staff will augment the various databases which were implemented during this visit of the information consultant. (See section entitled AIC Library Databases.)

***Other
Participating
Institutes***

With the restrictions on travel during much of the information consultant's last two weeks, it was not possible to visit three of the participating institutes: Bangladesh Agricultural University (BAU), Bangladesh Livestock Research Institute (BLRI), and Bangladesh Forest Research Institute (BFRI). Mr. Swann, Mr. Kamal and Mrs. Mansura Begum will make the follow-up trips as soon as possible. Both BAU and BFRI have received computers for their libraries and Mr. Kamal will install the necessary software and databases so these two institutions may utilize the training they have received and contribute to the coordinated information system.

Unfortunately the BLRI library did not receive one of the new microcomputers. The BLRI Director General expressed his displeasure with respect to the distribution of computers. Mr. Swann and the information consultant sympathized and suggested that he take the matter up with the BARC Executive Vice-Chairman who designated the institutes to receive new equipment.

Rebuild NAIS Database

Upon the arrival of the information consultant, Mr. Kamal was in the process of rebuilding the combined NAIS bibliographic database. The hard disk on the leased machine had crashed earlier. Since no system for regularly backing up the database had been established, the main database was lost. Fortunately, Mr. Kamal has bits and pieces of the data on hard disks of the other machines and was able to salvage the lost data and rebuild the database. This experience is not an unusual one when working with computerized systems; however, it impressed on Mr. Kamal the necessity for maintaining a system for backing up the AIC databases. What is particularly encouraging is that when the hard disk crashed, Mr. Kamal was able to deal effectively and efficiently with the crisis and rebuild the database. Only a minimal amount of time was lost in this effort and the lesson to make regular backup copies of the databases was well learned.

Build UCAT Database

When the information consultant arrived at the AIC, she found that Mr. Sukumar had completed data entry for the 1500+ records from the *Union Catalogue of Periodicals in Agricultural Libraries in Bangladesh*. During the ensuing days of strikes and curfews, the information consultant loaded these records into the UCAT database. Much time was spent editing the records for consistency and adding missing information. Since this database will be continually updated, the data must be correct and reliable. Librarians at the five NARS institutes will provide additions and corrections for this database throughout the coming year. A concerted effort should be made to get the other libraries to review their current holdings and send in their revisions.

Design and Implement Additional Databases for AIC Library

Ms. Shahina Sultana, one of the AIC Library Section staff, has been very keen on computerizing other routine tasks in the library. In consultation with the information consultant, she outlined several tasks which lend themselves readily to computerization — indexing of local newspaper articles, building up a computerized catalogue of library materials not included in the NAIS database, and recording newly received journals and bound volumes.

A simple database was designed for the newspaper indexing. An output format was made to print out a page with descriptive information to which each individual article would be attached. All three librarians were trained to input data for the index. Ms. Shahina will work with Mr. Kamal to gain experience in adding new records to the database and in designing additional report formats for a monthly listing and an annual index.

The AICLIB database was established using the same structure as the NAIS database to maintain records of catalogued library materials not included in the scope of the NAIS database, mostly foreign published materials. The librarians had catalogued nearly 400 titles over the past year. Approximately 300 were added to the AICLIB database. The remaining 100 records were added to the NAIS database and will be included in the 1989 annual publication of the *Bangladesh Agricultural Bibliography*. These records made it very clear that work by Library Section staff nicely complements efforts of Documentation Section staff to allow for more extensive coverage in the NAIS database. Again, Mr. Kamal will provide Ms. Shahina with the technical backstopping necessary for the library to maintain the AICLIB database.

A third database (AICPER) was developed for the library to maintain records of their periodicals titles. The subset of titles held by BARC was downloaded from the UCAT database. Some fields were added to the AICPER data structure to record arrival of individual issues, bound volumes with the accompanying accession

number, and call number of bound volumes. Additional fields may be added as the need arises. Mr. Kamal will work with Ms. Shahina to further develop this database to meet the library's needs.

While editing records for the AICLIB database, it was sometimes necessary to check information on the document itself. Quite often library staff could not easily locate the required book. This brought to light that some revisions were sorely needed in their present shelving and circulation procedures. Staff seemed open to suggestions to revise the filing order for circulation cards and to assign shorter UDC numbers to simplify locating materials on the shelf. Again, it was stressed that systems in the library should be dynamic rather than static and driven by needs rather than simply long-standing tradition.

Revise Records for 1989 BAB

The Documentation Section has entered the majority of records which will be printed in the 1989 annual volume of the *Bangladesh Agricultural Bibliography*. They have written to FAO in Rome to obtain records for materials on Bangladesh published in other countries. As soon as these records are received, Mr. Kamal will lead the effort to prepare camera-ready copy which may be sent directly to the printer. It is hoped that the Publication Section can arrange to have the volume printed in a much shorter time than the six months it took to print the 1988 volume.

Research Projects Database Cooperation

BARC had committed the AIC to participating in FAO's international database for maintaining information on current agricultural research projects in Bangladesh (CARIS database). The Documentation Section has sent information of some projects to Rome, but has had a difficult time locating sources of project information that they can access on a regular basis. During this trip Mr. Kamal and the information consultant met with Dr. Robert Witter, CARIS Research Management Specialist from the International Centre for National Agricultural Research (ISNAR) and currently serving as an advisor to BARC, and Mr. Ehsanul Haque, Office cum Systems Manager for ISNAR in Bangladesh, to review the database they have developed on research projects within the NARS institutes. Some of the information they have gleaned from NARS annual research program reports meets the AIC's requirements of information to be sent to the CARIS system, i.e., institution, project name and investigators names. Mr. Ehsanul Haque downloaded information from the ISNAR database in a format which may be directly transferred to the AIC's CARIS database. Much effort would be required to glean the additional information such as beginning and ending dates of the project, a statement of objectives, and subject descriptors for each project. ISNAR data provides, however, an excellent start for identifying current projects. We appreciate the

manner in which Dr. Witters and Mr. Ehsanul Haque readily shared the information they had diligently collected.

Along these same lines, Mrs. Mansura Begum arranged a meeting with Dr. Hamid Mia, BARC Member Director for Planning and Evaluation. Dr. Hamid Mia was very interested in the information the AIC was collecting on agricultural research projects as it correlates readily to the data his unit requires. He indicated his willingness to share project information he collects with the AIC and in return, the AIC will install a copy of the CARIS database along with the retrieval software for use by staff in the Planning and Evaluation Division. Mr. Kamal had received copies of several project reports from which the necessary data may be gleaned. He will prepare CARIS records for these projects and return the material's to Dr. Hamid Mia. It was stressed that maintaining the CARIS database is an ongoing process and that project reports must be collected and sent to the AIC Documentation Section on a regular basis. In return, the AIC must prepare CARIS records from these reports and return them to Planning and Evaluation in a timely manner.

Linkages with Agencies Outside NARS Institutes

The planning paper which outlines a framework for establishing the National Agricultural Information System (NAIS) states that the NAIS "will also establish linkages with GOB agencies involved in agricultural and rural development...for enhancement of NAIS databases" (Agricultural Information Centre, 1990). During this visit, two non-NARS groups expressed interest in participating in the NAIS.

Institute of Postgraduate Studies in Agriculture (IPSA)

Mr. Swann and the information consultant met with Dr. Harold W. Youngberg, Team Leader of the Technical Cooperation Project at the Institute of Postgraduate Studies in Agriculture (IPSA) and Mr. Craig A. Wilson, Assistant Director for Collection Development at Oregon State University Libraries, working short-term with IPSA to develop the IPSA library. The information consultant demonstrated the NAIS databases and ways in which IPSA could benefit from and contribute to the cooperative information system were discussed. On December 9th, the IPSA librarian accompanied Dr. Youngberg and Mr. Wilson to the seminar in which the information consultant reviewed progress and activities during the third visit. He, too, was very interested in how to participate in the NAIS coordinated system.

The next week after follow-up meetings at BARI and BRRJ, the AIC delegation met with Mr. Wilson and the librarian at IPSA. The librarian had arranged for us to install the NAIS databases on one of their computers and was delighted at the prospect of being able to retrieve information from this collection of research on

Bangladesh. The librarian was also given a copy of the *UCAT Database Input Manual* and several worksheets so he could contribute information of periodicals held in the IPSA library to be added to the UCAT database. Participating in the NAIS reinforces IPSA's plan to network with libraries at BARI and BRRI to each institute's mutual benefit. Mrs. Masura Begum and Mr. Kamal from the AIC Documentation Section will provide technical backstopping to the IPSA librarian as he prepares information to be added to the NAIS databases.

***Master Planning Office
Ministry of Irrigation***

Mr. David E. Bogan, Team Leader of the Bangladesh National Water Plan Project Phase II, and Mr. Richard Rudberg, Program Coordinator from Harza Engineering International in Chicago, visited the AIC to look at the computerized information systems which have been implemented. The Master Planning Office (MPO) at the Ministry of Agriculture has a unique collection of materials on irrigation, drainage, flood control, and water management in Bangladesh. Mr. Bogan and Mr. Rudberg were looking at alternative ways for organizing these materials. They were very impressed with the retrievability of information from the AIC databases and the number of records which cover subjects with which MPO is concerned. Their reaction was, "How can the MPO join in this coordinated information system to the mutual benefit of all parties?" It was clear that MPO library staff do not have the expertise that staff in the AIC Documentation Section have developed to manage computerized information systems. However, they could be trained to contribute records for documents held in their library to the NAIS network in the same manner as NARS institute librarians have been trained. The information consultant suggested that Mr. Bogan pursue this further through appropriate administrative channels as this would involve cooperation between two ministries where commitment from the highest levels must be provided.

Recommendations

It became quite clear during this trip that the technical skills of AIC Library and Documentation staff are progressing in a satisfactory manner. The capabilities of participating NARS institute librarians are improving, although at a much slower pace than had been anticipated. We are now at a critical juncture in the development of the program where some of the more intangible elements of leadership, management, accountability, and personal commitment are required in order to make the NAIS a sustainable cooperative information network.

Leadership

At the section level, staff in the AIC Documentation Section have built up their leadership capabilities over the past year. Each individual has taken his responsibilities seriously, built upon the

training which has been provided through the ARP-II (Supplement Project, and contributed backstopping support for other participants in the NAIS system.

Accountability

At all levels in the system, accountability must be required of staff to utilize new skills from training courses and increase productivity within their units. If no differentiation is made between those who perform their duties and those who are unproductive, then implementing new systems is doomed for failure. A section leader, director, or chairman who does not require output from his staff and does not work with them to increase their productivity level is as much at fault, or more so, for the lack of progress than the individual staff members. Promoting progress on a planned basis is much more productive than jumping from one task to another in crisis situations.

All participants in the AIC training courses should be held accountable by their superiors for regularly applying the newly introduced skills to their own work situations. The AIC has designated various individuals in the Documentation Section to provide the necessary backstopping for participants who need assistance. NARS institutes should avail themselves of this service when needs arise.

***Increased
Personal Commitment***

Each participant, from either the AIC or NARS institutes, must make a personal commitment to improving the NAIS system as a whole. He/she must be willing to increase individual skills and share knowledge freely with colleagues. An information system of the magnitude envisioned for the NAIS requires high-quality efforts from each individual working within the system. In addition, staff must become aware of the information requirements of agricultural scientists and policy makers in their respective institutions to make certain that the data entered into the system will meet their needs.

*Guidelines for Additional
Institutes Joining
the NAIS Network*

It is evident from activities during this visit that other institutions are interested in participating in the NAIS coordinated network. Some guidelines should be established for those organizations who wish to join. The following are some elements which should be taken into consideration when defining these guidelines.

- Librarian who is willing and capable of following high quality standards established for the system and providing new records for the system on a regular basis.
- Microcomputer equipment with sufficient free hard disk space to house the software and databases. The equipment must also be available to the librarian for daily use (at least two hours per day) for retrieving information and preparing additional records for input.
- Institutional support for librarian to participate in the necessary training activities and deliver input to the AIC on a regular basis.

*Equipment for Data
Transfer and Updates*

NAIS databases have grown considerably in size during the past year. Databases and accompanying software now require approximately 14 megabytes (MB) of hard disk space. In order to transfer the data from the machine containing the master databases to other machines, at least 14 high density disks (42 if low density disks must be used) are required. We have found that technical difficulties often arise in restoring this data on machines at outlying institutes when a different version of DOS was used to format the hard disk than that used at the AIC or that one or more of the backup disks may not be readable by the other machine. Consequently, the information consultant and Mr. Kamal used Mr. Swann's laptop computer and a special software program called Laplink (with its accompanying cable) to transfer the databases directly between the laptop and the institute's target machine. As the NAIS databases continue to grow, it is even more important that a reliable form of data transfer be acquired for this purpose.

Therefore, it is recommended that a laptop computer be purchased for use by the AIC Documentation Section so they may readily provide updated copies of the NAIS databases to participating institutes. This machine should have the following minimum specifications.

- 386SX DOS-based central processing unit
- 80 MB hard disk
- VGA screen resolution
- MS-DOS 3.3 or PC-DOS 4.0 or later version operating system

In addition, the communications software LapLink (Release III or later) including the connecting cable should be ordered. The current estimated cost for this equipment is under US \$5,000.

Conclusions

During the last six months, the technical skills of AIC Documentation and Library Section staff have developed satisfactorily. Staff are providing each other with informal assistance, thereby increasing the AIC's overall capabilities. Most individuals have taken their assigned responsibilities seriously and are better managing their time which has led to increased productivity. However, there is further room for improvement in time management.

The crucial requisite at this point is active leadership from the AIC director level and institutional support from BARC to make the NAIS a sustainable coordinated network. Over the next few months, documentation staff will be visiting the participating NARS institutes to install the NAIS databases and assist the librarians in retrieving information from the system as well as preparing high-quality records for the databases. At present, some of the participants and their DG's are disgruntled over the distribution of new microcomputers. Positive interaction with these people is required in order to resolve the problems and to provide benefits to all involved in the NAIS.

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Appendices

- I** Utilizing National Agricultural Information System Databases
- II** List of Participants
- III** Overview of NAIS Databases and SearchMAGIC Instructions
- IV** Sample Follow-up Letter to Training Course Participants
- V** *UCAT Database Input Manual*

Appendix I

Utilizing National Agricultural Information System Databases

*24-28 November 1990
Agricultural Information Centre
Bangladesh Agricultural Research Council*

Jane S. Johnson — Instructor

The purpose of this week-long course is to train participants to utilize the various cooperative databases managed by the Agricultural Information Centre (AIC) at the Bangladesh Agricultural Research Council (BARC). Principles and strategies for retrieving information will be presented and time allowed for trainees to gain experience with retrieval techniques.

The course will concentrate on three databases: (1) the National Agricultural Information System (NAIS) bibliographic database; and (2) the Union Catalogue of Agricultural Periodicals (UCAT) database; and (3) the Current Agricultural Research Information System (CARIS) research projects database. All aspects of the systems will be covered.

Initially participants will review procedures for preparing records to be added to the NAIS database. Cooperative input assures that the database will provide up-to-date information for retrieval. Each participating institution is responsible for materials published by their own institute as well as specialized materials in their area of expertise, i.e., reports, government documents, commercial publications, etc. Trainees will then be instructed in techniques for retrieving all types of information from this database.

Next, search strategies for locating individual periodical titles in the UCAT database will be presented. Participants will be introduced to the program for updating their institute's holdings in the UCAT database.

Finally searching strategies from work earlier in the course will be applied to retrieving information in the CARIS database. Trainees will discuss ways in which information may be more effectively collected for this particular database.

Training sessions will be held at the BARC Computer Centre from 9:00 a.m. to 4:00 p.m. daily. Upon completion of the course, AIC Documentation Section staff will arrange to install both software and databases on hardware designated for this purpose at each participant's institute.

Appendix II

Utilizing National Agricultural Information System Databases

*24-28 November 1990
Agricultural Information Centre
Bangladesh Agricultural Research Council*

List of Participants

	Name	Organization
1	A.K.M. Wazihullah	Bangladesh Forest Research Institute
2	Md. Nozmul Hoque	Bangladesh Forest Research Institute
3	Reazul Hannan Md. Yusuf	Bangladesh Agricultural University
4	Prabir Kumar Mitra Biswas	Bangladesh Agricultural University
5	Md. Bodiul Alam	Bangladesh Livestock Research Institute
6	S. M. Ekthair Uddin	Bangladesh Livestock Research Institute
7	Saleha Khatoun	Bangladesh Rice Research Institute
8	Talukdar Ijjat Ali	Bangladesh Rice Research Institute
9	Md. Tofael Hossain	Bangladesh Agricultural Research Institute
10	A. B. M. Fazlur Rahman	Bangladesh Agricultural Research Institute
11	Mostaque Ahmed	Bangladesh Agricultural Research Council
12	Shahina Sultana	Bangladesh Agricultural Research Council
13	Hosne Ara Ferdous	Bangladesh Agricultural Research Council
14	Dil Afroz	Bangladesh Agricultural Research Council
15	Mansura Begum	Bangladesh Agricultural Research Council
16	Md. Rafique Mostafa Kamal	Bangladesh Agricultural Research Council
17	Sukumar Chandra Singha	Bangladesh Agricultural Research Council
18	Firoza Sultana	Bangladesh Agricultural Research Council

Overview of NAIS Databases and SearchMAGIC Instructions

Bangladesh National Agricultural Information System

The National Agricultural Information System (NAIS) Database represents the collection of bibliographic citations to literature on agriculture in Bangladesh. The database includes records which have been sent to FAO's AGRIS Coordinating Centre by the Agricultural Information Centre (AIC) since 1975 as well as other documents which have been indexed specifically for this system.

This database is searchable by subject, title, author, and publication date. Both individual words and phrases may be searched. Use the F3 and F4 keys to browse the keyword and term indexes, respectively.

- A subject search scans both the Descriptor and Title fields for keywords entered, to ensure more complete retrieval.
- A title search scans Title including series titles if any occur.
- Authors are sought in both the Personal Author and Corporate Author fields.
- Date searches retrieve any date within the specified period - for example, a search for "1987" will find "March, 1987".

Once records are retrieved, they may be displayed in a brief format (Author, Title and Date), or individual records can be shown in a full format.

Current Agricultural Research Projects in Bangladesh

The Current Agricultural Research Projects (CARIS) Database provides information about on-going research at the member institutes of the National Agricultural Research System (NARS) in Bangladesh. The database includes records which have been sent to FAO's AGRIS Coordinating Centre to be included in the international CARIS system. At present, coverage of research projects is incomplete. It is hoped that it will become more comprehensive as the individual research institutes begin to provide cooperative input for the database.

This database is searchable by subject, researcher's name, and institution. Both individual words and phrases may be searched. Use the F3 and F4 keys to browse the keyword and term indexes, respectively.

- A subject search scans both the Descriptor and Title fields for keywords entered, to ensure more complete retrieval.
- The researcher search scans the four fields in which investigator's names are entered.
- An institution search scans the index for the institution where the research is being conducted.

Once records are retrieved, they may be displayed in a brief format (Title and Institution) or individual records can be shown in a full format which includes investigators' names and dates of the project in addition to the information found in the brief format.

Union Catalogue of Agricultural Periodicals in Bangladesh

The Union Catalogue of Agricultural Periodicals (UCAT) Database represents the holdings of serials in agricultural libraries in Bangladesh. Records for the database were derived from the 'Union Catalogue of Periodicals in the Agricultural Libraries of Bangladesh' published in 1985 by the National Agricultural Library and Documentation Centre (NALDOC), Bangladesh Agricultural Research Council (BARC). The BARC Agricultural Information Centre (AIC) has initiated a programme to update serials holdings of the 16 original institutions and add holdings from additional agricultural institutions in Bangladesh.

This database is searchable by title, subject, organization, and location. Both individual words and phrases may be searched. Use the F3 and F4 keys to browse the keyword and term indexes, respectively.

- A title search scans the Title, Previous Title, Successive Title, and Related Title fields.
- A subject search scans both the Subject and Title fields for keywords entered to ensure more complete retrieval.
- Organization searches retrieve names of corporate bodies responsible in some manner for the serial, i.e., association, international agency, government department, professional society, etc.
- The location search provides retrieval of records held by individual institutions. The location codes for each participating institution are listed below.

BARC	: Bangladesh Agricultural Research Council, Farmgate, Dhaka
BARD	: Bangladesh Academy for Rural Development, Kotbari, Comilla
BARI	: Bangladesh Agricultural Research Institute, Joydehpur, Gazipur
BAU	: Bangladesh Agricultural University, Mymensingh
BJRI	: Bangladesh Jute Research Institute, Sher-e-Bangla Nagar, Dhaka
BRRI	: Bangladesh Rice Research Institute, Joydehpur, Gazipur
BSRTI	: Bangladesh Sericultural Research & Training Institute, Rajshahi
BTRI	: Bangladesh Tea Research Institute, Srimangal, Moulavibazar
FFRS	: Freshwater Fisheries Research Station, Baburhat, Chandpur
FRI	: Forest Research Institute, Chittagong
FTRS	: Fisheries Technological Research Station, Baburhat, Chandpur
INA	: Institute of Nuclear Agriculture, Mymensingh
PKC	: Patuakhali Krishi College, Dumki, Patuakhali
RDA	: Rural Development Academy, Bogra
SRDI	: Soil Resources Development Institute, Krishi Khamar Sarak, Dhaka
SRTI	: Sugarcane Research and Training Institute, Ishurdi, Pabna

Once records are retrieved, they may be displayed in a brief format (title, frequency, place and publisher), or individual records can be shown in a full format which includes complete holdings.

Using SearchMAGIC

Choose a database to search from the Database Selection Menu. A search screen appears with Search Prompts for the fields you can search. Type the word or term you are looking for next to the appropriate Search Prompt(s). SearchMAGIC performs the search and tells you how many records are found. Or, instead of typing the things you want to find, copy (paste) them from the lists of words or terms in the database.

After a search is completed, you can display the records found on the screen in a brief report, and also expand any record into a fuller display. Remove any records that you don't want from the list of records found and then print the rest in another report.

Getting Online Help

Choose HELP from the Database Selection Menu to see information about using SearchMAGIC, or about the databases available.

Press F1 for online help while you are searching or browsing through indexes.

Searching

Move the cursor to the appropriate Search Prompt and type the word or words for which you are looking. You can find a term such as COMMUNICATION NETWORKS, or individual words such as TELECOMMUNICATIONS. Separate multiple terms with commas:

Subject(s): COMMUNICATION NETWORKS, TELECOMMUNICATIONS _____

SearchMAGIC will look for records containing any of the specified items in the field (or fields) associated with the Search Prompt.

To find words or terms beginning with certain characters, type an asterisk at the end of the word or term:

Subject(s): COMMUNICATION NET*, TELECOMM* _____

To find records which satisfy conditions in several fields at once, type information next to each of the appropriate Search Prompts:

Subject(s): COMPUTER AIDED * _____
Title: TRAINING _____

To find several words or terms in the same field at once (Boolean AND), use an ampersand (&) instead of a comma between the terms you type:

Subject(s): COMPUT* & SOFTWARE _____

To find a single word occurring alone in a field, put an equals sign (=) in front of the word on the Search Prompt line:

Subject(s): =COMPUTERS _____

Browsing Indexes

To see the words or terms in a field, press F3 (for words) or F4 (for terms). A list appears on the screen. Use arrow keys to move up and down this list, or press a letter of the alphabet to proceed directly to that location in the list.

If several fields are being searched by a single Search Prompt, you can use the right and left arrow keys to move from index to index.

If you see something in an index that you want to retrieve, press the INS key. The word or term is copied to the Search Prompt line. Press the INS key to paste as many words or terms as needed. Press the DEL key to remove something that has been copied to the Search Prompt line. Press RETURN when you want to start the search, or press ESC to stop browsing in order to type more search terms of your own.

Seeing Search Results

When a search is completed, the number of records found is displayed in the upper right corner of the screen. The line at the bottom of the screen indicates that you can Display or Print the results of the search, Continue searching, use INMAGIC-search, or quit SearchMAGIC.

If you display the records, you see them in a brief report.

- Use arrow keys to browse up and down in the list.
- Press the plus key (+) with the cursor positioned on any record to see a fuller display of that record.
- Press the minus key (-) to remove the record marked by the cursor from the list of records found. The record is not removed from the database, merely from the current list of records found. A space remains on the screen to remind you that a record has been removed. The figure in the upper right corner of the screen showing the number of records is reduced accordingly.
- Press the ESC key to stop browsing and return to your search.

Using Standard Inmagic Search Commands

To search fields not shown, construct a more complex Boolean query, or print search results using different report designs, you can use standard INMAGIC command searching (called INMAGIC-search in SearchMAGIC and its manuals) from within SearchMAGIC. Note that if INMAGIC-search has not been enabled by the Information Manager for a particular database, then INMAGIC-search does not appear as an option at the bottom of the search screens for that database.

The prompt in INMAGIC-search is an asterisk. Type a command next to the prompt, and press RETURN at the end. Alternatively, press RETURN at the asterisk prompt to see a list of available commands and assistance with such things as Boolean commands and truncation. Type ? (or HELP) and the name of a command (i.e. GET) or subject (i.e. Boolean) to have it described in detail.

Note that you must press RETURN after each command you type in INMAGIC-search.

To leave INMAGIC-search, type E (for EXIT) and press RETURN. When you exit INMAGIC-search, the SearchMAGIC screen reappears.

Appendix IV

Sample Follow-up Letter to Course Participants

Mr. Talukdar Ijjat Ali
Ms. Saleha Khatoon
Library
Bangladesh Rice Research Institute
Joydebpur, Gazipur

10 December 1990

Dear Mr. Talukdar and Ms. Saleha,

Congratulations on completing the training course *Utilizing National Agricultural Information System Databases*. Even though we were unable to meet the last day of the course, we are pleased that the majority of work had already been covered in the first four days.

Again, I must emphasize that a training course is only a beginning. It has no value unless the skills taught are applied to your daily activities in the BRRI Library. We will install on one of the microcomputers at your institute WordPerfect 5.1, SearchMAGIC, and the three AIC databases for your use. In return, the AIC staff expect to receive on a monthly basis additional records that you have prepared for input into the NAIS bibliographic database. These may be sent to the AIC on diskette or on completed worksheets, should you have difficulty in preparing the input files in WordPerfect. Remember to search the NAIS database to make certain there is no record for the publication before spending the time preparing a worksheet. If you encounter any problems, you will need to contact Mansura Begum at the AIC Documentation Section. She will make the necessary arrangements to assist you in overcoming your problems.

In addition to providing regular input for the NAIS bibliographic database, you are expected to review BRRI's holdings in the union catalogue (UCAT) database. Enclosed is a working copy of your library's records which are to be modified and returned to Mansura Begum at the AIC Documentation Section so that the UCAT database may be updated. You will need to fill out a worksheet for new titles which your library owns, but are not yet recorded in the UCAT database. Sample worksheets and copies of the *UCAT Database Input Manual* have been included with the list for revision. You are requested to send changes and additional worksheets to the AIC on a monthly basis. *Do not wait until you have completed all titles to send additions and changes. Send a few each month.*

This collaborative agricultural information system provides you with access to a larger number of documents than have been previously available. However, the success and continued usefulness of the system is dependent on each institute's regular contributions to maintain coverage of new agricultural literature. It is important that each of you be personally committed to providing high quality and timely data and that you gain experience in utilizing the databases by providing retrieval services for your researchers.

It has been a pleasure to work with you during these training courses and I look forward to seeing your increased contributions to the cooperative information system.

Sincerely,

Jane S. Johnson
Information Consultant/Instructor

cc: Director General, BRRI
Dr. M.S.U. Chowdhury, EVC, BARC
Mr. Abdun Nur, Director, AIC, BARC

UCAT Database Input Manual

Jane S. Johnson
Information Consultant
PacMar, Inc.

Dhaka

Bangladesh Agricultural Research Council
Checchi and Company Consulting, Inc.
(In association with PacMar, Inc./Uniconsult International/USAID)

December 1990

Contents

Introduction	1
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Database Fields

UCAT Record Number (NO)	1
Location (LOC)	2
Frequency (FR)	2
ISSN Number (SN)	2
Title (TI)	3
Place of Publication (PL)	3
Publisher (PUB)	3
Organization Name (ORG)	3
Subject Terms (SUB)	4
Holdings (HOL)	4
Collation (COL)	4
Previous Title (PT)	4
Successive Title (ST)	4
Related Title (RT)	5
Notes (NOT)	5

Appendices

I	UCAT Database Input Sheet	6
II	Country Names	7

UCAT Database Input Manual

Jane S. Johnson
December 1990

Introduction

The UCAT Database was developed from information contained in the *Union Catalogue of Periodicals in the Agricultural Libraries of Bangladesh*. This directory was published in 1985 by the National Agricultural Library and Documentation Centre (NALDOC) [now the Agricultural Information Centre (AIC)] of the Bangladesh Agricultural Research Council (BARC).

In order to update the catalogue, the titles have been recorded in the UCAT database. Listings of periodical holdings of the 16 institutions have been

sent to each library for information on additions, changes, and/or deletions. A data entry form (Appendix I) has been developed for recording this information in a format easily transferred to the database.

This manual describes the various fields in the UCAT database and what information is to be included in each of those fields. Examples are given to clarify the standards required in order to maintain high quality information in the database.

Database Fields

The following section delineates the fields in the database structure and explains how the information should be entered for each of those fields. The three boxes in the upper right corner of the input sheet provide general information for the database manager.

Date

Write the date which the input sheet was prepared in the Date area.

By

Add the initials of the person providing the input in the By area

New Add Change Delete

Circle the appropriate item in the box. If the title is not yet in the database, select *New*. If the title is already in the database, but your library's holdings are not included, select *Add*. If changes need to be made in your library's holdings for a particular title, select *Change*. If your library no longer maintains holdings for a particular title, select *Delete*.

Institutions which are contributing information for the first time may select only the *New* or *Add* terms.

NO UCAT Record Number

The UCAT Record Number is a four-digit number used as a unique identifier for each title. At present, most of the numbers relate directly to the title number in the 1985 *Union Catalogue*.

If *Add*, *Change*, or *Delete* is circled on the input sheet, enter the UCAT No. for the title from the database.

If *New* is circled, *do not* enter a number in this field. A unique number will be assigned when the new record is added to the database.

Enter number in this field with any leading zeros.

NO 0035

NO 1286

LOC Location

Enter the code for the institution holding the periodical title represented on the input sheet. The following codes have been established for the institutions which are presently providing input for the union catalogue. Additional codes will be created for institutions which join this cooperative effort.

BARC	Baughladesh Agricultural Research Council, Farmgate, Dhaka
BARD	Baughladesh Academy for Rural Development, Kotbari, Comilla
BARI	Baughladesh Agricultural Research Institute, Joydebpur, Gazipur
BAU	Baughladesh Agricultural University, Mymensingh
BFRI	Baughladesh Forest Research Institute, Chittagong
BINA	Baughladesh Institute of Nuclear Agriculture, Mymensingh
BJRI	Baughladesh Jute Research Institute, Sher-e-Bangla Nagar, Dhaka
BRRRI	Baughladesh Rice Research Institute, Joydebpur, Gazipur
BSRTI	Baughladesh Sericultural Research and Training Institute, Rajshahi
BTRI	Baughladesh Tea Research Institute, Srimangal, Moulavibazar
FFRS	Freshwater Fisheries Research Station, Baburhat, Chandpur
FTRS	Fisheries Technological Research Station, Baburhat, Chandpur
PKC	Patuakhali Krishi College, Dumki, Patuakhali
RDA	Rural Development Academy, Bogra
SRDI	Soil Resources Development Institute, Krishi Khamar Sarak, Dhaka
SRTI	Sugarcane Research and Training Institute, Ishurdi, Pabna

FR Frequency

Enter the frequency for the title serial being described. Frequency codes are listed below. Type the code in lower case letters.

a	Annual
b	Bi-monthly
h	Half-yearly
i	Irregular
m	Monthly
q	Quarterly
t	Three times in a year
w	Weekly
z	Others

FR a

FR q

SN ISSN Number

Enter the International Standard Serial Number (ISSN) in this field. All ISSN's are eight-digit numbers divided into groups of four by a hyphen (-).

SN 0003-6839

SN 0039-632X

TI Title

Enter the title of the serial according to *AACR II* standards, i.e., as it is given on the piece. All significant words are given with capital first letters. Separate the sections or parts of the title by a full stop and a space.

Use a space dash space [-] to separate a non-distinctive title from the name of the issuing body.

If two titles are exactly the same, place the country of publication at the end of the title enclosed by parentheses to make each title unique.

TI AAEA Newsletter
TI Advances in Agronomy
TI Abstracts of Bulgarian Literature. Series A:
Plant Breeding and Forest Economy
TI Abstracts of Bulgarian Literature. Series B:
Animal Breeding and Veterinary Medicine
TI Publications - Bangladesh Rice Research
Institute
TI Journal of Coffee Research (UK)

PUB Publisher

Enter the name of the publisher. If more than one publisher is given, select the name of the publisher that (a) is given typographic pre-eminence or (b) is listed first on the document. In either case the publisher should coincide with the place of publication given in the PL field.

An acronym or an abbreviated form of the name of the publisher may be used in this field if the name is that of a corporate body and will also be entered in the organization name (ORG) field. Copy the name of the publisher as given on the document, but omit such words as "Incorporated", "Sons", "Limited", etc.

PUB McGraw-Hill
PUB American Chemical Society
ORG American Chemical Society
PUB BRRI
ORG Bangladesh Rice Research Institute

PL Place of Publication

Enter the place and country of publication indicated in the address of the publisher. If the publisher has several addresses listed, give only the place and country of the head office, if this may be easily identified (usually the first place listed). If the address lists several publishers in two or more countries, the place and country of publication will be either that of the publisher given typographic preeminence or that of the publisher listed first.

If no place is given, supply one if it can be easily identified. Always give the name of the country. Include the name of the locality (i.e., city or town) followed by an element required to identify that locality unequivocally (i.e., state, county, etc.). Enter the name of the country in the form given in Appendix II and enclose it between parentheses.

PL Dhaka (Bangladesh)
PL Urbana, IL (USA)
PL Cambridge (UK)

ORG Organization Name

Enter the name(s) of the organization(s) responsible for the serial either intellectually or technically, editorially or contractually. Spell out the corporate name in its entirety. Enter the country in parentheses where there might be confusion among two organizations with the same name. For government departments, enter the name of the country followed by the department.

ORG National Institute of Health (USA)
ORG Malaysian Rubber Research Institute
ORG U.S. Dept. of Agriculture
ORG Bangladesh Agricultural University

Abbreviations should be used only for the following words:

Dept. Department
Div. Division
U.S. United States

SUB Subject Terms

Enter subject descriptors from *AGROVOC* which describe the specific subject content of the serial. Each descriptor is to be treated as a separate occurrence of the field. Separate descriptors with a semicolon and a space.

If no *AGROVOC* terms suitable describe the serial, terms may be selected from more general lists of subject headings such as the *Library of Congress Subject Headings* or *Sears List of Subject Headings*.

Always enter the subject in upper and lower case letters. Capitalize only the initial letter of the first word of the descriptor and the initial letter of proper names.

SUB Agricultural economics
; Rural sociology
; Sri Lanka

SUB Rural development
; Abstracts

HOL Holdings

Enter your library's location code followed by the holdings of that particular periodical title. Enter the beginning volume and date for which your library has a continuous run. If the title is a current subscription, *do not* indicate an ending volume and year.

For titles which are not complete, list the missing volumes and/or issues in a "Lacks" statement enclosed by square brackets. Individual missing issues are indicated in parentheses next to the volume number.

HOL BAU : 46- , 1954- [Lacks 67(2-4),
70, 72(3, 8)]
HOL BARI : 3-34, 1950-81 [Lacks 9, 11-12]

COL Collation

Enter the beginning volume and date of the serial, if known. Enter the end volume and date only if the title has ceased publication or changed names.

COL Vol. 1 (1964)-
COL Vol. 3-28 (1943-1966)

PT Previous Title

Enter the previous title of the serial in this field if it was formerly published under a different name. Use the same capitalization as that for the title (TI) field. List the ISSN number of the previous title at the end of the title, if known.

PT Advances in Carbohydrate Chemistry
0096-5332
PT Journal of Farm Economics

ST Successive Title

List the successive (later) title of the serial if it has ceased publication under its current name. Use the same capitalization as that for the title (TI) field. List the ISSN number of the successive title at the end of the title, if known.

ST Advances in Carbohydrate Chemistry and
Biochemistry 0068-2318
ST American Journal of Agricultural
Economics 0002-9092

RT Related Title

Enter the title of a related serial which is neither a previous title or successive title, in this field. There will normally be information in the Note (NOT) field explaining the relationship of the title in this field with that in the Title (TI) field.

RT Agro-ecosystems 0304-3746
; Agriculture Ecosystems and Environment
0167-8809

NOT Merged with Agro-ecosystems to form
Agriculture ecosystems and environment.

RT List of Dissertations in Political Economy
in Progress in American Universities and
Colleges

NOT Includes annual List of doctoral
dissertations in political economy in progress
in American universities and colleges

NOT Notes

Enter any information on the serial title which might be of value to persons using the database, but which may not be entered in any of the other fields. This field is often used to explain relationships between titles, information regarding languages of articles and/or summaries, etc.

RT Agro-ecosystems 0304-3746
; Agriculture Ecosystems and Environment
0167-8809

NOT Merged with Agro-ecosystems to form
Agriculture ecosystems and environment.

NOT Text in English; summaries in German,
French, and Spanish.

Appendix I

UCAT Database Input Sheet

Union Catalogue of Periodicals in the Agricultural Libraries of Bangladesh						Date	
UCAT Database Input Sheet						By	
UCAT NO	LOC	FR	SN	New	Add	Change	Delete
TI							
PL		PUB					
ORG							
SUB							
HOL							
COL							
PT ST RT							
NOT							

37

Appendix II

Country Names

Afghanistan	Ecuador	Lebanon	San Marino
Albania	Egypt	Lesotho	Sao Tome & Principe
Algeria	El Salvador	Liberia	Saudi Arabia
Andorra	Equatorial Guinea	Libya	Senegal
Angola	Ethiopia	Liechtenstein	Seychelles
Argentina	Fiji	Luxembourg	Sierra Leone
Australia	Finland	Madagascar	Singapore
Austria	France	Malawi	Somalia
Bahamas	Gabon	Malaysia	South Africa
Bahrain	Gambia	Maldives	Spain
Bangladesh	German D.R.	Mali	Sri Lanka
Barbados	Germany, F.R.	Malta	Sudan
Belgium	Ghana	Mauritania	Surinam
Belize	Greece	Mauritius	Swaziland
Benin	Grenada	Mexico	Sweden
Bhutan	Guatemala	Monaco	Switzerland
Bolivia	Guinea	Mongolia	Syria
Botswana	Guinea Bissau	Morocco	Tanzania
Brazil	Guyana	Mozambique	Thailand
Bulgaria	Haiti	Namibia	Togo
Burma	Holy See	Nauru	Tonga
Burundi	Honduras	Nepal	Trinidad and Tobago
Byelorussian SSR	Hungary	Netherlands	Tunisia
CAmeroon	Iceland	New Zealand	Turkey
Canada	India	Nicaragua	Uganda
Cape Verde	Indonesia	Niger	UK
Central African Republic	Iran	Nigeria	Ukranian SSR
Chad	Iraq	Norway	United Arab Emirates
Chile	Ireland	Oman	Upper Volta
China	Israel	Pakistan	Uruguay
Colombia	Italy	Panama	USA
Comoros	Ivory Coast	Papua New Guinea	USSR
Congo	Jamaica	Paraguay	Venezuela
Costa Rica	Japan	Peru	Vietnam
Cuba	Jordan	Philippines	Yemen Arab R.
Cyprus	Kampuchea D.	Poland	Yemen, D.
Czechoslovakia	Kenya	Portugal	Yugoslavia
Denmark	Korea D.P.R	Qatar	Zaire
Djibouti	Korea R.	Romania	Zambia
Dominican R.	Kuwait	Rwanda	Zimbabwe
	Lao	Samoa	

26