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CABI South Asia

Opposite 1-A, Satellite Town, Data Gunj Bakhsh Road Rawalpindi.

Tele: 051-9290132, 9290332: Fax: 051-9290131

E-mail: cabisa@cabi.org



CABI Global Repository

**Situation Analysis of Conservation Management and
Dissemination of Institutional Knowledge-Pakistan**

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KNOWLEDGE FOR LIFE



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**Mahrukh Siraj**

Coordinator Knowledge and Innovation Systems

CABI South Asia
Opposite 1-A, Data Gunj Bakhsh Road
Satellite Town
Rawalpindi
Pakistan

Tel: +92(0) 51 9290332
Email: m.siraj@cabi.org



Executive Summary

In 2008 CABI started working globally on a proposal for digitally capturing and creating knowledge repository for the agricultural information created in the developing countries of the world. This is particularly useful for countries where the agriculture related knowledge is lost in the manual archives of their research institutions/universities. Also such a repository has far reaching implications in cases where the countries lose their archives due to disasters and conflict situations. Other than preserving the Agricultural knowledge produced in the developing countries, such a repository can have a practical impact by being a source of information for generating usable (i.e. re-written for a different audience) content for other stakeholders of the agricultural systems at the grassroots level such as the extension workers and the farmers.

There are only a few current initiatives locally on building repositories; one by Higher Education Commission of Pakistan (HEC) and the other by LMKR. HEC has built a repository; 'Pakistan Research Repository' where all the PhD theses of the students from Pakistani universities are being published. LMKR a private company providing Geo Technology and IT services to mainly oil/petroleum industry in Pakistan, has developed 'Pakistan Petroleum and Production Data Repository'. LMKR repository however is private.

National Agriculture Research Centre, Islamabad, Institute of Mycology and Plant Pathology, University of Punjab, University of Agriculture, Faisalabad, Ayub Agriculture Research Institute (ARRI), Faisalabad were visited. All the institutions expressed a very positive interest in the concept of a Global Agricultural Repository and were willing to contribute their publications to it.

The universities in Pakistan have benefited from Higher Education Commission's initiative of digitizing all the PhD theses of all the universities of Pakistan, and thus all these are available in the electronic form in the Pakistan Research Repository. The project reports, conference proceedings etc however may or may not be available in the electronic form.

In the research institutes there is a wealth of data in the form of reports and journals, conference proceedings etc. available, which needs to be archived in an organized and accessible manner. Currently, a lot of these reports are not easily available. These usually can be located but only after a few days effort.

Therefore, in the coming year, though the universities should be targeted, all the research institutions should definitely be covered.



Introduction

Agriculture is the mainstay of Pakistan's economy. A total of 22.94 million of the nation's 153.96 million acres are under tillage. Twenty-two percent of total output (GDP) and 44.8 percent of total employment are generated in agriculture. About 68% (11.04 million) of the country population lives in the rural area and directly or indirectly depends on the agriculture for their livelihood. Despite intensive farming practices, Pakistan still remains a net food importer. (1, 2)

Due to the important part that agriculture plays in the economy of Pakistan, there are several high quality research institutes in Pakistan. However the research produced by these institutes is either available through paid subscriptions to international journals or is embedded with in the institute. Repositories based on ICT provide an interesting option for preserving this information and also provide for easier availability and dissemination of knowledge. Availability of free tools like the Eprints server makes the task of building a repository even more possible.

Use of ICTs for development is well documented. In the last few years the GoP has shown an exceptional commitment to the improvement of the ICTs in the country. Due to the favourable policies and availability of cheap bandwidth the local IT scene has shown great improvement. Initial investigation has shown there are only a few current initiatives on building repositories; one by Higher Education Commission of Pakistan (HEC) and the other by LMKR. HEC has built a repository; 'Pakistan Research Repository' where all the PhD theses of the students from Pakistani universities will be published. LMKR a private company providing Geo Technology and IT services to mainly oil/petroleum industry in Pakistan, has developed 'Pakistan Petroleum and Production Data Repository'. LMKR repository however is private.

The co-existence two factors; continued need for information and knowledge in the agriculture sector and the availability of telecom infrastructure and allied services make the situation ripe to investigate the use of ICTs for knowledge transfer.

In 2008 CABI started working globally on a proposal for digitally capturing and creating knowledge repository for the agricultural information created in the developing countries of the world. This is particularly useful for countries where the agriculture related knowledge is lost in the manual archives of their research institutions/universities. Also such a repository has far reaching implications in cases where the countries lose their archives due to disasters and conflict situations. Other than preserving the Agricultural knowledge produced in the developing countries, such a repository can have a practical impact by being a source of information for generating usable (i.e. re-written for a different audience) content for other stakeholders of the agricultural systems at the grassroots level such as the extension workers and the farmers.

Repositories are seen as a fast route to making institutional and national knowledge visible to all in a cost-effective way by making content digitally accessible via the World Wide Web.



Institutions visited:

Following sections detail the various institutes that were visited in order to identify suitable institutions and collect data from these for the pilot repository being built by CABI.

National Agriculture Research Centre, Islamabad. Pakistan

NARC is the research station of Pakistan Agriculture Research Council (PARC). It was established in 1980 as a Centre for Excellence for Agricultural Research. It is located on south-eastern periphery of the Federal Capital and is spread over an area of 565 ha of which 465 is farm area. Food & Agriculture Organization's (FAO) Pakistan office is also located on NARC premises.

The Centre is headed by a Director General. The research activities are organized into seven institutes grouped into seven sectors, namely: Crop Sciences, Animal Sciences, Agricultural Biotechnology, Natural Resources, Farm Mechanization, Social Sciences.

Meeting held with:

Dr. Iftikhar Ahmed
Director General

Mrs. Shahnaz Zubari
Director Scientific Information unit

Dr Imdad Mirza
Director Planning and research monitoring

Mr. Tariq Hassan
Training and Transfer technology wing

Total scientific staff: 400 approximately.

Library resources:

- Large numbers of online journal subscriptions via Higher Education Commission (15 work stations)
- Bibliographic services available and are based on searching of in-house developed databases (Pakistan Agriculture, Medicinal Plants of Pakistan, Plant Genetic Resources, Narc Library Catalog, Union Database of Journals and Social Sciences). International database (CAB, Agora etc) available on CDs.
- Internet, email services are available. However these are based on dial-up connections and therefore erratic.
- Approximately 15,000 NARC publication in library
- Connected with union data base of 36 national libraries and providing services for providing information on journal name, volume and issue number and its location (i.e. in which library is it available)

Collections:

- A fairly good collection of new and old books, theses, reports, etc.
- Research reports
- Subscription of 30 printed national and international research journal

Connectivity and computer resources:

- Centre is partially networked (run from the central library). A fibre-optic loop is being laid at the premises and is expected to complete by the end of the year 2008.



- There is no 'central' LAN, and the various buildings have their own LANs and their own Internet links. However once the fibre-optic loop is laid the next step expected in the next year is the establishment of a central cabling and LAN system.
- There is a computer room in the library which is connected to the Internet. The Scientists use it for research purposes.
- Currently the Internet connection is via Dial up.

Digitization:

- Already digitizing project reports
- Maintaining Pakistan agriculture research data base
- Working as nation liaison office for Agris (FAO)

Publications:

- Research reports from scientists
- Pakistan Journal of Agricultural Research (Quarterly)
- Published more than 125,000 copies of different publications over the past 15 years.
- Publishing popular agriculture research articles in news papers
- Scientific and functional photography
- Consultation and advisory services
- Proceedings of Research Dissemination conferences

Implications for Repository:

- The Director General and the Director Information and other Directors very supportive.
- National Agriculture research Centre, Islamabad. Pakistan is key institution and though all the recent reports are in electronic form the old reports need to be digitized. Also there is a need for a central repository as at the moment there is no central place where all the reports are available to all. The best bet at the moment is the Project Evaluation and Monitoring department of the PARC, where all the project reports are submitted.
- Criteria for selection of material needed
- Collating material may require travel to institutions
- Scanner and PC would be needed, unless material is shipped out for scanning. The scanning can be easily outsourced locally.

Institute of Mycology and Plant Pathology, University of Punjab, Pakistan

The Department of Mycology and Plant Pathology, University of Punjab was established with the aim of reinforcing the corps of trained Mycologists/Plant Pathologists whose presence is necessary to ensure crop protection, improved crop health and agriculture based industrial development.

Its research goal is to understand microbes, plants and their interactions in the environment in order to provide effective approach to control diseases and to maximize the beneficial interaction. First Fungal Culture Bank of Pakistan in association with the Institute is working since June 2003. Work in progress is being made to build the inventory of fungi and relevant literature needed to solve identification problems.

The Institute offers a B.Sc. (Hons.) program, M.Sc. (Hons.) program and a Ph.D. program. The first batch of regular Ph.D. students has completed course work and is going to start the research projects. (<http://www.pu.edu.pk/departments/default.asp?deptid=53>)

Meeting held with:

Dr. Rukhsana Bajwa
Director

Dr Ghazala
Associate professor

Total scientific staff 25



Total number of students: 600

Maintaining first fungal culture bank of Pakistan and Herbal heritage garden

Library resources:

- Large numbers of online journal subscriptions via Higher Education Commission (32 work stations)
- Library has 65 seat capacity
- Details of the holding are listed on the library's catalogue
- During the present fiscal year department has upgraded library by purchasing most recent books worth Rs. 6.5M sponsored through PC1 by HEC and special grant from the Vice chancellor
- Internet, email services available via the IT department of Punjab University
- 5000 books in library

Collections:

- Collection and fresh arrival of books, theses, reports, etc.
- Research reports
- Subscription of two international and eight national printed research journals

Connectivity and computer resources:

- Institute is completely networked (run from central library)
- Computer room is separate from library, Scientists and students use for research purposes free of cost
- Broad band connection of internet

Digitization:

- Already digitizing project reports, old publications and books

Publications:

- Faculty members are actively involved in various research projects and publish their research work in various reputed international and national journals
- Research reports from scientists and students
- Publish research journal MYCOPATH (ISSN 1729-5521) biannually
- Dedicated photographic facility for scientific purposes
- Consultation and advisory services
- Hold conferences regularly and publishing proceedings of these conferences
- Publishes research bulletin and myconews regularly

Implications for Repository:

- Institute of Mycology and Plant Pathology is a newly constructed and modern research institute whose work is mostly in electronic form, some old work is being digitized.
- The director is very positive towards the activity and interested to be part of the project
- They are willing to donate the research reports, thesis and other print material in digital form

University of Agriculture, Faisalabad, Pakistan

University of Agriculture, Faisalabad, is the oldest Agricultural university of Pakistan. It was established in the pre-partition era and is over 100 years old. The university has four institutes; Institute of Horticultural Sciences, National Institute of Food Sciences and Technology, Institute of soil and environmental sciences and the Institute of Animal Nutrition and feed Technology. It has about 32 institutions (Colleges, Training institutes etc) associated with it.



Meeting held with:

Dr. Iftikhar Ahmed
Dean Agriculture Faculty

Dr. Abdul Ghafoor
Director Research

Dr. Nisar Ahmed
Librarian

Library resources:

- Library has 300 seat capacity
- Large numbers of online journal subscriptions (Science Direct, American Association Of Physics Teachers, American Chemical Society, Blackwell Synergy, Mary Ann Liebert, Palgrave Macmillan, Royal Society Of Chemistry, Springerlink, Free Medical Journals and ACM Portal) via Higher Education Commission (50 work stations)
- Library is connected with union data base of 36 libraries throughout Pakistan and providing services for journals, volume and issue number and updating scientific information
- Online public access catalogue available
- CAB abstracts (upto 2000), AGRIS on CD

Collections:

- 150,000 books are available in library
- 18,644 manuscripts
- 37,000 volumes of national and international journals
- Research reports
- Collection of books and research reports
- Subscription of 35 printed international research journals which are not available through HEC subscription

Connectivity and computer resources:

- Institute is partially networked (run from central library) and expected to be connected completely via fibre optic cable till end of December 2008
- Computer room in library, Scientists use for research purposes
- Dial up Internet connection

Digitization:

- On the eve of century celebrations university has published bibliography of scientific publication and a report on "100 year of excellence in education and research" in print and CD
- Updating Pakistan agriculture research data base
- Agris (FAO) annually collect title and abstract of all M. Sc thesis
- Depository for world bank publications

Publications:

- Ph.D thesis and M. Sc thesis
- Research reports from scientists
- 10 national research journals
- Relevant departments publish helping information for the farmers in national language
- Consultation and advisory services
- Proceedings of research conferences

Implications for Repository:

- University of Agriculture Faisalabad is main agriculture university involved in research. Most of the research work is in form of student thesis.
- The library administration wants their 19,000 M.Sc/M.Phil level to be digitized
- Criteria for selection of material needed
- Collating material may require travel to institutions



Ayub Agriculture Research Institute (ARRI), Faisalabad

Ayub Agricultural Research Institute named after one of the former presidents of Pakistan is one of the premier agricultural research Institutes. Its areas of research include plant breeding and biotechnology.

Meeting held with:

Dr. Abdur Rasheed

Director General

Dr. Abdul Hameed

Dypt. Director Research

Total scientific staff 727

Library resources:

- Library has 600 seat capacity
- Library is connected with union data base of 36 libraries throughout Pakistan and providing services for journals, volume and issue number
- Internet service is available via separate dial-up connections in separate divisions
- 6500 books are available in library
- CAB abstracts (2006), AGRIS and AGRICOLA (1997) on CD

Collections:

- Research reports
- Collection of books
- Subscription of 10 printed national research journals

Connectivity and computer resources:

- No networking in the institute
- Computer lab (15 work stations) in library under construction for research purposes
- DSL Internet connection in library (100MB)

Digitization:

- No plans for digitization of research reports
- Working as depositary lab for international rice research institute (IRRI)

Publications:

- Quarterly and annual research reports
- Project reports
- Publishing Journal of Agriculture Research quarterly.
- Publishing Agriculture Research Courier (newsletter) monthly
- Consultation and advisory services
- Six daily radio programs telecasted from five radio stations in Punjab province
- Proceedings of scientific conferences

Implications for Repository:

- Dr. Abdur Rasheed very positive and supportive of the idea.
- Ayub Agriculture Research Centre, Faisalabad is key institution and will be good candidate for material for the repository.
- Criteria for selection of material needed
- Collating material may require travel to institutions
- Scanner and PC would be needed, unless material is shipped out for scanning



Data Collected for the Pilot:

The data collected from the universities and the research institutes has been placed in the "GR" on CABI's FTP site. A list of material received as hardcopies has already been sent to the PM for the Global Repositories project.

Conclusion:

The initial visits have confirmed that there is a large amount of data that is available locally and can be made part of the repository. In the case of Universities the situation is a little better as the HEC (Higher Education Commission) has over the last few years taken lot initiatives in improving the facilities at the universities; access to research. Through one of its initiatives it has already built an electronic repository where all the PhD theses are available and the MS and MPhil theses are also being digitized. Therefore the universities' theses are available in the electronic form.

However, the research institutes have not benefited from any such national level programme. There is a wealth of data in the form of reports and journals, conference proceedings etc. available at these institutes that need to be archived in an organized and accessible manner. Currently, a lot of these reports are not easily available. These usually can be located but only after a few days effort.

Therefore, next year though the universities should be targeted but all the research institutes should definitely be covered.



contact CABI

europa

CABI Head Office
Nosworthy Way, Wallingford, Oxfordshire, OX10 8DE, UK
T: +44 (0) 1491 832111, E: corporate@cabi.org

CABI Europe - UK
Bakeham Lane, Egham, Surrey, TW20 9TY, UK
T: +44 (0) 1491 829080

CABI Europe - Switzerland
Rue des Grillons 1, CH-2800 Delémont, Switzerland
T: +41 (0) 32 4214870

asia

CABI South Asia
Opposite 1-A, Data Gunj Baksh Road, Satellite Town, PO Box 8, Rawalpindi-Pakistan
T: +92 (0) 51 9290132

CABI Southeast and East Asia
PO Box 210, 43400 UPM Serdang, Selangor, Malaysia
T: +60 (0) 3 89432921

CABI South Asia - India
2nd Floor, CG Block, NASC Complex, DP Shastri Marg, Opp. Todapur Village, PUSA,
New Delhi - 110012, India
T: +91 (0) 11 25841906

CABI Southeast and East Asia - China
C/o CAAS-CABI Project Office
C/o Internal Post Box 56, Chinese Academy of Agricultural Sciences,
12 Zhongguancun Nandajie, Beijing 100081, China
T: +86 (0) 10 62112118

africa

CABI Africa
ICRAF Complex, United Nations Avenue, Gigiri, PO Box 633-00621, Nairobi, Kenya
T: +254 (0) 20 7224450/62

americas

CABI Caribbean & Latin America
Gordon Street, Curepe, Trinidad and Tobago
T: +1 868 6457628

CABI North America
875 Massachusetts Avenue, 7th Floor, Cambridge, MA 02139, USA
T: +1 617 3954051

www.cabi.org

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