Role of Libraries in Agricultural Research in Indian Context: A Review of Related Agricultural Resources' Websites

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Abstract

Agriculture is India's largest livelihood provider, and traditional knowledge is passed down through generations. Libraries are crucial in supporting agricultural research and education, providing open access to resources. Information centres like CeRA, AGRIS, ICAR, and FAO Institutional Repository of Agriculture – KrishiKosh promote the use of agricultural resources. The study reviews articles and websites related to agricultural resources and research, examining their structure, audience, collection, search techniques, and use.

Keywords
LIS in Agricultural Research; KrishiKosh;, Agricultural resources; Agricultural websites; Agricultural Consortium; CeRA, ICAR, AGRIS,
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1. Introduction

From the ancient age, the library's existence has been proven in many texts, though it had a different identity. But the aim of the library remains the same as to collect, organise, store and disseminate the required information to the right users. India is considered the mother of traditional knowledge in each discipline, like Ayurveda, yoga, food culture, literature and agriculture. Large part of the population depends on agriculture in India, mainly on agricultural production. The production, techniques and needs of agricultural demands is increasing with the increase of population. Also, the demand of agricultural information is increasing.

Agricultural research is needed to provide safety for people's food and nutrients. Innovative science-based agricultural technologies are supporting the sustainability of resources. The development in agricultural research expects the documentation for future use. This agricultural institution must also educate, train and promote research activities to enhance agricultural knowledge. The agricultural institution provides policy-making data to both government and policy makers. For this purpose, they are developing R&D, and the libraries are managing the information for the growth of agricultural research.

To fill the gap of information needs and users, many institutions, organisations and universities have evolved. Libraries and Information Centers are also trying to process agricultural information with the help of ICT. Through institutional repositories, databases, websites, libraries and information centres manage agricultural information.

2. Problem Statement

This paper explains the role of libraries in providing information related to agriculture. And the aim of this paper is to identify the different agricultural resources and to define their nature for better understanding of its collection, use and functions.

This study's main objectives are to:

a) Understand the contribution of libraries in providing information related to agriculture to the users.
b) Identify the type of information resources available for agricultural information.
c) Analyze the different type of information resource's collection, function and access.

3. Research Methodology –

To achieve the above-mentioned objectives the researcher reviews some related literature and analyzes the websites of respected agricultural resources to sum up in the findings. The sample for this study is mainly the following websites –

- ✓ Indian Council of Agricultural Research (ICAR)
- ✓ Consortium for e-Resources in Agriculture (CeRA)
- ✓ Krishikosh
- ✓ The International System for Agricultural Science and Technology (AGRIS)
- ✓ AGROVOC

4. Role of Libraries in Agricultural Research-

This study aims to know the role of agricultural libraries in the digital network and to study the support of ICAR towards these agricultural libraries. A vast literature reviews have been done on the facets Historical perspective of agricultural education and libraries, user needs and survey on services provided by the libraries, Sources of agricultural libraries, growth and collection of agricultural libraries, reference services provided by agricultural libraries, agricultural libraries management. By explaining role of agricultural libraries, it says these libraries put focus more on increasing the resources. This study collects data follows personal interview, discussions, observation methods. This research also included the library records for services and operation. All the data are collected from the teachers, students and library staff of KAU. The major finding says users need to be trained for easy retrieval of required resources and the library staff are too trained on content development, knowledge management, digital document delivery etc. (Mourya & Modak, 2018).

From tracing agricultural libraries in India to defining the Digital India program's objective, this paper aims to show the transformation of Agricultural Libraries in digital India. It says agricultural libraries supports the user community with resources for research to fulfil the parent organization's objectives. Through a SWAT analysis it identifies the strength of the agricultural library is the trust of user in satisfying the need of information, weakness is the management, funding and service provided by the library, opportunity is the digitization and information technology skills, and threats are free, cheap, ubiquitous online content with shrinking budget. It highlights some initiation of agricultural libraries towards digital India like Krishikosh (IR), KrishiPrabha (Dissertation Repository), CeRA (Consortium), IDEAL (Union Catalogue for Agriculture) etc. This paper suggests the ICAR to lead in providing financial support to implement technological trends and to train the agricultural librarian in digital skill (Krishna, 2022).

4.1. Indian Council of Agricultural Research (ICAR):

The authors in the article titled "Role of Library Science in Agriculture College: A Case Study" discuss the key roles of agricultural libraries and their user's information-seeking habits. This study's main objective is to know the role of agricultural libraries in the networked digital era and to study the support of ICAR for the strengthening and development of agricultural libraries. The main roles of agricultural college libraries as mentioned in the article are providing information services to various users like farmers, business organizations, students, and researchers to support their educational and research needs. This paper also highlighted the key role of the Indian Council of Agricultural Research. It is the network library of agricultural libraries across India to support library development like the Agricultural Research Information System to enhance information management and access to agricultural research (R et al., 2022).

The Indian Council of Agricultural Research (ICAR) is the main body that manages, and coordinates research and education related to agriculture in India. This is an autonomous body operated under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare. It serves various agricultural disciplines such as horticulture, veterinary science, and agricultural engineering. The source says 4 deemed universities, 66 institutions, 15 national research centers, 6 national bureaux, 12 project directories, 11 agricultural technology application research institutes. This council is the apex body for coordinating, guiding, and managing horticulture, fisheries, and animal science research in the country.

This apex body published annual reports by the name of ICAR Annual Report from 2020-21, before that it was published as DARE-ICAR Annual Report. It publishes two monthly journals for agricultural and animal science in the English language. ICAR magazines cover horticulture and Indian farming in English, Kheti, and Phal Phool in Hindi language. Its collection also has some digital information products in CD that contain Indigenous Technical knowledge, ICAR Technologies, etc. It has archived abstracting

journals since 2007. On its website, it has a publication catalog that includes new arrivals with publications and authors' names. Along with it provides reports, newsletters, and links to open-access journals of ICAR. It has listed its Krishi Vigyan Kendras zone-wise which are distributed in different states and union territories of our country. All the research projects with their additional link are mentioned on its website under AICRPs & Network Projects. It invites proposals to write textbooks for UG/PG in different subjects of agriculture. It does not require any login to access its website.

4.2. Consortium for e-Resources in Agriculture (CeRA):

To leverage the information needs of users, a Library consortium was introduced. Consortiums are facilitated by e-resources for easy sharing and cutting monetary needs. The e-resources in Consortium help to provide a wide range of access to reputed scientific journals, e-textbooks and databases. Astronomical Research Sharing Forum and Astrophysics (FORSA), one of the oldest library consortia which are a national body for physics established in 1982. INFLIBNET, INDEST, and ERMED are some examples of library consortiums. The Consortium for e-Resources in Agriculture (CeRA) is an electronic consortium of agricultural libraries that works under the National Agronomist Researchers System (NARS) to facilitate access to reputed scientific journals related to agriculture and related fields. CeRA subscribes to various renowned publishers like Elsevier, Oxford University Press, and SpringerNature. It provides research support to the institutions under ICAR and state agricultural Universities for improving agricultural productivity. It provides Document Delivery Requests to access of e-resources via EZ-Proxy's remote access facility (Kumar, 2023).

It was established in 2007 to facilitate 24x7 online access to selected journals in agricultural and allied sciences to all researchers, teachers and students, policy planners, administrators, and extension specialists in NARS through IP authentication. Its objectives are to upscale R&D of ICAR and State Agricultural Universities and to provide online journals and e-resources to scientists, faculties, and researchers.

The author of this research finds the awareness and understanding of CeRA among the researchers and PG students at the KRC College of Horticulture, Arabhavi (UHS, Bagalkot) through a structured questionnaire. In the analysis, the study found that 100% of the respondents are aware of CRRA as the platform is predominantly used for research work. However, the main issues faced by the researchers are finding relevant information due to restricted access (Mr & Dr, 2023).

4.3. Krishikosh

The Indian Agricultural Research Institute (IARI), and NARES-designated university, hosts the Krishikosh at its data centre. It is an institutional repository maintained by ICAR. Its objectives are to disseminate knowledge, preserve agricultural literature, and support agricultural research. It brings together the resources of various ICAR institutions, agricultural universities, and other agricultural institutions to acquire agricultural knowledge in one digital space. Its search tool is filtered with thesis types, types of resources, authors, dates, subject cover, and rating counts. Its collection comprises of thesis, journals, articles reports, institutional publications, book chapters, technical reports, books, and reprints. The resources that are available in this IR have preserved the copyright content to the respected organization from where the collections are sourced. The item under this repository can only be viewed but not downloadable as mentioned on the website of the KrishiKosh. The different file types can be uploaded on this. The Krishikosh has been designed by using open-source software DSpace and each institution in NARES has been configured as a community having its collections.

The major findings of the study on the awareness and use of Krishikosh among foreign scholars shows only 44.19% of the respondents are aware of this IR and major of them are research scholars, Mainly the respondents are accessing the thesis and dissertations. The satisfaction level with the IR is less than 50% (Partap, 2018).

4.3. AGRIS (the International System for Agricultural Science and Technology)

It is an initiative set up in 1974 by the FAO to make agricultural research information discoverable and globally available. It is an international cooperative system to serve both developed and developing countries. It is a global public-domain database having structured bibliographical records on agricultural science and technology. It is a comprehensive scientific literature search engine for food and agriculture. The uniqueness of the AGRIS is, that it prioritizes peer-reviewed and grey literature in an equal manner. Anyone can find 100 different languages of bibliographic records from the database.

The biggest misconception about the AGRIS is to access full-text articles. But it doesn't provide full-text articles. It has indexed bibliographic references of articles. It has 13,553,363 bibliographic records covering 160 countries' scholarly publications.

AGRIS provides different facilities to search through it for bibliographic records. Its advanced search provides search in title, author, published in, abstract, subjects, and AGRIVOC keyword. Apart from this, the search can be filtered out by country of data provider and match any or match none. A user can limit the publication year of the required search.

Apart from knowledge sharing and capacity development activities, it has a service of data providers. Organizations that made available their collection of scientific literature and/or data through digital libraries, repositories, journals and datasets in the areas of FAO's themes can apply for a registration as a data provider in the AGRIS Network. For this it provides a seal of reorganization. AGRIS network is comprised of academic and research institutions, development programmes, and international and national organizations, governmental bodies, libraries and publishers.

4.4. AGROVOC

AGROVOC is a controlled vocabulary covering all areas of interest of the Food and Agriculture Organization (FAO). It is a multilingual thesaurus published as linked open data, available for public use. It offers a structured collection of agricultural concepts, terms, definitions and relationships to avoid ambiguity. AGRIVOC was created in the 1980s by FAO and now it is maintained by a wide community of experts with technical support and coordination of FAO. Its copyright is still with FAO. Updated AGRIVOC content is released once a month. AGRIVOC is an RDF/SKOS concept expressed as BT/NT relations. In AGRIVOC a searched keyword is shown from its wider term to a specific term by mentioning its RT (Related term), NT (Narrow terms), and BT(Broad term).

5. Study Findings

The major findings of the study are as follows:

- Most initiatives have been carried out to preserve the resources of agriculture covering different subjects like horticulture, fishery, pollination, etc.;
- The library is not limiting itself to preserve print materials only. The library itself converting into information centers to satisfy the user needs.;
- The development of consortium helps in sharing agricultural knowledge rapidly among users to cater the time and money;
- Databases, digital resources and technical supports have greatly enhanced the access to information of agricultural knowledge;
- The institutional repository, databases and portals help in accumulating the various type of resources of agriculture at a same digital space. It increases the visibility and citation of research;
- Collaboration between agricultural libraries and agricultural information centers with universities and institutions have resulted in the development of joint research projects and data sharing platforms;
- Like special library specific agriculture resource portals help to identify the agricultural institution, organization, on going projects, innovation in the same field, invention and discoveries;
- The scholarly communication like thesis, dissertation, journals, magazines, newsletter and annual report helps in disseminating the current progress and trends in agricultural research;
- Institutional repository like KrishiKosh is enhancing agricultural knowledge management which will help the future researcher;
- The controlled vocabulary AGRIVOC helps in identifying the most suitable resources;
- The open access initiatives play a key role for sharing the agricultural information; and
- The national level initiatives in agricultural resource management are also accessed by foreign researchers. It will help in communicating the indigenous knowledge globally.

6. Study Limitations

The limitations of the study are as follows:

- Agricultural institutions are failing to maintain Institutional Repository. IR needs funding, synergy between the trained library staff and scholars, and well-developed Information technology and tools that are not available in agricultural institutions;

- Lack of awareness about the availability of special libraries, online databases, and portal related to agricultural resources;
- Lack of multilingual resources are the obstacles for researchers from diverse linguistic backgrounds;
- Due to funding or bureaucratic issues collaboration and networking always are not possible;
- Some of the websites are not user friendly. Users fail to identify the nature; structure of the website and the search techniques are not always mentioned; and
- A shortage of qualified librarians in the agricultural discipline impedes the efficient management of library resources.

7. Conclusion

Like academic and public libraries, agricultural libraries' role is vital in driving innovation and ensuring food security. The development in agricultural libraries and improving the agriculture librarians' skills can foster agricultural research. Improving the resource findings and spreading awareness about the existence of different information sources can help the researcher and user. Easy access to information can promote research and contribute to global food security and sharing agricultural knowledge will help in sustainable agricultural development.

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