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

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ABSTRACT

Agriculture is the largest livelihood provider in India. Agricultural knowledge is the traditional knowledge that the farmers of India have passed down through generations. The 21st century emphasizes agricultural resources, research, and support for collecting, storing, and disseminating this traditional knowledge. As the guardians of knowledge, the libraries play a pivotal role in supporting agricultural research and education. The evolution of the Library as Information Science has changed its role in storing and disseminating resources to satisfy the user's needs. This paper explains the role of libraries in facilitating agricultural research. Libraries and Information centers provide open access to make agricultural research more accessible. From hosting scholarly publications to databases, libraries have taken an active role in promoting the use of agricultural resources. The paper explores the information centers that are working nationally and internationally to provide agricultural knowledge. This paper reviews some related articles and studies the websites related to agricultural resources and research to introduce the readers to some information centers related to agricultural knowledge. It includes CeRA, AGRIS, ICAR, FAO Institutional Repository of Agriculture – KrishiKosh to help readers find agriculture-related resources. Further, the study presents an in-depth case study on the structure and function of the analyzed websites to understand the targeted audience, collection, search techniques, and their use. The findings of this study are concluded as the advantages and limitations of these websites.

KEYWORDS: LIS in Agricultural research, KrishiKosh, Agricultural resources, Agricultural websites, Agricultural Consortium, CeRA, ICAR, AGRIS, India's agricultural repository.

1. INTRODUCTION

From the ancient age, the existence of the library has been proven in many texts , though it had a different identity. But the aim of the library remains the same to collect, organize, 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. A large part of the population in India depends on agriculture, as it is mainly

dependent on agricultural production. The production, techniques, and needs of agricultural demands are increasing with the increase in population. Also, the demand for agricultural information is increasing.

Agricultural research is needed to provide people with safe food and nutrients. Innovative science-based agricultural technologies are supporting the sustainability of resources. The development in agricultural research requires documentation for future use. This agricultural institution also needs to educate, train and promote research activities for the enhancement of agricultural knowledge. The agricultural institution provides data for policy making to both the government and policymakers. 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 between the information needs and users, many institutions, organizations, and universities have evolved. Library and Information Centers are also trying to process agricultural information with the help of ICT. Through institutional repositories, databases, websites, libraries, and information centers are managing agricultural information.

2. PROBLEM STATEMENT

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

This study's main objectives are to:

- ✓ Understand the contribution of libraries in providing users with information related to agriculture.
- ✓ Identify the type of information resources available for agricultural information.
- ✓ Analyze the different types of information resource 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 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 review has been done on the facets of the Historical perspective of agricultural education and libraries, user needs and surveys on services provided by the libraries, Sources of agricultural libraries, growth and collection of agricultural libraries, reference services provided by agricultural libraries, and agricultural libraries management. By explaining the role of agricultural libraries, it says these libraries

focus more on increasing the resources. This study to collect data has followed personal interviews, discussions, and observation methods. This research also included the library records for services and operations. All the data are collected from the teachers, students, and library staff of KAU. The major finding says user needs to be trained for easy retrieval of required resources, and the library staff are too trained in 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 support the user community with resources for research to fulfil the parent organization's objectives. A SWAT analysis identifies the strength of the agricultural library is the trust of the users in satisfying the need for information; weakness are the management, funding, and service provided by the library; the opportunities are the digitization and information technology skills; and threats are free, cheap, ubiquitous online content with a 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 lead in providing financial support to implement technological trends and to provide financial support to implement technological trends and train agricultural librarians in digital skills (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 is 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 Springer Nature. It provides research support to the institutions under ICAR and state agricultural Universities for improving agricultural productivity. It provides Document Delivery Requests to access 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 (H & B, 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 show only 44.19% of the respondents are aware of this IR, and most of them are research scholars, mainly the respondents accessing the thesis and dissertations. The satisfaction level with the IR is less than 50% (Partap, 2018).

4.4. 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 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 programs, international and national organizations, governmental bodies, libraries, and publishers.

4.5. 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

- 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 preserving print materials only. The library itself converts into information centers to satisfy the user's needs.
- The development of consortium helps in sharing agricultural knowledge rapidly among users to cater to 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 types of resources of agriculture in the same digital space. It increases the visibility and citation of research.
- Collaboration between agricultural libraries and agricultural information centers with universities and institutions has 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, ongoing projects, innovation in the same field, invention, and discoveries.
- scholarly communication like thesis, dissertation, journals, magazines, newsletters, and annual reports helps in disseminating the current progress and trends in agricultural research.
- Institutional repositories like KrishiKosh are enhancing agricultural knowledge management, which will help future researchers.
- The controlled vocabulary AGRIVOC helps in identifying the most suitable resources.
- The open access initiatives play a key role in sharing agricultural information.
- 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 main challenge is managing the institutional repository. If each agricultural university and institution would digitize its own scholarly publication and available, it on its own IR.
- Lack of awareness about the availability of special libraries, online databases, IR, and portals related to agricultural resources.
- Lack of multilingual resources is an obstacle 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 and structure of the website, and the search techniques are not always mentioned.
- A shortage of qualified librarians in the agricultural discipline impedes the efficient management of library resources.

CONCLUSION

Like academic and public libraries, agricultural libraries' role is vital in driving innovation and ensuring the security of food. The development of agricultural libraries and improving the agriculture librarians' skills can foster agricultural research. The improvement in 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. The sharing of agricultural knowledge will help in sustainable agricultural development.

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