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INFORMATION SEEKING BEHAVIOR OF AGRICULTURAL RESEARCHER WHILE USING INTERNET: A CASE STUDY OF BIDHAN CHANDRA KRISHI VISWAVIDYALAYA CENTRAL LIBRARY, WEST BENGAL, INDIA

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ABSTRACT

Rapid advancement in Information and communication technology also Internet have changed the concept of traditional library This paper is the outcome of research study conducted by authors on information seeking behavior of agricultural scientists in Bidhan Chandra Krishi Viswavidyalaya a state agricultural University of West Bengal, India, regardinguse of internet. Data has been collected from 212 researchers through structured questionnaire and analyzed through proper statistical methods like weighted index, percentage, rank etc .Paper discusses the use of internet by the scientists of BCKV. The purpose of study is to identify how the scientists use the internet more or less, , the purpose for using them, frequency and extent of usage of internet, , search approaches and advanced search technique they used and problem they faced regarding use of internet in library.

KEYWORDS: Agricultural Researcher, Bidhan Chandra Krishi Viswavidyalaya, Information Seeking Behaviour, Internet, Online Resources

INTRODUCTION

Agriculture supports directly or indirectly about 70% of Indian rural population for their livelihood. Both Central and State Governments in India are involved in the formulation and implementation of policies and programs to achieve rapid agricultural developments. Agricultural libraries have to play pivotal role to face these challenges by providing quick access to right information in right time to the researchers .Information Need and Information seeking behavior will be assessed for proper planning and policy making of agricultural libraries for rendering qualitative services to its most vital user groups i.e Researchers and Scientists community.

Rapid strides over information technology and environment, Information and communication tools (ICTs) led to a paradigm shift in research environment. Those changes also reflected in modern days library activity. With the help of Internet Researcher can get required information quickly and easily. Researchers dependence on internet and online resources increasing day by day.

The Bidhan Chandra Krishi Viswavidyalaya (BCKV) state agricultural University, situated at Mohanpur, District of Nadia West Bengal, India established in 1974 has completed four decades of its existence as the pioneer institute of Agricultural Education, Research and Extension. The main objective of this Viswavidyalaya is to provide facilities for the study of Agriculture, Horticulture and Agricultural Engineering. It is also to conduct researches in these sciences and undertake the educational and extension programmes in agriculture among the rural clientele base, keeping in view the

requirements of the state.

The faculty of Agriculture consists of sixteen departments namely Agronomy, Agricultural Biochemistry, Agricultural Chemicals, Agricultural Chemistry & Soil Science, Agricultural Entomology, Agricultural Economics, Agricultural Extension, Agricultural Meteorology & Physics, Agricultural Statistics, Animal Science, Agricultural Biotechnology, Genetics & Plant Breeding, Plant Pathology. Plant physiology, Soil & Water Conservation, Seed Science & Technology, with specializations in teaching, research and extension for the development of agriculture in this state

The faculty of Horticulture was established in 1996 with five departments namely, the Department of Floriculture & Landscaping, the Department of Fruits & Orchard Management, the Department of Post Harvest Technology, the Department of Spices & Plantation Crops, and the Department of Vegetable Crops. The Agricultural Engineering education integrates Engineering and Agricultural Science knowledge and skill to develop technology and / or process to raise production and productivity of agriculture and other farm produce through efficient utilization of natural resources and conserving the same for future use. The education in Agricultural Engineering has also been gradually developed and taken a definite shape through inclusion of theoretical as well as practical courses in multidirectional fields of Soil & Water Engineering irrigation and Drainage Engineering, Land and Water Resource Development and Management, Rural Engineering, Aqua-cultural Engineering, Farm Development and Management, Marketing, Marketing and Sales, Computer Applications etc.

Bidhan Chandra Krishi Viswavidyalaya is proud of its Library system which was inaugurated in 1980 comprises only the Central Library at Mohanpur, Main campus. It is housed in a four storied gigantic building encompassing total 5575 sq. m. floor space with a plan area of 7242 sq. m. having a good architectural beauty. Library resources includes Books (74,968), Pamphlets (8,252), Bound Journal (25,007) International Standards (94) Indian Standards (350) Theses & Dissertations (3,832) Cartographies (100) Annual Reports (100 titles each year) and Non-Book Material (712).

Computer platforms used mainly IBM Think Centre, IBM-Lenovo Think Centre, Lenovo Think Centre, Hp Compaq , Lenovo Laptop , IBM – Xeon X series e-server , IBM X3400M3 server (Intel Xeon E 5645 6 Core). Library presently used SOUL Network version 1.0 library management software by INFLIBNET (Running presently) and SOUL Network version 2.0 by INFLIBNET (Installed and under trial).

Objectives of the Study

The main objective of this study is to analyze extent of dependency of the agricultural scientists and research scholars on internet, the perceived impact of the internet on their academic efficiency and problems faced by them while using the internet. This survey was particularly conducted to assess the benefits of the Internet over conventional sources of information.

Some of the major objectives are to:

- study the purpose and frequency of using the internet services available in the library;
- Types of gadgets they used during accessing the information.
- To know the different platform used for accessing Internet and location of accessing Internet.
- To study different search engines they used. and format of information resources(online)

- To know the researchers preference towards searching queries, advanced search techniques used by them.
- To identify the problems faced by the researcher while accessing the internet.

LITERATURE REVIEW

Wilson [10] (2000) defined information behavior as the "totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use.**"** It is the "micro Level" of behavior employed by the searcher in interacting with information systems of all kinds. Kumar [11] defined information seeking behavior as the complex patterns of actions and interactions which people engage in, when seeking information of whatever kind and for whatever purpose. Users behavior is influenced by number of factors such as his/her knowledge about the role of information unit, use of information products, services offered by various information units, Accessibility of Information units and products, his/her status in organization, socio professional position, relation with people, competition in gaining access to information etc.

Information seeking behavior refers to the way people search for and utilize information.

In Nigeria Oladele **[4]** examined the information sources use patterns among agricultural Researchers in south western Nigeria. This is based on the fact that the way scientists seek Information to support teaching, and research is changing as new technologies and Information system delivery emerges. A systematic sampling, using a sampling interval of 2 was used to select 88 researchers from seven agricultural research institutes. Data were collected through the use of a structured questionnaire that had earlier been subjected to face validity and reliability using the split-half technique with a coefficient of 0.85, on four major categories of information sources identified as library, electronic tools, agricultural databases and FAO in-house databases. The data were subjected to frequency counts and percentages and One way analysis of variance. The results show that from library sources the prominent sources are Dissertation and thesis (86.36 percent), Journals (86.36 percent), Catalogues (85.22 percent) and Abstracts (82.95 percent). Internet (71.59 percent) and World Wide Web's (71.59 percent) are the most commonly used electronic tools as sources of information among researchers. Oyemike Victor Ossai-Onah [5] and others in 2013in their study in Nigeria using descriptive survey research; a purposive sampling technique was adopted. The undergraduate students in Federal University of Technology, Owerri sought for information in relation to their academic and research needs while in Imo State University sought for information resources on academic / research information, business information and industrial attachment/employment information. The undergraduates in the Federal university of technology consulted shelves and catalogues to foster information seeking behaviour while in Imo State University, the undergraduates browse through the shelves signifying that the former utilized catalogues more significantly than the latter. Major reasons for seeking for information amongst undergraduate in FUTO include updating of knowledge and development of personal competencies, while that of IMSU include updating of knowledge, when carrying research, development of personal competencies and writing of assignment, the type of information resources mostly consulted by undergraduates in FUTO is the textbook, while that of IMSU is textbooks, periodical journals, reference books and project report. In FUTO the major militating factor affecting information needs and seeking behaviour was inadequate information resources while in IMSU inadequate information resources, inadequate qualified librarians and lack of time to access the information resources affected the information needs and seeking behaviour of students. Introduction of computerized or digital catalogues should be provided and made available to enable the students have access to information resources librarians should embrace effective management and use of ICT facilities

to promote satisfaction of information needs and seeking behaviour of the students.

In India K P Singh [7] examined the difficulties faced by the agricultural scientists while seeking information. Study also identifies the degree of different sources of information used by agricultural scientists. The study examines the importance, frequency and rank order of information sources in the entire field of agricultural sciences being used y the agricultural scientists. It also studies the degree of usage of various information sources by the agricultural scientists.

In 2013 Singh and Dhiraj kumar[8] conducted an interesting study to examines the information access and utilization by faculty of Guru Angad Dev Veterinary and Animal Sciences University (GADVASU). Data has been collected from faculty using online questionnaire with response rate of 62%. Users' purpose, place of accessing information, preferences over print v/s online resources, problems faced in accessing information, etc. has been explored. Findings reveal that the online access to information resources has influenced the users' visit to library.

Nazir Ahmed and others [3] in 2015 conducted a significant study on Information behavior of scholarly community with e-resources in Sher-e-Kashmir University of Agricultural Sciences and Technology, Kashmir, India. The study reveals that majority of the faculty members and PhD scholars of SKUAST-Kashmir are familiar about e-resources like CDROM databases, e-journals, e-books, etc. Scholars preferably use Laptops and mobiles as compared to Desktops for browsing their needed information. As expected, it is divulged that scholars prefer Google search engine mostly for browsing their desired information and 'keyword' or 'subject' searching techniques are applied by them to retrieve precise information. The respondents seem to be less skilled to use the advanced search techniques as a good number of respondents claimed that they have never used Boolean Gates (AND, OR, NOT); Wild Cards (*; #; $; etc); Truncation marks (??; #; *; etc) and the Phrasal Search "----". It calls for speedy implementation of Information.

Devendra kumar [1] in his study of information-seeking behavior among agricultural Scientists in Sardar Vallabhbhai Patel University of Agriculture and Technology, India their preferences regarding various formats of information sources (formal, informal and electronic information sources) have been explored through quantitative survey.

Sharma [6] in 2009 examines the existence of various e-resource databases in Guru Gobind Singh Indraprastha University Library. The study also highlights the preferences and importance of online resources among the teachers and research scholars.

Significance of the Study

Education is key to the progress of a nation. Universities are the apex institutions at the helm of higher education producing human resources for development of society. The Indian National Agricultural Research System is one of the largest Agricultural Systems of the world. It [8] consists of 53 State Agricultural Universities (including Veterinary Sciences Universities), 4 Deemed Universities, 45 Institutions of National Importance, 17 Research Centres, 6 National Bureaux and 25 Directorates/ Project Directorates contributing to the growth and development of agricultural research and education (Indian Council of Agricultural Research).

Information Need and Information seeking behavior will be assessed for proper planning and policy making of agricultural libraries for rendering qualitative services to its most vital user groups i.e Researchers and Scientists Community. The development of Internet and web as well as e resources has emerged as a powerful educational tool. With the increasing impact of information and communication technologies on Agricultural research; all those concerned with Technological education are attempting to grasp how ICT could help in modernizing the process of development and

research. Modern days library with its rich web /digital resources is capable of disseminate information and same time provides the fastest access to the right kind of information in nano-seconds of time to end-user at any time and at any place in the world.

Scope and Coverage

The present study is limited to Agricultural Researchers in Bidhan Chandra Krishi Viswavidyalaya, West Bengal, India.

Methodology of the Study

The study was limited to the Scientists and research Scholars of Bidhan Chandra Krishi Viswavidyalaya , West Bengal, India.

A questionnaire survey was conducted to collect the information regarding the use of e-resources, frequency of use of e-resources, purpose of using e-resources, frequency of locating desired information, problems faced by the users while using e-resources. A total of 450 structured questionnaires were distributed to collect the primary data out of which 350 received back among this 212 show their positive response towards internet and online resources at a rate of 60.57%. The questionnaires were completed by personal visits or interview the user or through sending email to users. Questionnaires were distributed randomly to the users covering all strata of agricultural sector. Here we are using stratified random sampling method. The collected data was analyzed and presented in the tabular form. No cross checking has been made. The analysis is based on the information received from the respondents.

FINDINGS AND DISCUSSIONS

Analysis has been made from the data available from total number of 212 respondents comprising of 3 faculties, Faculty of Agriculture-(132), Faculty of Horticulture (63), Faculty of Agricultural Engineering (17) participates in the survey.

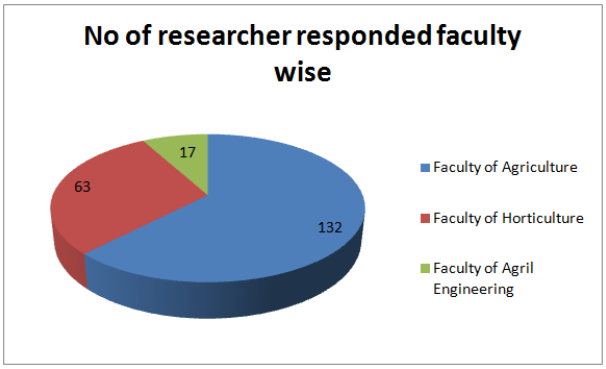

Chart 1: Faculty Wise Response of Researcher

Table 1: Purpose for Using Internet (Multiple Options Allowed) N=212

Sl No	Information Needed	No. Of Agricultural Researchers	Percentage	Rank
1	Keep abreast of latest knowledge	108	50.94	2
2	Prepare lecture notes	35	16.5	8
3	Professional interest	125	58.96	1
4	Research work	75	35.37	3
5	Publishing books/journals	38	17.92	7
6	Participating seminar,	67	31.60	5

	conference			
7	Social networking	27	12.73	9
8	E conference/chatting(Skype)	41	19.33	6
9	For demonstration videos	70	33.01	4

Agricultural researchers were asked for the purpose for accessing online resources and using internet. Majority of the researchers (58.96%) used online resources for professional interest followed by 50.94% for keeping them abreast about the latest knowledge. 35.37% researchers seeking information for their respective research work, while 19.33% researchers for e conference, chatting and 33.08% for demonstration videos on you tube and others.

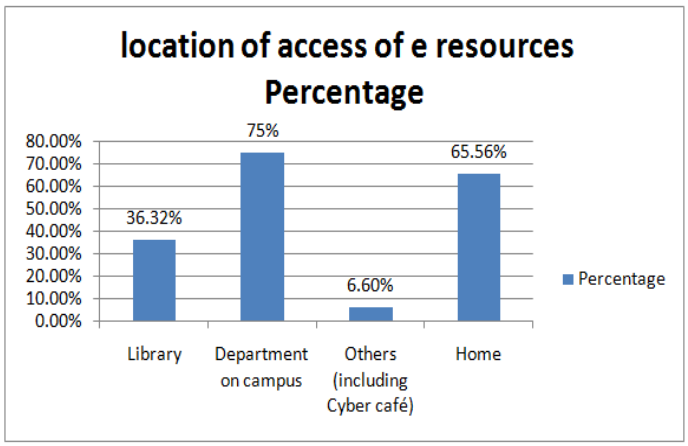

Chart 2: Location of Accessing Information Resources (Multiple Options Allowed) N=212

Chart 2 indicates the place of accessing online resources by agricultural researchers. Majority of them (75%) used their respective department for accessing online resources.65.56% researchers were accessing resources from their home, 36.32% of the respondents used library for accessing online resources and only 6.6% of the scientists were accessing online resources at other places including other libraries, cyber café or hostel.

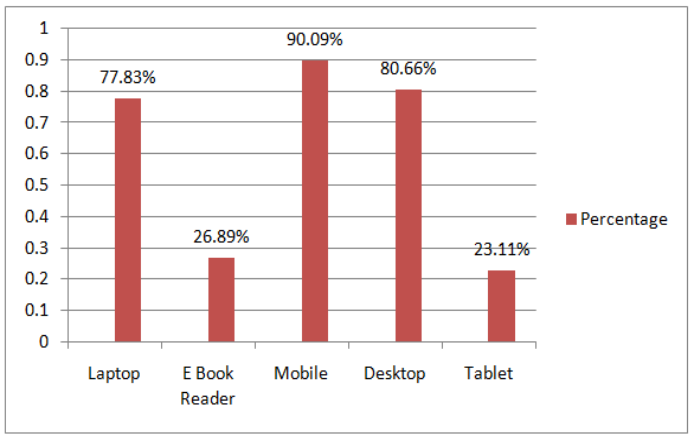

Chart 3: Gadgets Used to View, Store and Use Online Resources (Multiple Option Allowed) Showing Percentage

While asking about the gadgets used to browse, access, download or store information for later use, it is interesting to note that most of the respondents(agricultural Researchers) 90.09% prefer to use “Mobile” as compared to 80.66% of users who use “Desktop”. 77.83% user preferred to use “Laptop “as popular gadgets. However, there is very meager number of respondents (26.89%) and (23.115) who use “E Book Reader” and” Tablets” respectively.

Table 2: Frequency of Use of Online Resources

Frequency of Use	No of Respondents	Percentage	Rank
Daily	194	91.50	1
Weekly	12	5.66	2
Fortnightly	4	1.88	3
Monthly	2	0.94	4
	N=212		

Table 2 reveals that trend of using electronic information resources in BCKV is overwhelming as more than 91.5% of the users access electronic resources on daily basis followed by 5.66% on weekly basis, 1.88% on fortnight basis. However, very small percentage of user (0.94%) used online resources on monthly basis.

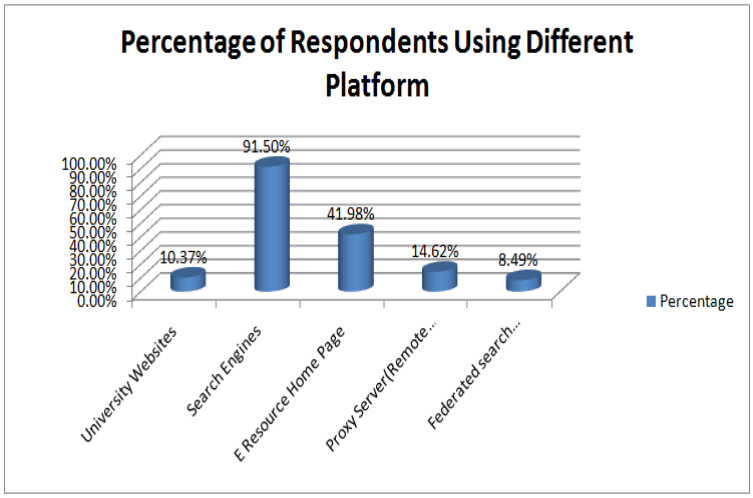

Chart 4: Platform Used to Access Internet (Multiple Options Allowed)

In chart 4 when the researchers were asked about the e platform that they use to access electronic resources, it is found that most of them 91.5% predominantly access through search engines rather than Online resources Homepage and University Websites which is being used by 41.98% and 10.37% of the user's respectively.14.62% users used proxy server. Federated search platform used by very small percentage of][[4user (8.49%)

Table 3: Search Engines Used to Access Online Resources (Multiple Options Allowed)

Name of Search Engines	No of Respondents	Percentage
Google	193	91.03
Yahoo	72	33.96
Altavista	25	11.79
All the web	18	8.49
Ask.com	9	4.24
infoseek	5	2.35

From the table 3 it is evident that majority of users (91.03%) were using Google followed by Yahoo (33.96%) and Altavista (11.79%). However, it is also proved from the chart 5 that" All the web", Ask.com and Infoseek were least used by the agricultural researchers.

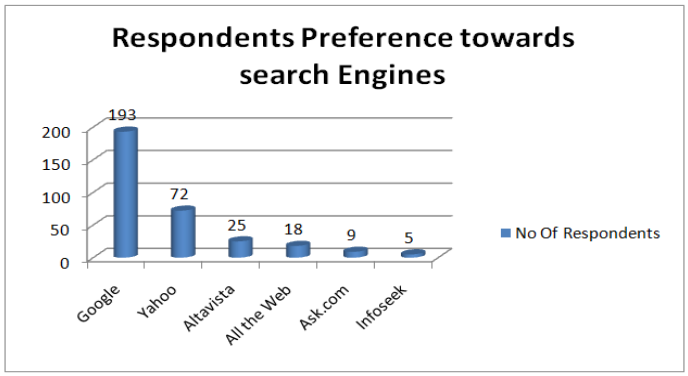

Chart 5: Showing Users Preference towards Search Engines

Table 4: Advanced Search Techniques (Multiple Options Allowed)

Search Techniques	Often	Sometimes	Never	Silent
Boolean gates(And/or/Not)	52(24.5%)	47(22.16%)	85(40.09%)	92(43.39%)
Wild card (*,#,$ etc.)	-	3(1.41%)	-	209(98.58%)
Truncation marks	15(7.08%)	12(5.66%)	12(5.66%)	182(85.84%)
Phrasal search "…."	85(40.09%)	48(22.64%)	120(56.6%)	70(33.01%)

The respondents seem to be less skilled to use the advanced search techniques for searching and retrieving electronic resources. As an average only 24.5 % and 22.16% of the respondents claimed that they use Boolean gates (And/or/Not) often or sometimes for narrowing or broadening the scope of their search, where as 40.09% indicated that they have never used this technique. The respondents seemed to be ignorant about Wild Card, Truncation Marks. Phrasal Search often used by the 40.09% researchers. Wide range (33.01% to 98.58%) of respondents as indicated in Silent Column, did not express their opinion.

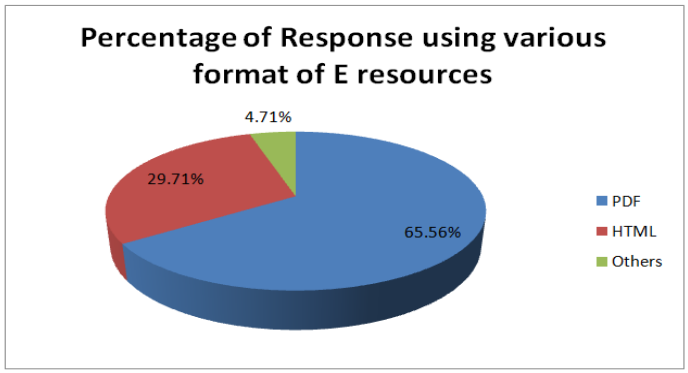

Chart 6: Online Resources Format (Percentage of Use) While Accessing Net

Chart 6: Indicates that 65.56 % Users Preferred to Use PDF Format Followed by HTML (29.71%)

Table 5: Use Pattern of Online Resources

Use Pattern of Online Resources	No of Researcher	Percentage
Read material on computer screen	57	26.88
Print out	113	53.30
Download in suitable storage device	165	79.83

Respondents were asked to indicate how they use contents of online resources and their use pattern is provided in Table 5. 79.83% and 53.3% of Researchers either download or take printout. 26.88% users were reading material on computer screen.

Table 6: Problems in Accessing Online Resources

Problems in Accessing Online Resources	No of Respondents	Percentage of Response
Lack of infrastructure	67	31.60
Slow downloading	83	39.15
Insufficient e resources	89	41.98
Lack of knowledge & training	43	20.28
Others	23	10.84

Electronic resources have become important common resources among the agricultural research Institutes. The Agricultural Researchers were asked about the problems they faced in accessing the electronic resources. Majority of the respondents 41.98% pointed out the insufficient online resources as the major problem followed by slow downloading rate (39.15%). 20.28% of respondents viewed that lack of knowledge and training was the important problem they faced.31.6% blamed against the infrastructure

RECOMMENDATION AND CONCLUSIONS

Internet now a day's become the very essential for the research community and ar used extensively for research purposes. The scientists require information very quickly, easily and they also need the information in readily usable format for research work. Now the scientists have started making maximum use of e-resources, however, lack of training among the scientists and proper infrastructure in the research institutions are major de-motivating factors in the use of electronic resources.

It is essential to conduct comprehensive need assessment study to develop an understanding of the agricultural related ICT needs and problems faced in using ICT by the Researchers in various agro and socio-economic situations. A primary survey was conducted using structured Schedules / Questionnaires, Focus Group Discussions and Participatory Rural Appraisal. The different types of ICT based delivery systems providing agricultural information such as Community Radio, Internet kiosk / web portal, Mobile and Call Centers etc were considered as effective tools for disseminating agricultural information. Research libraries should increase the number of internet nodes exclusively for Scientists and internet bandwidth should be increased. Higher speeds Wi-Fi facilities in the BCKV campus need to be developed so that scientists can use the online e–resources and internet within the campus. It is advisable that infrastructure facility should be improved.

It is the duty of library professionals to come forward to understand the actual need and exact field of interest that the agricultural scientists have their priority and to reform the library resources making the

Collection more purposeful and need based.

IT training specially on advanced search techniques like truncation marks, Boolean gates, Wild Cards etc. might be beneficial. Qualified Information Technology (IT) experts should be made available to solve the problems of networking and hardware. Software must be up-to-date and easy to use. It is also the duty of library professionals to convert the non-users into actual users by educating them about the use potentiality of the e-resources for their research

activities. In this context the

Website of the library and newsletter of the institution should highlight the available e-resources in the library regularly .It is essential to analyze the information seeking behavior of agricultural scientists for proper planning and development of effective library system that really capable of meeting ever increasing demand of the most vital user group of research library i.e Researchers and thereby make itself as a land mark of disseminating right information to right user in right time.

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