

Competitive Research Grant

Sub-Project Completion Report

On

**Enhancing Agricultural Research Information Services
through Digitization of Research Outputs**

Project duration: 12 July 2017 to 30 September 2018

Implemented by

Md. Rafique Mostafa Kamal, PI

Dr. Susmita Das, Co-PI

Agricultural Information Centre (AIC)



Submitted to

**Project Implementation Unit-
BARC, NATP 2**
Bangladesh Agricultural Research
Council
Farmgate, Dhaka-1215

September 2018



Project ID: 612

Competitive Research Grant

Sub-Project Completion Report

on

Enhancing Agricultural Research Information
Services through digitization of research outputs

Project Duration

12 July 2017 to 30 September 2018

Implemented by

Agricultural Information Centre (AIC)
Bangladesh Agricultural Research Council



Submitted to

Project Implementation Unit-BARC, NATP 2
Bangladesh Agricultural Research Council
Farmgate, Dhaka-1215

September 2018

Citation

Kamal, R.M. and Das, S. (2018). Enhancing Agricultural Research Information Services through Digitization of Research Outputs. Project Implementation Unit, National Agricultural Technology Program-Phase II Project (NATP-2). Bangladesh Agricultural Research Council (BARC), New Airport Road, Farmgate, Dhaka – 1215, Bangladesh

Edited and Published by:

Project Implementation Unit
National Agricultural Technology Program-Phase II Project (NATP-2)
Bangladesh Agricultural Research Council (BARC)
New Airport Road, Farmgate, Dhaka – 1215
Bangladesh.

Acknowledgement

The execution of CRG sub-project has successfully been completed by the Agricultural Information Centre (AIC), Bangladesh Agricultural Research Council (BARC) using the research grant of USAID Trust Fund and GoB through Ministry of Agriculture. We would like to thank to the World Bank for arranging the grant fund and supervising the CRGs by BARC. It is worthwhile to mention the cooperation and quick responses of PIU-BARC, NATP 2, in respect of field implementation of the sub-project in multiple sites. Preparing the project completion report required to contact a number of persons for collection of information and processing of research data. Without the help of those persons, the preparation of this document could not be made possible. All of them, who made it possible, deserve thanks. Our thanks are due to the Director PIU-BARC, NATP 2 and his team who have given their whole hearted support to prepare this document. We hope this publication would be helpful to the agricultural scientists of the country in designing their future research projects on technology generation as well as increasing production and productivity for sustainable food and nutrition security in Bangladesh. It would also assist the policy makers of the agricultural sub-sectors for setting their future research directions.

Published in: September 2018

Printed by:

Acronyms

AIC	-	Agricultural Information Centre
BARC	-	Bangladesh Agricultural Research Council
CSV	-	Comma Separated Values
IMS	-	Information Management System
IR	-	Institutional Repository
ISO	-	International Standard Organization
LIMS	-	Library and Information Management System
MARC	-	Machine Readable Catalogue
NARS	-	National Agricultural Research System
OAI	-	Open Archives Initiative
OJS	-	Open Journal System
OPAC	-	Online Public Access Catalogue
RFID	-	Radio Frequency Identification

Table of Contents

SI No.	Subject	Page No.
	<i>Executive Summary</i>	1
A	1. Title of the Sub-Project	2
	2. Implementing organization	2
	3. Name and full address with phone, cell and E-mail of PI/Co-PI (s)	2
	4. Sub-project budget	2
	5. Duration of the sub-project	2
	6. Justification of undertaking the sub-project	2
	7. Sub-project goal and objective (s)	3
	8. Sub-project objective	3
	9. Implementing location	3
	10. Methodology	3
	11. Results and discussion	5
	12. Research highlight/findings	13
B	Procurement, Establishment and Training	14
C	Financial and Physical Progress	15
D	Achievement of Sub-project by objectives	16
E	Materials Development/Publication	16
F	Technology/Knowledge generation/Policy Support	17
G	Information regarding Desk and Field Monitoring	17
H	Lesson Learned	18
I	Challenges	18

Executive Summary

National Agricultural Research System (NARS) Institutes, agricultural universities and the related organizations are engaged in basic and upstream research for enhanced agricultural productivity and to ensure food security and safety. The findings of these research and development activities are published mainly in the country's agriculture and related research journals, in the form of reports, conference proceedings, research highlights, etc. Besides, various government policy documents like acts, guidelines, policies, handbook, manual etc., strategic papers, five-year plans which have enormous importance in determining the future plan are generated at regular pace. These scholarly documents are spread over many different agencies and thus not available at the time of need. These necessitate important documents to be conserved in appropriate format to facilitate their use. With this end in view this project was undertaken to improve the information services by ensuring greater accessibility to the e-content of scholarly publications through development of a digital repository of important documents to promote efficient delivery of information to all interested users through Open Archives Initiative (OAI). Further the project envisaged to publish research results online and make those available in the web to facilitate research capability. The project was approved on July 2017 with a budget of Tk. 45,50,560.00. During implementation, received Tk. 42,07,307.00, out of which Tk. 37,73,319.00 was spent and the rest Tk. 4,33,988.00 refunded to NATP. As a part of the activities, procurement plan was prepared along with technical specifications of the goods to be procured and terms of reference of the tenderer required for implementation. Recruitment of the contractual staff was completed at the start. Information sources were identified for tagging required for the RFID security system. Project got momentum with the installation of an independent server in AIC Library and resolving matter relating to IT support for providing Real IP, Local IP, dedicated port and others necessary. Wiring was done to connect to the workstation, user PCs, Kiosk and the RFID security gate. Configured the server and installed the applications to run the system. During the project period all installation and customization of the hardware and software were completed and the system was set under operation. Data input was done and several trials were made to fine tune in order to make the system truly functional. A considerable number of records (6272) have been added directly and through batch processing. A total of 167 documents have been identified and scanned full text into JPG formats. The documents were categorized considering the relevance of the documents for easy location and retrieval. For publishing journal online and subsequently to make those available in the web, the Open Journal System was installed and customized discarding additional steps which seemed to be redundant. The installed system has been tested starting from online submission and management of all content and was found to work as per plan fulfilling requirements. The delay in procuring the equipment and service related activities caused hindrance to set up and start the whole system in stipulated time and thus, it was not possible to conduct the planned training/workshops.

CRG Sub-Project Completion Report (PCR)

A. Sub-project Description

1. **Title of the CRG sub-project:**Enhancing Agricultural Research Information Services through digitization of research outputs
2. **Implementing organization:** Agricultural Information Centre (AIC), Bangladesh Agricultural Research Council (BARC), New Airport Road, Farmgate, Dhaka-1215.
3. **Name and full address with phone, cell and E-mail of PI/Co-PI (s):** Md. RafiqueMostafa Kamal, Director (Addl. Charge), Agricultural Information Centre, BARC. New Airport Road, Farmgate, Dhaka-1215. Phone: 9127407; 01677-279109

Dr. Susmita Das, Senior Documentation Officer, Agricultural Information Centre, BARC. New Airport Road, Farmgate, Dhaka-1215. Phone: 9132416; 01711-102198

4. **Sub-project budget (Tk):**

4.1 Total: 45,50,560/-

4.2 Revised: 45,50,560/-

5. **Duration of the sub-project:**

5.1 Start date (based on LoA signed): 12 July 2017

5.2 End date: 30 September 2018

6. **Justification of undertaking the sub-project:**The role of agricultural research in Bangladesh is inevitable. National Agricultural Research System (NARS) Institutes, agricultural universities and some related organizations have been engaged in basic and upstream agricultural research to generate new information and thus to assist producers to ensure food and nutrition security. The findings of these research and development activities, in many cases, are published mainly in the country's agriculture and related research journals, in the form of reports, conference proceedings and research highlights. Side by side, various government policy documents, strategic papers, five-year plans which have significant importance in determining the future plan in agricultural research and development are also generated at a regular pace. Unfortunate though, many of those information get lost overtime due to traditional process of documentation or not available to the users, as these are scattered and lies with many diffident agencies. Until now, these huge data have not been tapped in an organized manner, for archival and dissemination to the various end-users. For R&D pursuits, all these scholarlyarticles should be available to

the users more easily. Making the context easily and quickly browseable, necessity of indexing the metadata of these articles is inevitable. Once it is done with retrospective coverage, it would be the foundation for accessing the information in full-text through web.

There is no denying fact that the findings of the research and development activities have immense value for future research and policy direction. However, the information resource centre, the library having huge volume of data were not tapped in an organized way. Sporadic attempts by different organizations have been made to index the materials. Moreover, today's demand to have access to the full content of the materials is still far behind. Against the backdrop, it has become utmost important to make full-text scholarly articles full text available to the users through web. To respond to the need, it becomes necessary to digitize the research articles/documents generated throughout in the country. This particular project was proposed to perform that much needed task.

7. **Sub-project goal:** Making information resources electronically available and accessible to different stakeholders to facilitate adoption of research findings and undertake programs for higher productivity
8. **Sub-project objective (s):** The sub-project objectives were to:
 - i. Improve service by ensuring greater accessibility to the e-content of scholarly publications;
 - ii. Develop digital repository of important documents to serve the researchers, policy-makers and other stakeholders;
 - iii. Promote efficient delivery of information to researcher, policy-makers and other end users through Open Archives Initiative (OAI); and
 - iv. Publish research results online and make available in the web to facilitate research capability
9. **Implementing location:** Agricultural Information Centre (AIC), Bangladesh Agricultural Research Council (BARC), Dhaka
10. **Methodology in brief:** In the recent time, some open source Integrated Library/Information Management System have been developed and used world-wide by the special libraries. These open source packages have wide range of features including searching for items, catalogue, circulation and acquisition modules which enables to

capture details of available documents. These are, of course, also based on international standard formats; meaning data entry and exchange are greatly simplified. Among those, Koha, an open source Information Management System (IMS), has been used by some organizations namely, Sher-e-Bangla Agricultural Library, Dhaka; Sylhet Agricultural University, Sylhet; Bangladesh University of Science and Technology, Dhaka; Bangladesh Rural Advancement Committee, Dhaka; Chittagong Veterinary and Animal Sciences University; and some private universities in the country.

The activities were accomplished through outsourcing to a firm having experience in open source software particularly on Koha, with a package on depository management, and on-line publishing process of research results (journal) and making those available in the web.

AIC identified, collected and populate information by appointing contractual staff. In addition, the available information resources at AIC were documented using standard open source software(s) and published in the web to make available in the internet. Another software package was customized for on-line publishing process of research results (journal) and make available in the web or publish in an open access initiative platform whichever is suitable.

AIC professionals discussed thoroughly with the outsourcing firm on the issues relating to all software and hardware, installation process and implementation strategies of the systems. These include designing of data structure, essential data elements required by different stakeholders, circulation and lending policy, personalization of RFID Tags for, and other related issues. AIC professionals worked closely with the vendors in each and every steps involved to complete the whole tasks to achieve the project goals.

The vendor customized the software in installation and working process. In case of bibliographic data management, the essential metadata elements were brought together and put in a single tab, so that data population became easier by the library professionals. The RFID security gate was installed at exit point of the library. To make the RFID security system functional RFID management software was installed and pasted the tags in 2000 in the designated area in the documents as per the requirement of the Library. Staff station module was made functional by activating Check in and out system which aided issue and return operation.

A total of 167 documents have been identified and scanned full text into JPG formats. The documents were categorized considering the relevance of the documents for easy location and retrieval. For publishing journal online and subsequently to make those available in the web, the Open Journal System was installed and customized discarding additional steps which seemed to be redundant.

Vendor, as per requirement, provided staff operational training of library personnel after accomplishment of every step of the activities. The training covered all the operational features of LIMS, RFID Library solution, and also basic trouble-shooting of problems which might arise in the course of live operation. It also installed the Kiosk, a self-service device, a type of interactive public information and transaction systems enabling users to have access and collect information without the help of the information professionals.

11 Results and Discussion:

To strengthen the agricultural research information services, AIC accomplished all the task required to improve the library housekeeping operations, develop the e-resource base of the important reports, proceedings documents like Acts, Guidelines, Handbook, Manual, Strategy papers, Five-year plans etc., and introducing on-line publishing process of research results (journal). Details were as follows:

a. Improving Library and Information Management System (LIMS)

As a part of the project purpose to strengthen the service delivery and activities of the Agricultural Information Centre, an efficient service delivery package having wide range of automated features including cataloguing, searching documents, circulation and acquisition was selected. In doing so, Koha, an Integrated Library and Information Management System, was installed to improve the library housekeeping operations and to promote the economical and efficient delivery of information to the researcher, policy-makers and other end users.



The Installed Server Provide Access to the On-line Databases

Koha has been subscribed under the licensing agreement with the vendors. Before installation, the operating system Linux, the web server Apache, the database server MySQL and other associated programming language like Perl were

installed. The server was configured with the IP addresses available at the Computer and GIS Unit of BARC and customized on the platform as mentioned above.

The following areas of library management have been made functional:

Catalogue Interface: TheKoha catalogue interface (Online Public Access Catalogue - OPAC) contains full range of metadata to describe a document of documents of different natures. Since the AIC library is a special library and the requirement of the users are different from the others like academic library, it was required to congregate the essential metadata from the different built-in tabs of the Koha. Thus all the essential metadata tags were brought under a single tab so that population of data could be made easier. This was done by modifying the layout by inserting HTML, CSS and JS. The following format illustrates how the metadata populated:

Add MARC record

The screenshot displays the 'Add MARC record' interface in Koha. At the top, there is a navigation bar with a 'Save' button, a search box containing 'Q Z39.50/SRU search', a 'Settings' dropdown, and a 'Cancel' button. Below this is a tabbed interface with tabs numbered 0 through 9. The main content area shows a list of MARC fields with their respective labels and input boxes:

- 000 ? - LEADER** (fixed length control field *): Input box.
- 005 ? - DATE AND TIME OF LATEST TRANSACTION** (control field *): Input box.
- 006 ? - FIXED-LENGTH DATA ELEMENTS--ADDITIONAL MATERIAL CHARACTERISTICS** (fixed length control field): Input box.
- 007 ? - PHYSICAL DESCRIPTION FIXED FIELD--GENERAL INFORMATION** (fixed length control field *): Input box.
- 008 ? - FIXED-LENGTH DATA ELEMENTS--GENERAL INFORMATION** (fixed length control field *): Input box.
- 015 ? [] [] - NATIONAL BIBLIOGRAPHY NUMBER** (Qualifying information): Input box.
- 020 ? [] [] - INTERNATIONAL STANDARD BOOK NUMBER** (International Standard Book Number): Input box.
- 020 ? [] [] - INTERNATIONAL STANDARD BOOK NUMBER** (Qualifying information): Input box.

Format for Adding Records in Koha

The database structure of AIC library is different from Koha structure. Therefore, effort was made to transfer those data in to Koha compatible format so that the existing bibliographic records can be imported using batch uploading feature of Koha. The AIC library was using a UNESCO developed database management software named WINISIS for capturing metadata of the documents. The output of the records given below is based on ISO-2709 format developed by International Standard Organization (ISO). Koha has the capability to import records from outside in batch uploading if the imported records are in ISO-2709 format. At the same time, WINISIS has the capability to output the records in the said format. Therefore, it becomes easier to import previously digitized records inside the Koha database, thus this facility saves an enormous time and labours.

```

00376000000001570004500021000300000100008800003110001700091110001500108111003500123121001
20015813000060017030000050017630001600181410000900197411001200206#En#Farming systems research
programme Vaskarkilla site, Kishoregonj: Annual report1986-87#Gupta^bSubas
Das#MizanurRahman#Bangladesh Jute Research Institute#BJRI^bDhaka#46
p.#Jute#FarmingSystems#BARC(OP)#633.52(058)##

00406000000002050004500021000300000100004700003110001500050110001100065110002000076111003
400096121009013012205001391307001441650600151165060015730900163300160017241005001884110070
193#En#Plant genetic manipulation for crop
protection#Getehouse^bAMR#Hilder^bVA#Boulter^bD^fEditors#Commonwealth Agricultural
Bureaux#CABI^bUK#1992#266 p.#11078#11079#Genetics#Crop Protection#BARC#581.15##

00445000000002290004500021000300000100006600003110000700069110001100076110001000087111003
400097121000900131122000500140130000700145165000600152165000600158300001000164300001000174
300001100184300000700195410000500202411000800207#En#Plant parasitic nematodes in subtropical and
tropical agriculture#Luc^bM#Sikora^bRA#Bridge^bJ#Commonwealth
AgriculturalBureaux#CABI^bUK#1992#629
p.#11086#11087#Nematodes#Parasites#Subtropics#Plants#BARC#595.122##

00377000000002050004500021000300000100003500003110001500038111003400053121000900087122000
500613000070010116500060010816500600114165000600120300013001263000005001393000013001444100
500157411000900162#En#Agroforestry for soil conservation#Young^bAnthony#Commonwealth Agricultural
Bureaux#CABI^bUK#1991#276p.#11071#11072#11073#Agroforestry#Soil#Conservation#ARC#631.4913##

```

Format of Digitized Metadata Currently used in the AIC Library

<input type="checkbox"/>	<p>1. Farming systems research programme <u>vaskarkilla</u> site, Kishoregonj: Annual report 1986-87 / Gupta, Subas Das; Mizanur Rahman by Gupta, Subas Das. Material type: Book Publisher: Dhaka : BJRI; Description: 46 p.</p> <p style="text-align: right;">Holds (0) Add to cart Edit record Edit items OPAC view</p>
<input type="checkbox"/>	<p>2. Plant genetic manipulation for crop protection / Getehouse, AMR; <u>Hilder</u>, VA; Boulter, D, Editors by Getehouse, AMR. Material type: Book Publisher: UK : CABI; 1992 Description: 266 p.</p> <p style="text-align: right;">Holds (0) Add to cart Edit record Edit items OPAC view</p>
<input type="checkbox"/>	<p>3. Plant parasitic nematodes in subtropical and tropical agriculture / Luc, M; <u>Sikora</u>, RA; Bridge, J by Luc, M. Material type: Book Publisher: UK : CABI; 1992 Description: 629 p.</p> <p style="text-align: right;">Holds (0) Add to cart Edit record Edit items OPAC view</p>
<input type="checkbox"/>	<p>4. Agroforestry for soil conservation / <u>Young</u>, Anthony by <u>Young</u>, Anthony. Material type: Book Publisher: UK : CABI; 1991 Description: 276 p.</p> <p style="text-align: right;">Holds (0) Add to cart Edit record Edit items OPAC view</p>

Conversion of metadata to Installed New System in the AIC Library

After installation and customization of the Koha based integrated system, 6272 bibliographic records have been added including the batch uploading. Koha has the capabilities to add records which have already been catalogued following international compatible formats. This feature has also been tested. Besides, it has the capability to import MARC bibliographic records, create spine and barcode labels, ability to duplicate or merge existing records and items, perform collection inventory etc. All the features were tested and now could be implemented by AIC whenever required.

Circulation Module: Ability to place inter-library loan requests for books or articles in Koha from the OPAC interface. Users can view and comment on their requests from the OPAC. The circulations i.e. check-in and check-out with a barcode scanner or RFID reader was implemented. For this purpose, tags were attached to 2000 book/important documents so that RFID base circulation system could be performed. Barring this, it has whole range of circulation facilities to set reserve management, due date



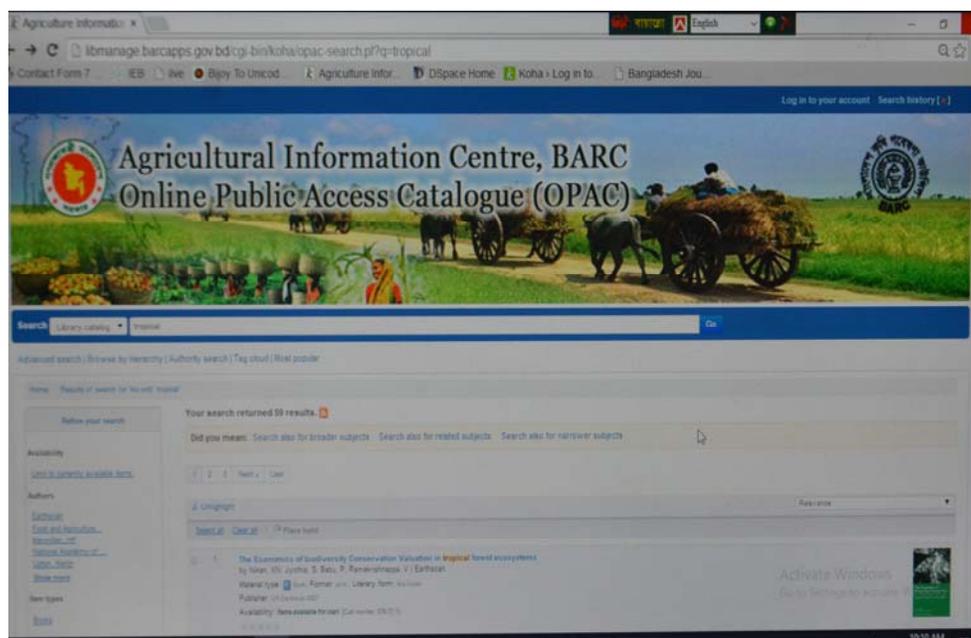
Issuing Document Using RFID System

managed to the day or hour, fine calculation, ability to restrict checkouts by user age as well as by user type etc. It may be mentioned that all the features of the system have been tested which could be implemented now in real time operation.

Patrons Module: Created user lists of some of the BARC officials which would help creating user cards, help librarians to view the holds history of library users, run tailored reports on circulation etc.

Reports Module: Koha has a powerful and flexible reporting capability with guided reports and the ability to create, save and schedule new reports, group reports by branch, category or any custom criteria and run easily any saved report at any time or set up a schedule, export results to CSV file. This feature has been tested and found suitable for use.

Acquisition Module: It has the ability to make acquisition of library materials where all the necessary information budgets and funds, keep track of all vendor information in one place, automatically generate order emails using the new notice template, generate late reports and claim letters, track budget encumbrances and expenditures etc., required prior to purchase the library materials. This feature has been demonstrated but could not be tested, because it requires real time data.



Home Page for Searching Information Resources

Installation of Kiosk: Kiosk, a self-service device, is a type of interactive public information and transaction systems by which users have the ability to access and collect information without the help of the information professionals.

Considering the advantages and as a self-service information retrieval tool, a Kiosk has been installed as a part of the improvement of information system in the library by which users themselves can search and retrieve information

to meet their information needs. The Kiosk has been connected to the library main database so that user can have access the library resources through this interface. This site can be visited using the web address: <http://libmanage.barcapps.gov.bd/>



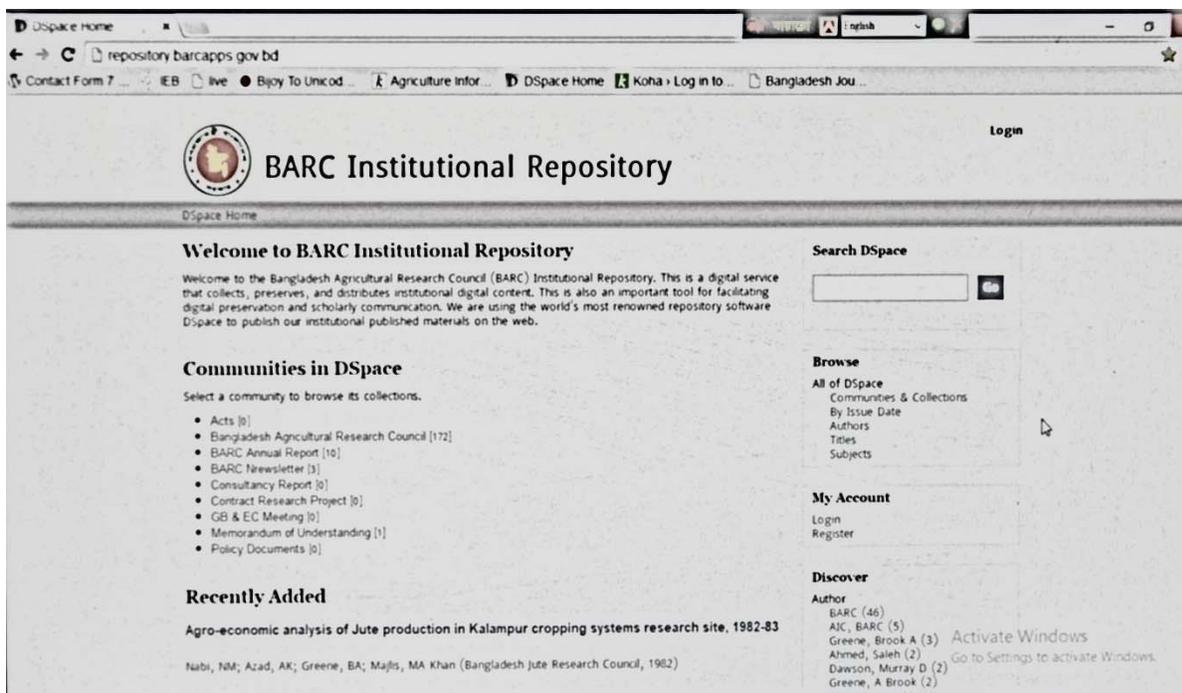
Self-searching by accessing remote data using Kiosk

b. Develop the e-resource base with important full-text documents

Building an Institutional Repository (IR) of the major documents with full-text was planned as a component of the project. To accomplish this goal, a repository management software package (DSpace) was introduced. This package is typically used for creating open access repositories for scholarly and/or published digital content. The DSpace repository software serves a specific need as a digital archives system, focused on the long-term storage, access and preservation of digital content. It has features to completely customize to fit user needs, manage and preserve all format of digital content (PDF, Word, JPEG, MPEG, TIFF files) and optimize for Google Scholar indexing.

Installation of DSpace

DSpace is a platform that allows capturing and long term processing of items in any format - in text, video, audio, and data. It indexes the items and facilitates users to search and retrieve. DSpace provides a way to manage research materials and publications in a professionally maintained repository to give them greater visibility and accessibility over time. It is typically used in an institutional repository to facilitate the capture and ingest of materials, including metadata about the materials to ensure easy access to the materials, both by listing and searching.



DSpace Home Page for Searching and Browsing Full text Documents

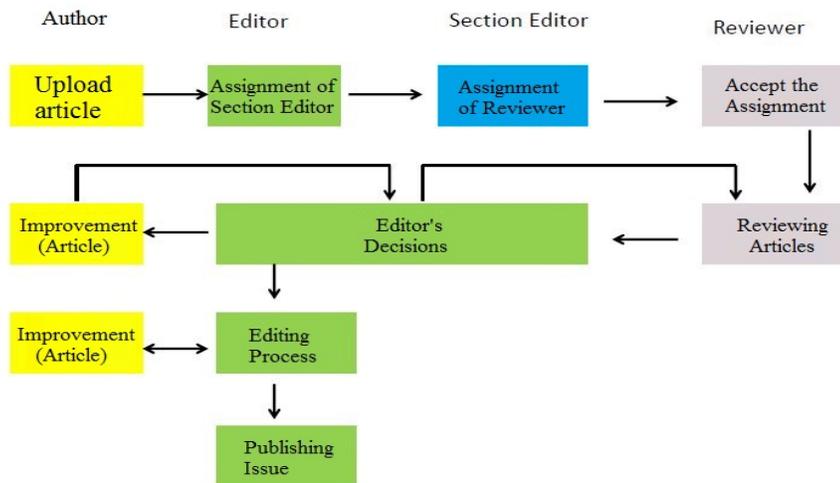
DSpace was installed and can be operated under the same platform as installed before. The server has been configured with the IP addresses available at the Computer and GIS Unit of BARC. Subsequently, DSpace was installed, configured and customized on the same platform as mentioned above. A total of 167 documents were identified and scanned full text into JPG formats. The documents have been categorized, which may be changed as required, considering the relevance of the documents so that relevant documents can be located in the same place. This site can be visited using the web address: <http://repository.barcapps.gov.bd/>

c. OpenJournal System

By nature, Open Journal System (OJS) is an open source software for the purpose of making open access peer reviewed publishing for journals. The OJS has been designed to reduce the time and energy devoted to the clerical and managerial tasks associated with editing a journal, while improving the record keeping and efficiency of editorial processes. It seeks to improve the scholarly and public quality of journal publishing through a number of innovations, from making journal policies more transparent to improving indexing. Further, OJS facilitates in providing the technical infrastructure not only for the online presentation of journal articles, but also an entire editorial management workflow, including article submission, multiple rounds of peer-review, and if accepted, editing and publishing, with records maintained of who is doing what

and when indexing. OJS relies upon individuals fulfilling different roles, such as the Journal manager, editor, reviewer, author, reader, etc.

OJS Workflow

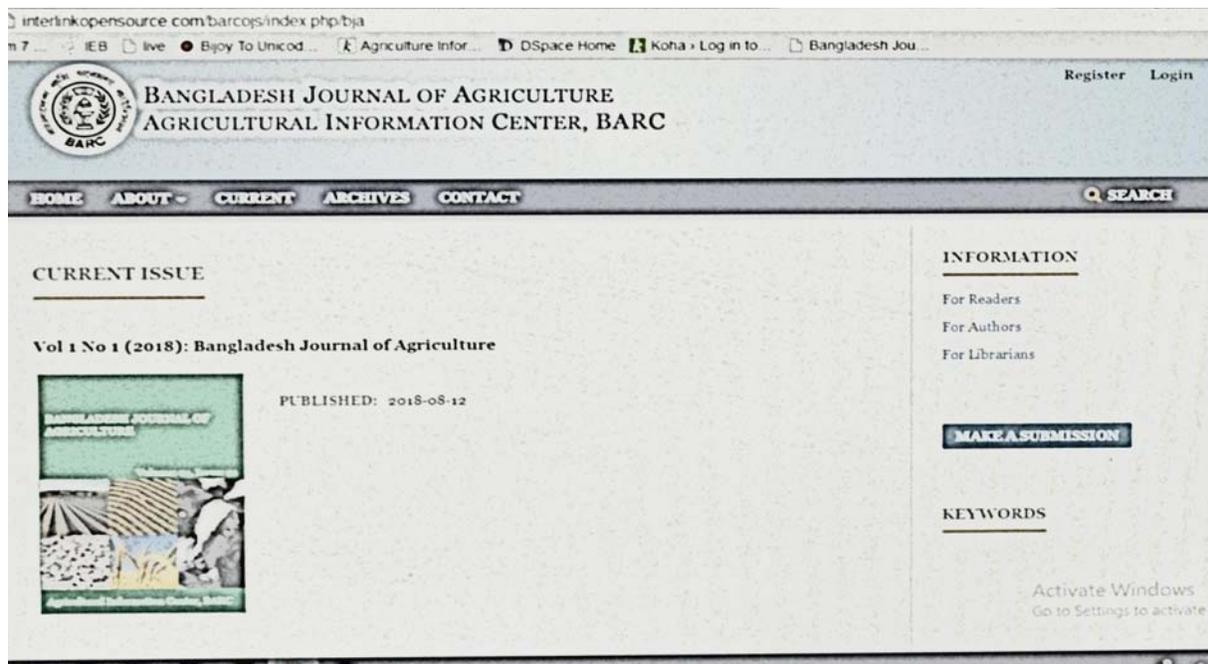


Customized Open Journal System (OJS) Workflow

Roles in the Publishing Workflow

- **Journal manager:** sets up journal by filling in templates and checking options; manages users, assigns roles; manages reading tools, indexing, prepared emails templates.
- **Editors:** assign one or more editors or a section editor to submissions; oversee editorial process and decisions; assemble and publish issues.
- **Section editor:** manages peer review process and makes editorial decision for submissions, in consultation with Editor.
- **Subscription manager:** sets up different types of subscriptions and manages subscription processes.

With the view to publish journal online and subsequently made those available in the web, the Open Journal System (OJS) has been installed and customized discarding additional steps which were seemed to be redundant. The installed system has been tested starting from online



On-line Journal Publishing Interface Panel

submission and management of all content and was found working as per requirements. Prior to put the system under operation, the different stakeholders need to be trained on the issues of submitting and resubmitting the research articles following the system's requirement. Particularly, the author and the reviewers should be made well acquainted with the system. A regular training provision for online journal publishing may be included in the annual training workplan of AIC so that selected reviewers can be trained for making a reviewers pool to run the system without interruption. When the system will be put under operation, the system will be run using a Control Panel. However, temporarily this site can be visited using the web address: <http://interlinkopensource.com/barcojs/index.php/bja>

12. Research highlight/findings:

- Procurement of all Hardware & Software were made in time as per plan
- Installed Server and Linux based Operating System and customized for local needs
- Installed RFID Staff Work station and Tag reader software for personalization and circulation and Introduced RFID Security System for check-in check-out system
- Installed Koha, Dspace, OJS and Kiosk.

- Identification of the information sources for tagging was completed for the RFID Security System
- 2000 tags have been attached to the selected important documents for RFID based circulation control
- Populated and 6272 records in to Koha database and data input is underway
- Process of digitization of necessary documents and the materials required for enhancing library housekeeping operations e.g. accession, circulation (check-in, check-out) are functional
- 167 documents like Annual reports, BARC Newsletters, Proceedings of Executive Council and Governing Body meetings have been (digitized and) uploaded in the institutional repository
- Customization of on-line publishing process of research results (journal) is under process
- RFID Security gate and display board have been refurbished
- Installed Kiosk for making library database available for users.

B. Implementation Position

1. Procurement:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Phy (#)	Fin (Tk)	Phy (#)	Fin (Tk)	
(a) Office/Lab & the field equipment (the major equipment are: Server, desktop computer, printer, RFID security gate, scanner)	1	24,67,500/-	1	24,67,500/-	Completed. Office/Lab & the field equipment has been merged with Field research and made a single package as recommended by the TEC
(b) Furniture (Almirah, compute table)	2	1,05,500/-	2	1,05,500/-	Completed
(c) Purchase of storage device	3	16,000/-	3	16,000/-	Completed

2. Establishment/renovation facilities: RFID Security gate, Kiosk and entrance of Library have been refurbished using miscellaneous budget. No other facilities have been provisioned for upgradation/refurbishment.

3. Training/study tour/ seminar/workshop/conference organized:

Description	Remarks
Two Training/Workshop Planned during the project period	The training/workshops were planned to conduct after completion of all planned activities. These activities were dependent on the equipment purchase. Accordingly, procurement plan of all necessary equipment and

	<p>software were grouped under 3 packages. But, in the middle, the Tender Evaluation Committee of BARC recommended to revise the procurement plan to include the main activities and the associated equipment under a single Package. The Procurement plan had to revise and invited fresh tender with the new procurement plan.</p> <p>On receipt of the necessary equipment, the server and the applications were installed and customized based on the requirement for rendering improved information services. But, unfortunately, the Public IP connection could not be established for a long time because of the difficulties of bi-furcating a connection from the BARC Router/Switch. The delay in procuring the equipment and service related activities caused hindrance to set up and start the whole system in stipulated time and thus, it was not possible to conduct the planned training/workshops.</p>
--	--

C. Financial and physical progress

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/ unspent	Physical progress (%)	Reasons for deviation
A. Contractual staff salary	704881	704881	674366	30515	95.67	Delay in staff recruitment
B. Field research/lab expenses and supplies	720000	690800	606970	83830	87.86	GOB fund not released
C. Operating expenses	248224	223010	213324	9686	95.66	GOB fund not released
D. Vehicle hire and fuel, oil & maintenance	179031	134432	96468	37964	71.76	Could not complete visit to the NARS institutes for assessing their needs for time constraint
E. Training/workshop/seminar etc.	270000	226010	0	226010	0	**
F. Publications and printing	170000	123789	86329	37460	69.74	GOB fund not released
G. Miscellaneous	306924	234956	226433	8523	96.37	GOB fund not released
H. Capital expenses	1951500	1869429	1869429	0	100	GOB fund not released
Total	4550560	4207307	3773319	433988		

** The training/workshops were planned to conduct after completion of all planned activities. These activities were dependent on the equipment purchase. Accordingly, procurement plan of all necessary equipment and software were grouped under 3 packages. But, in the middle, the Tender Evaluation Committee of BARC recommended to revise the procurement plan to include the main activities and the associated equipment under a single Package. The Procurement plan had to revise and invited fresh tender with the new procurement plan.

On receipt of the necessary equipment, the server and the applications were installed and customized based on the requirement for rendering improved information services. But, unfortunately, the Public IP connection could not be

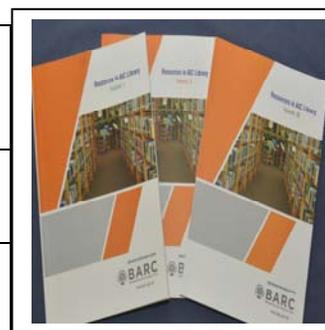
established for a long time because of the difficulties of bi-furcating a connection from the BARC Router/Switch. The delay in procuring the equipment and service related activities caused hindrance to set up and start the whole system in stipulated time and thus, it was not possible to conduct the planned training/workshops.

D. Achievement of Sub-project by objectives: (Tangible form)

Specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output(i.e. product obtained, visible, measurable)	Outcome(short term effect of the research)
Improve service by ensuring greater accessibility to the e-content of scholarly publications; Promote efficient delivery of information to researcher, policy-makers and other end users through Open Archives Initiative (OAI); and	1 Configure Server 2 Install and customize Software 3 Customize data entry module 4 Populated/uploaded records 5 Tagging (with chip) the important documents 6 Kiosk	1 An integrated Library and Information Management System (based on Koha software) 2 6272 records have been inserted in to the database 3 Tagged (with chip) 2000 important documents	An Integrated Library and Information Management System (LMIS)
Develop digital repository of important documents to serve the researchers, policy-makers and other stakeholders;	1 Install and customize Software 2 Digitized documents (where needed) and populated data 3 Uploaded Full-text digitized documents	1 An e-resource base (repository) with important full-text documents (based on DSpace software) 2 167 documents like Annual reports, BARC Newsletters, Proceedings of EC and GB meetings have been (digitized and) uploaded in the institutional repository	A National Full-text Agricultural Depository System
Publish research results online and make available in the web to facilitate research capability	1 Install and customize Software 2 Customize		An Online Journal Management System

E. Materials Development/Publication made under the Sub-project:

Publication	Number of publication		Remarks (e.g. paper title, name of journal, conference name, etc.)
	Under preparation	Completed and published	
Inventory: Resources in AIC Library	-	3	Resources in AIC Library in 3 volume (vol. 1, 2 &3)
Periodicals in AIC Library	-	1	Inventory of Periodicals available in AIC Library



F. Technology/Knowledge generation/Policy Support (as applied):

i. Generation of technology (Non-commodity)

1. An Integrated Library and Information Management System (LMIS)
2. A National Full-text Agricultural Depository System
3. An Online Journal Management System

ii. Generation of new knowledge that help in developing more technology in future

1. Knowledge of Library house-keeping operation would help in developing technologies on acquisition system, serial control and advanced library administration system. May be replicated in the libraries of NARS institutes.
2. Management of full-text documents would help in developing group based access control, allowing setting permissions down to the level of individual files. may be replicated in the libraries of NARS institutes.
3. On-line publishing process of research results (journal). An on-line journal publishing platform of agricultural journal published by NARS and others can be established.

iii. Technology transferred that help increased agricultural productivity and farmers' income

The system would help in using research and policy level information for designing future research programme in order to generate new production technology and thus help increasing production and farmers' income.

iv. Policy Support

Improved information delivery service by ensuring greater accessibility to the e-content of scholarly publications would assist the researcher and policy makers in better decision making

G. Information regarding Desk and Field Monitoring

Desk Monitoring: Planning and Evaluation Division of the BARC conducted desk/internal monitoring of the project and expressed their satisfaction on progress and attainments. The team

members comprised of Dr. Paresh Chandra Golder, Member Director, Dr. Md. Abdul Awal, Chief Scientific Officer, and Dr. KabirUddin Ahmed, Principal Scientific Officer of the division. They made valuable comments on various activities and expenditure incurred. During the implementation period their comments could be taken as guideline in improving the project performance.



Monitoring Team Visiting the Equipment and the Functioning of Project Activities

H.Lesson Learned

- i. More exercise and consultation were required to prepare Procurement Plan prior to finalization.
- ii. Proper and timely IT support should be ensured for smooth implementation of the activities.

I. Challenges

- i. Digitization of documents full text
- ii. Maintenance of the databases and ensuring of connectivity
- iii. Extensive training to the different stakeholders involved in On-line publishing process of research results (journal)

Signature of the Principal Investigator

Date

Seal

Counter signature of the Head of the organization/authorized representative

Date

Seal