

Strengthening of Digital Library and Information Management in Agriculture (India)

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Abstract

In the present age of globalization, technology is changing at a very fast pace. Capacity building in ICAR Institutions and SAUs libraries is the need of the hour for sharing knowledge in cost effective manner. These libraries needs update infrastructure to face the technological challenges. Indian Council of Agricultural Research (ICAR) is playing active role in knowledge sharing among agricultural user community. ICAR is supporting the libraries through its innovative projects like National Agricultural Innovative Project (NAIP). The institutions under the ICAR and State Agricultural Universities and their constituent libraries are playing a vital role in providing the required information to their users for education, research and extension. The paper discussed different knowledge sharing initiatives i.e. KrishiKosh, KrishiPrabha, CeRA and AgriCat implemented by the ICAR.

INTRODUCTION

Indian Council of Agricultural Research (ICAR) is an autonomous apex body responsible for organizing, conducting and managing research and education in agriculture and allied sciences in India. The ICAR also acts as a repository of knowledge and provide information on agriculture, horticulture, resource management, animal sciences, agricultural engineering, fisheries, agricultural extension and agricultural education.

Digital technologies and online information resources have brought fundamental changes in how research is done, and also about what researchers expect from library and information services. The services that librarians and information professionals provide have also changed fundamentally over the past decade, and they now offer much more in providing leadership that

continue to create new opportunities, new challenges and new expectations.

Union catalogue and digital libraries are the new paradigms of modern library. The National Agenda for Governance, which is the Government's policy blueprint, has taken due note of the ICT Revolution that is sweeping across the globe. Project Gutenberg, Google Book Search, Windows Live Search Books, Internet Archive, Cornell University, The Library of Congress World Digital Library, The Digital Library at the University of Michigan, and The Million Book Project completed in partnership with India, China and USA are considered leaders in the field of digital archive creation and management. Many Indian libraries have taken up the challenge of modernization to develop the machine readable catalogue (MARC), machine readable full text documents to provide greater accessibility to full text databases of different nature; changing the focus of public libraries from providing library services to the fulfilling the long cherished goal of 'right to information'. The National Knowledge Commission has recommended an Open Access mandate for public funded research.

It has been observed that in the past few years, subscriptions to journals by libraries of ICAR Institutes/SAUs have been on the decline mainly because of the financial crunch. Also, there is an increase in the cost of reputed relevant journals and books, due to which some of the research institutions in NARS are deprived of such journals and books. At the same time, the research/ educational activities must always keep pace with the international competition for which all important journals and books should be made available to researchers / teachers in the NARS. Maintaining a traditional form of library with hardcopies is becoming labour-intesive and adds to the cost. Each and every library cannot be sustained with adequate funds. NARS must take advantages of sweeping changes taking place globally.

Duplication of record creation can be avoided by pooling the efforts through common electronic protocols. **Union catalogs** are useful to librarians, as they assist in locating and requesting materials from other libraries through interlibrary loan service. Indian National

Agricultural Research System (NARS) has a very large collection of institutional repositories in agriculture and allied sciences, in different libraries of ICAR institutes and State Agricultural Universities spread all over the country. Digitization of these valuable archives would allow online access to researchers, teachers and students to which they would not otherwise have access.

Keeping the above background in view, the project ‘**Strengthening of Digital Library and Information Management under NARS (e-Granth)**’ has been approved by the National Agricultural Innovation Project (NAIP)’ which is a World Bank funded initiative under ICAR. The project has been approved as a pilot to be implemented by the consortium of following 12 partner institutions comprising of libraries of ICAR, 4 Deemed Universities of ICAR and 7 State Agricultural Universities:

- ICAR HQ, New Delhi
- IARI, New Delhi
- IVRI, Izatnagar, UP
- NDRI, Karnal, Haryana
- CIFE, Mumbai
- ANGRAU, Hyderabad, AP
- CCSHAU, Hisar, Haryana
- CSKHPV, Palampur, HP
- GBPUAT, Pantnagar, Uttarakhand
- MPKV, Rahuri, Maharashtra
- TANUVAS, Chennai
- UAS, Bengaluru

The project has following objectives

1. To create Online Public Access Catalog (OPAC) under “Indian Agricultural Research Group Catalogue” of all 12 partner library resources with Online Computer Library Center (OCLC) partnership.
2. To digitize important institutional repositories (digitization limited to IARI, IVRI and UAS, ANGRAU) including rare books and old journals etc. and make them open access under NARS.
3. To strengthen capacity building for library and information management system (open to all libraries of NARS).
4. Implementation of Koha (Library Management Software) in Partner's Libraries.

Objective 1 (Union Catalogue)

Under this objective, AgriCat, the union catalogue of 12 agricultural libraries, is Developed in collaboration with Online Computer Library Center, Inc. (OCLC), Dublin, Ohio, USA. AgriCat is useful to all library users as well as librarians. AgriCat helps in locating and sharing materials among group of libraries. Duplication of effort in record creation (cataloguing) is avoided by pooling the efforts through common electronic protocols. Indian National Agricultural Research System (NARS) has a very large collection of printed resources in

agriculture and allied sciences, spread all over the country in different libraries of ICAR institutes and State Agricultural Universities. AgriCat being a common union catalogue of these valuable archives allows sharing and online access to researchers, teachers and students and other stakeholders to which they would not otherwise have access. AgriCat has been developed as subset of WorldCat using ‘connexion’ middleware tool for online cataloguing following international standards and batch uploading of bulk data for automatic processing.

Second version of AgriCat has been developed indigenously based on Koha by integrating catalog data of all partner libraries and has similar or better features than AgriCat developed as subset of WorldCat. AgriCat-2.0 is fully integrated with Koha local library management system, thus avoiding need for using middleware to upload record and then importing it to local library management system, saving the time and effort. These initiatives have very high potential of bringing all library and knowledge resources of NARS on unified digital platform developed under eGranth, thus making easy access to institutional knowledge leading to improved quality of research and academics in NARS. AgriCat-2.0 may be used for resource sharing by article exchange and inter library loans, acquisition planning to economize the shrinking funds. Practically, AgriCat virtualizes the complete experience of ‘Physically visiting the library, searching through the catalog, going to stacks/racks, taking out the desired book and browsing through it, before borrowing it. Sitting at your desk or in comfort of your home, you can do this by few clicks, using AgriCat-2.0.

Currently following is the status of Library Records under AgriCat (As on 10th July 2014):

Records in AgriCat 2.0:

№	University/Institute	Records in AgriCat
1	ANGRAU, Hyderabad	28836
2	CCSHAU, Hisar	86639
3	CIFE, Mumbai	14720
4	DKMA, New Delhi	9354
5	GBPUAT, Pantnagar	73564
6	HPKV, Palampur	32119
7	IARI, New Delhi	63612
8	IVRI, Bareilly	24604
9	MPKV, Rahuri	33678
10	NDRI, Karnal	48706
11	TANUVAS, Chennai	35545
12	UAS, Bengaluru	42967
Grand Total		494344

AgriCat is available at URL
<http://www.egranth.ac.in/AgriCat.html> and
<http://agricat.worldcat.org>.



Objective 2 (Institutional Repository)

KrishiKosh, a digital repository is the output under this objective. It is the repository of accumulated knowledge in agriculture and allied sciences, having collection of old and valuable books, old journals, theses, research articles, popular articles, monographs, catalogues, conference proceedings, success stories, case studies, annual reports, newsletters, pamphlets, brochures, bulletins, summary of the completed projects, speeches and other grey literatures spread all over the country in different libraries of ICAR Research Institutions and State Agricultural Universities. The KrishiKosh acts as digital platform to preserve institution's intellectual assets and help in providing and managing open access to institution's intellectual assets.

To accomplish this objective, the list of documents to be digitized is asked from all the ICAR/SAUs institutes. Also, a committee was formed to approve the list of material. The list was then checked for duplicity at the Lead Centre and circulated to the digitization centres (IARI-New Delhi, ANGRAU-Hyderabad, IVRI-Bareilly and UAS-Bengaluru).

At digitization centre, the digitization process includes, scanning, cleaning, cropping, PDF-A conversion and OCRing. The output file is then uploaded to the Integrated Content Management System (ICMS). So far 51,180 documents are uploaded in the KrishiKosh.

FUNCTIONALITIES OF KRISHIKOSH

Enhanced Search Ability

All holdings are grouped in communities and collections based on institutions, subjects, themes or other criteria making large amount of information easily available on any subject matter for teaching, research and development. Any researcher looking for content on any subject or themes can have a unified access to content on all media types (manuscripts, photographs, audio-video etc.) thereby making the search much easier and faster.

Agrotags

For making searches more meaningful and intelligent, online Agrotagger service development under Agropedia sub-project at IIT, Kanpur has been integrated with KrishiKosh repository to generate agrotags which is a carefully selected subset of Agrovac

as developed by Food and Agriculture Organization (FAO).

Preservation

Preservation of all the rare documents in electronic form is an important aspect of this project. Once the documents are scanned and digitized, preservation of the originals is ensured for a much longer period as the need to handle the physical documents is eliminated or minimized to a great extent because the same documents are made available through the digital repository.

Content Selection

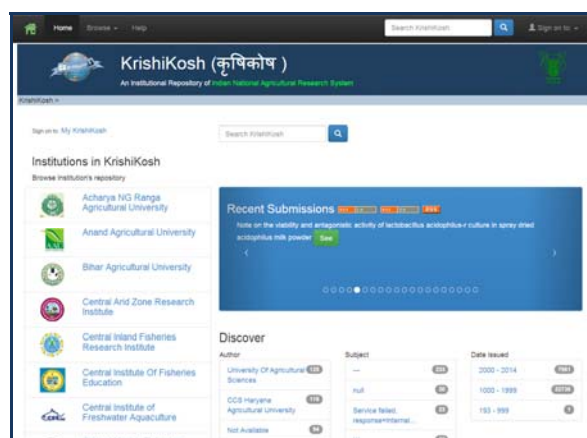
High power committees of subject experts identified the content of intellectual and academic value to be included in the repository at four digitization centers. Other institutions identify the content in consultation with subject experts approved by the Directors / Vice-Chancellors. The identified content is then harmonized centrally to avoid duplication.

ACCESS RIGHTS

All of NARS's holdings has been classified under the following three access categories:

- **Public Access** : Any Record that can be made available to public at large shall fall under this category
- **Privileged Access**: Records classified under this category shall be accessible to only to those individuals or organizations that have a privileged status with NARS (such as other national / state archives / research and academic institutes / eminent researchers etc.). Others (the world at large) would have to seek prior permission / approval from IARI to access any Record classified as Privileged Access.
- **Prohibited Access**: Records which are accessible ONLY to NARS senior officials, due to their confidential and sensitive nature as defined by statutory rules and regulation.

The Krishikosh is available at <http://krishikosh.egranth.ac.in>



Objective 3 (Capacity Building)

Capacity building is essential part of any new technology based initiative. Therefore, one of the objectives of eGranth project was to build capacity amongst librarians of NARS, so that they can understand, adopt and manage any latest technology in the field of library management, related services and knowledge management technologies.

There were about 72 Trainings/Workshops/National Workshops and two National Conferences conducted during the project period. In addition, online discussion group, webinar, email communications were extensively used to bring coherence amongst the group working on this project. This provided opportunities for collaborative working and problem solving capacity amongst the librarians under NARS. The project eGranth, first time provided such an opportunity to librarians of NARS to personally know each other, meet and discuss issues of common interest. This has generated good capacity in the NARS librarians to adopt with confidence, any technology mediated library and knowledge management systems. Conferences and workshops invited partners from local ICAR/SAUs and other libraries and was appreciated by all as is evident by large number of news clippings. The project has specially generated keen interest in adopting Koha – Integrated Library Management Software amongst libraries of not only NARS but also other libraries of the country. National Conference of Agricultural Libraries and User Community (NCALUC), started by the eGranth project has become annual feature organized by the AALDI – a professional society of agricultural librarians.

Objective 4 (KOHA Implementation)

To strengthen the digital library initiatives, more advanced Library Management Software, compliant to open international standards is necessary for easy data portability and data sharing. Koha is open source software which has been identified for implementation in the NARS libraries with expert support, intensive trainings. In-house capacity building has been part of the strategy. All further advanced library automation system like RFID for automated library services can be built only on robust Library Management System compliant to international standards for data compatibility and portability. In NARS 38 libraries have already adopted Koha and more are willing to join. Koha is a full featured Integrated Library System (ILS), downloadable free under GNU General Public License, maintained by a dedicated team of software providers and library technology professionals from around the globe. Koha has robust Cataloging, Circulation, Patrons, Search, Serials control, Acquisition, Reports and Administration modules along with utility Tools and OPAC. By adopting it, the customer becomes 'joint stake holder' in the product.

To achieve the objective all the libraries were asked to export their data in MARC 21 format or in excel sheet. The data is then processed library wise and imported in Koha.

KrishiPrabha

Krishi Prabha is a full text database of Indian Agricultural Doctoral Dissertations submitted by research scholars to the 45 State Agricultural Universities and Deemed Agricultural Universities from 01-01-2000 to 31-12-2007. This database, listing about 10,500 Dissertations, has been created by Nehru Library, Ch. Charan Singh Haryana Agricultural University, Hisar with financial support from Indian Council of Agricultural Research, New Delhi under its National Agricultural Innovation Project.

There were 45 Ph.D. awarding Agricultural Universities/Deemed Agricultural Universities/ICAR Institutes in India. The doctoral dissertations, submitted by the scholars for award of doctoral degrees, are one of the very important and valuable original sources of information. A copy each of these dissertations is placed in the libraries of the respective Universities/Institutes.

OBJECTIVES OF KRISHIPRABHA

- To develop, organize and sustain knowledge base of Indian Agricultural Doctoral Dissertations in digital form and make it accessible online.
- To develop a standard format for submission of e-theses by the SAUs/DAUs (Data Centres) to the Lead Centre.
- To upgrade skills of human resources of SAUs/DAUs/ICAR Institutes.

Access to Krishiprabha is available at :<http://202.141.47.8:8080/equestthesis/>



Consortium for e-Resources in Agriculture (CeRA)

CeRA is the second largest Consortium in India, having basic, crops, dairy and animal and fishery sciences. The URL of this web based application is www.cera.jccc.in. All the consortium members are provided the accessibility through respective IP address (es). Based on negotiation and discussion, subscription for more than 2800 journals from Annual Review, Indian Journals, Springer Verlag, Elsevier, Taylor and Francis and open access journals were made accessible

online on 24X7 basis to researchers in 131 institutions in NARS through CeRA platform.

OBJECTIVES OF CeRA

1. To develop existing R & D information resource base of ICAR Institutions / Universities, etc., comparable to world leading institutions / organizations.

2. To subscribe e-journals and create e-access culture among scientists / teachers in ICAR Institutes / Agricultural Universities.

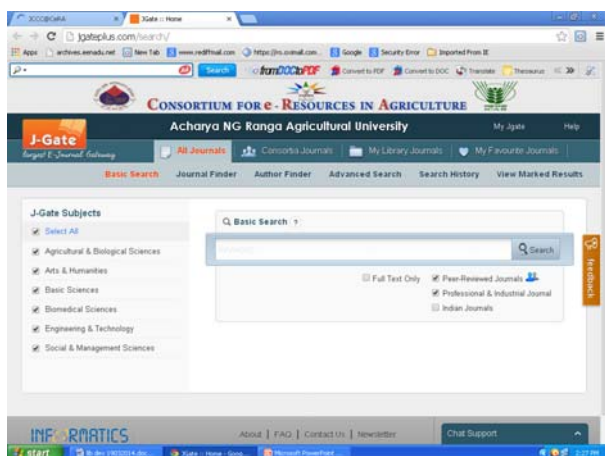
3. To study the impact of CeRA on the level of research publications measured through SCI & NAAS ID.

RESOURCES AVAILABLE IN CERA

- American Association for the Advancement of Science (2 Journals)
- Annual Reviews (25 Journals)
- American Society of Microbiology (13 Journals)
- BioOne (167 Journals)
- CSIRO (Australia) (8 Journals)
- Springer (70 Journals)
- Informatics (416 Journals)
- Elsevier (420 Journals)
- Indian Journals (216 Journals)
- International Society for Horticultural Science (1 Journal)
- IWA Publishing (12 Journals)
- Nature (2 Journals)
- American Society of Agronomy (6 Journals)
- Oxford University Press (30 Journals)
- Taylor & Francis (1215 Journals)
- Metadata from 625 other publishers

The functionalities like Basic Search, Journal Finder, Author Finder, Advanced Search, Search Results will be common for all the three layers of searching. According to the kind of journals he wants to restrict his searches to (Consortia, Library or Favourite), the researcher can toggle between the three layers while using these functionalities.

Access to CeRA is available at: www.jgate.com/



IMPACT

The scientists, teachers and students of NARS are very comfortable for accessing information through different portals designed for information retrieval. During the last five years usage of agricultural information online has been increased tremendously.

CONCLUSION

The agricultural sector requires a well-organized library and information centres. Information and Communication Technology provide linkages, enhance information access, and improve the usage of quality of agricultural information. The libraries under NARS have always been in the forefront in providing latest and up-to date information on time to the agriculture user community. The World Wide Web has removed the barriers and boundaries of knowledge society that are usually restricted to physical library buildings within limited working hours. In other words, users are able to access any information they want, from anywhere in the world, and at any time over the Internet.

The Institutional Repository 'KrishiKosh' – a collaborative project under the National Agricultural Innovation Project (NAIP) is an important step towards providing online access to the Indian agricultural information to researchers and scientists all over the world.

The support of Indian Council of Agricultural Research (ICAR) in information and communication partnership among the National and State level digital library management projects for providing information to the user desktops.

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