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Information Use, Satisfaction, and Difficulties: A Case Study of Agricultural Scientists in India

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Introduction

The present period is marked by rapid change in the manner in which scientific and technical information is acquired, created, stored, repackaged, retrieved and disseminated. Access to current and retrospective agricultural sciences literature play an important role in ensuring that agricultural scientists at all levels may able to maintain high standards of research, teaching, training and consultancy. The results of agricultural research are published through various channels of communication in order that the information may be communicated/ transmitted to the agricultural scientists as speedily as possible. It is essential that the agricultural scientists be informed timely of latest innovations and developments in their concerned areas. The users' is an important component of all kind of information systems in building the most adequate collection of the resources in their respective fields. Research on information use, information seeking has been undertaken since a long time particularly in the developed countries. But in India not much research is reported particularly in the sector of agricultural sciences hence, the present study is an outcome of a research in this perspective by the researcher. In the present study researcher attempt to investigate the various issues related to the study such as information use, level of users' satisfaction, difficulties faced by agricultural scientists while seeking information, which help to the agricultural libraries and librarians in building their library collections more rationale.

Literature Review

People often talk about information needs when, in fact they are referring to want or use. While both are primarily manifestations of need. Information needs arise out of a desire to meet one or other of three basic human needs i.e., physiological needs (need for food, shelter, etc.,), psychological needs (need for domination, security, etc.,) and cognitive needs (need to plan, learn a skill, etc.,) Satija and Singh[1] (2006). According to Marchionini [2] (1997) 'information seeking as a process in which humans engage to purposefully change their state of knowledge. The process is inherently interactive as information seekers direct attention on adapt to

stimuli, reflect on progress, and evaluate the efficacy of knowledge base of the information seeker. Information seeking is thus a cybernetic process in which knowledge state is changed through inputs, purposive outputs, and feedback. For Kuhlthau[3] (1993) information seeking begins with an initiation stage. During this stage, the information seeker first becomes aware of the need to gather information. The task during this stage is to recognize the initial need for information. Subbaiah[4] (1982 identified the five levels of information needs of agriculture scientists. This study was based on his experience of classifying the micro literature of agro biological subjects. The study reveals that retrieval of information is effective through a systematic organization pattern of information sources based upon users information needs. According to Chakraborty[5] (2003) that agriculture scientists rely more frequently on scientific/technical journals than on teachers. Dulle (2001)[6] agriculture information services rendered by the libraries and information centres should be improved up to the level the scientists need. Chatman[7] (1996) stated that, there are barriers and constraints that face people during the cause of seeking information on their research work.

Relevancy and Significance of the Study

Library is an institution charged with the basic responsibility of dissemination and distribution of knowledge to its users in the desired form and format. The basic purpose of the library is to obtain, preserve and make available the recorded /unrecorded knowledge to its users in response to their information needs. It is imperative on the part of administrative authority of a library to provide optimum use of it to its users. For achieving this objective, the library should estimate the information needs of the potential users and their mode of approaches to get their documents and information. To find the information requirements of agriculture scientists, their mode of approaches for gathering information, the depth of the Information and speed at which the information is to be provided, it is imperative to conduct a user's survey of agricultural libraries. It enable the investigator to know the information needs of the agricultural scientists and also to find at what extend the existing libraries collections and services are meeting their information needs. It is the fact that the information needs/information use cannot be properly diagnosed without knowing the information seeking behaviour of agriculture scientists. The problem become more difficult as information needs/information gathering habits of the users are changing very fast, especially due to increasing/availability of the new breeds of documents, channels and information technology-based services. As a consequence, the findings of earlier studies may not be completely relevant in the context of present day situation. Therefore, such study would help in filling gaps and overcome shortcomings in the existing organization of scientific and technical knowledge. Library professional and library managers of information system and services would become familiar with the actual needs of the agricultural scientists in such situation. In the today's scenario as we know that the information is prerequisite for any research and development activities. Therefore, development of the need-based collection is a priority and it could only possible when such research undertaken.

Purpose and Objectives of the Study

The undertaken study intend to explore the degree of agricultural information use, and their level of satisfaction/difficulties faced by the Indian agricultural scientists working in the institutions of Indian Council of Agricultural Research (ICAR) so that on the basis of the findings of the study, need based collection could be developed by the agricultural libraries and meet the information needs of their clientele judiciously and effectively. The study was conducted in order to meet the following objectives:

to identify the degree of different sources of information used by agricultural scientists;
- to explore the difficulties faced by the agricultural scientists while seeking information;
- to find the satisfaction level of the agricultural scientists with the available information in their libraries; and
- to suggest the possible solution to overcome the problems faced/encountered by the agricultural scientists.
-

Scope and Coverage of the Study

The study mainly focuses on agricultural scientists working in the six research and teaching institutions of ICAR namely, Indian Council of Agricultural Research. (ICAR), Indian Agricultural Research Institute (IARI), Indian Agricultural Statistical Research Institute (IASRI), National Bureau of Plant Genetic Resource (NBPGR), National Centre for Agricultural Policy and Research (NCAP) and Punjab Agricultural University (PAU), Ludhiana. The term 'agricultural scientists' includes the teachers as well as agricultural scientists working in the above institutions according to four categories i.e., *Category-I* Principal Scientists/Professors, Senior Scientists/Associate Professors, Scientists/Assistant Professors working in the crop improvement discipline (such as Plant Genetics and Plant Breeding, Horticulture, Floriculture, Vegetable Sciences, Seed Science and Technology and Plant Biotechnology); *Category-II* Principal Scientists/Professors, Senior Scientists/Associate Professors, Scientists/Assistant Professors working in the Resource Management discipline such as agronomy, soil science, agricultural physics, microbiology, environmental sciences, agricultural engineering, and water management and technology; *Category-III* - Principal Scientists/Professors, Senior Scientists/Associate Professors, Scientists/Assistant Professors working in the Crop Protection discipline such as plant pathology, entomology, agricultural chemicals, integrated pest management; and *Category-IV* - Principal Scientists/Professors, Senior Scientists/Associate Professors, Scientists/Assistant Professors working in the Basic & Applied Sciences discipline such as biochemistry, plant physiology, economics, agricultural extension, rural sociology and computer science.

Methodology of the Study

A structured questionnaire was developed for the purpose of data collection and distributed personally as well through mails/e-mails to the agricultural scientists in the identified institutions of ICAR. Seven hundred questionnaires were distributed, out of which 375 questionnaires were received back with a response rate of 53.57%. The questionnaire covered five basic areas namely, user's attributes and characteristics (such as age, sex, levels of education, field of specialization, institution affiliation and purpose of current research), strategies of seeking information, use of the libraries/information centres, and suggestions for the improvement of the existing information systems/libraries. The collected data was thoroughly analyzed/interpreted using the latest version of MS-Excel for appropriate statistical procedures for the description (i.e., frequencies, percent, means, and standard deviations, etc). Three-point scale and five-point scale have been adopted to get the weighted values and rank order.

Findings and Discussion

The major findings of the study presented into the following successive headings with their interpretation:

Frequency of usage of information sources

The agricultural scientists use a variety of information sources while seeking information with each source contributing to their information requirement at varied degrees. To determine the degree of usage of various information sources, agricultural scientists were asked to indicate the frequency. Table1 shows the result of the degree of usage of various information sources while table 2 shows the rank order of the sources used by the agricultural scientists.

Table 1: Frequency of usage of information resources and their responses

Name of Sources	Frequency					
	Frequently (No & %)	Often (No & %)	Sometimes (No & %)	Rarely (No & %)	Never (No & %)	Total Responses
Journals	187 (50.54)	118 (31.89)	58 (15.67)	7 (1.89)	0 (0.00)	370
Databases	230 (70.01)	190 (60.31)	138 (43.81)	79 (28.57)	21 (6.67)	315
Indexing & Abstracting Journals	37 (10.81)	74 (21.63)	126 (36.84)	83 (24.27)	22 (6.43)	342
Books, Monographs, etc.	218 (59.56)	91 (24.86)	57 (15.57)	0	0	366
Bibliographies/ Library Catalogues	41 (12.02)	83 (24.34)	114 (33.43)	82 (24.05)	24 (7.04)	341
Research / Technical Reports	190 (60.31)	138 (43.81)	131 (37.32)	111 (31.62)	29 (8.26)	351
Workshop, Seminars, Conference Proceedings, etc.	62 (17.2)	93 (25.83)	142 (39.44)	58 (16.11)	5 (1.39)	360
Pre-prints/ Reprints directly from authors	27 (7.96)	38 (11.21)	92 (27.14)	109 (32.15)	73 (21.53)	339
References found while reading literature	32 (9.28)	121 (35.07)	150 (43.48)	35 (10.14)	7 (2.03)	345
Attending lectures, conferences, seminars, etc.	97 (26.87)	137 (37.95)	109 (30.19)	15 (4.16)	3 (0.83)	361
Conversation with Colleagues and experts	148 (40.21)	156 (42.39)	55 (14.95)	9 (2.450)	0	368
Dissertations/ Thesis	25 (7.35)	41 (12.05)	129 (37.94)	130 (38.24)	15 (4.41)	340

Yearbooks/ Annual Reviews, etc.	62 (17.41)	122 (34.27)	102 (28.65)	64 (17.98)	6 (1.69)	356

Note: Percentage is the out of total number of responses against each source.

Table 2: Rank Order

Name of Sources	Categories					
	I	II	III	IV	Mean	Rank
Databases	3.85	3.80	3.75	3.65	3.87	1
Journals	3.45	3.56	3.17	3.00	3.30	2
Books, Monographs, etc	2.35	3.33	3.69	3.60	3.24	3
Conversation with colleagues and experts	3.21	2.74	3.57	3.21	3.18	4
Attending lectures, conferences, seminars, etc.	2.88	2.72	3.60	2.10	2.69	6
Yearbooks/Annual Reviews, Advances in, etc.	2.63	2.94	2.21	2.10	2.47	7
References found while reading literature	2.41	2.48	2.39	2.25	2.38	8
Indexing and Abstracting Journals	2.18	1.82	1.96	1.75	1.93	9
Bibliographies/ Library Catalogues	1.63	1.94	2.00	2.10	1.91	10
Technical/Research Reports	2.11	2.30	1.48	1.25	1.79	11
Dissertation / Theses	1.38	1.61	2.07	1.85	1.73	12
Library Acquisition lists	1.80	1.97	1.32	0.84	1.49	13
Pre-prints/Reprints directly from authors	1.39	2.24	0.88	1.40	1.47	14
Weighted scale	0	1	2	3	4	

It indicates from the above tables that the databases were the first priority by all the categories of respondents in terms of its use having highest mean (i.e., 3.87). It is also found that subject specific databases are the most used sources of information. In context of journals it was found that there is a second marked preference for journals. 50.54% of the respondents used this source frequently followed by 31.89% often and 15.67% sometimes. All the respondents reported that they used journals in their current research and teaching in different degrees. The proportion of the non-use of the source is nil. The use of journals ranks second. Thus, journals are the most important source of information. The books, monographs, etc. are frequently used by 59.56% of the respondents. Further, 24.86% and 15.57% used this source often and sometimes. It has been observed from the above tables that agricultural scientists engaged in teaching of (category -

III and IV) use more books and monographs than agricultural scientists. The reason for the extensive use of these print materials was its availability and close proximity to the place of work their accessibility and ability to provide quick and reliable information.

Further it was also reported from the study that conversation with colleagues and experts ranked as the fourth most used source of information by agricultural scientists. A high percentage of the respondents used this source frequently i.e., 40.21% and sometimes i.e., 42.39%. Generally, conversation and interaction with colleagues and experts provide the immediate feedback, clarification and confirmation necessary in research and teaching, whereas the other sources such as Attending Lectures, Conferences and Seminars etc., Yearbooks/Annual Reviews/Advances in., etc. References found while reading literature, Indexing & Abstracting Journals, Technical/ Research Reports, Dissertations/Thesis, Bibliographies, Library Catalogues were found least used sources of information by the respondents

Use of indexing and abstracting sources

There is a substantial growth of agricultural sciences literature in worldwide. Therefore, the indexing and abstracting journals provides the opportunity to agricultural workers to access the agriculture literature effectively and efficiently. Due to the inter-disciplinary nature of agricultural literature, the agricultural scientists use several indexing and abstracting sources such as Agriindex, biological abstracts, CAB abstracts, science citation index, etc. Special areas like agronomy, forestry, horticulture, post harvest technology, soil sciences, dairy sciences, plant breeding and plant genetics, plant pathology and entomology, farm machinery and engineering, etc, requires specific kinds of indexing & abstracting sources. These sources are also overwhelmed by sophisticated computerized methods based on information technologies for controlling the vast floor of agricultural literature published throughout the world. Nevertheless, the printed tools are the essential keys in searching agricultural literature in most of the libraries/information centres of Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAUs). Tables 3-4 show the use of important indexing and abstracting sources and their priority in order.

Table 3: Use of indexing and abstracting sources

Name of the Information Sources	Number of Respondents					
	Frequently (No & %)	Often (No & %)	Sometimes (No & %)	Rarely (No & %)	Never (No & %)	Total
Current Contents: Agricultural and Life Sciences	55 (16.67)	66 (20.00)	80 (24.24)	40 (12.12)	89 (26.97)	330
Agricultural Engineering Abstracts	76 (25.50)	66 (22.15)	44 (14.77)	32 (10.74)	80 (26.85)	298
Agriindex	110 (29.73)	106 (28.65)	127 (34.32)	7 (1.89)	20 (5.41)	370
Crop Physiology Abstracts	5 (1.59)	13 (4.14)	70 (22.29)	54 (17.20)	172 (54.78)	314

Plant Breeding Abstracts	15 (4.62)	34 (10.46)	77 (23.70)	52 (16)	147 (45.23)	325
Biological Abstracts	18 (5.64)	27 (8.46)	35 (10.97)	54 (16.93)	185 (57.99)	319
Irrigation and Drainage Abstracts	10 (3.18)	26 (8.28)	20 (6.37)	22 (7.01)	236 (75.16)	314
CAB Abstracts	38 (12.14)	40 (12.77)	79 (24.25)	44 (14.1)	112 (35.78)	313
Indian Science Abstracts	5 (1.57)	21 (6.60)	32 (10.06)	40 (12.58)	220 (69.18)	318
Rural Development Abstracts	5 (1.161)	10 (3.23)	38 (12.26)	26 (8.39)	231 (74.52)	310
Biotechnology Abstracts	13 (4.26)	8 (2.62)	35 (11.48)	32 (10.49)	217 (71.15)	305

Note: Percentage is out of total number of responses against each source.

Table 4: Rank Order

Name of the Information Sources	Categories					
	I	II	III	IV	Mean	Rank
Agriindex	2.90	3.20	2.40	1.81	2.60	1
Current Contents: Agricultural and Life Sciences	2.00	1.90	2.33	2.00	2.00	2
Agricultural Engineering Abstracts	1.87	2.11	1.76	1.70	1.87	3
CAB Abstracts	1.23	2.13	1.60	1.26	1.55	4
Plant Breeding Abstracts	1.10	1.71	0.84	0.90	1.13	5
Crop Physiology Abstracts	0.60	1.13	0.70	0.85	0.81	6
Biological Abstracts	0.47	1.69	0.56	0.25	0.76	7
Biotechnology Abstracts	0.93	0.50	0.64	0.40	0.63	8
Indian Science Abstracts	0.27	0.87	0.67	0.50	0.59	9
Irrigation and Drainage Abstracts	0.20	1.00	0.38	0.50	0.53	10
Rural Development Abstracts	0.33	0.47	0.56	0.6	0.50	11

Agriindex: Among the various indexing & abstracting sources, Agriindex is used by majority of the respondents. Table-3&4 indicates that 29.73% used this source frequently followed by 28.65% and 34.32% consult this source as often and sometimes respectively. The use of Agriindex received first rank. Thus, it is the most used source of information by agricultural scientists. Table-3&4 also indicate the use of Agriindex by different categories of agricultural scientists. Agricultural scientists of categories -I and II use of this information source more than the categories of III and IV. This is due to the nature of their specialization and more coverage of specific subjects. Current Contents: Agricultural sciences and life sciences: which provides the content pages of current periodicals in the field of agronomy, forestry, agricultural engineering, agricultural economics, horticulture, soil science, plant breeding, genetics, agricultural extension, biotechnology, plant pathology, entomology and crop sciences is consulted frequently by the respondents i.e., 16.67, 25.50% often, and 22.15% sometimes. It is also indicate from the above Table-3&4 that this source received second ranked in terms of its use. There is no significant difference in the use of this source by different categories of agricultural scientists. The third most preferred source used by the respondents is Agricultural Engineering Abstracts by obtaining the third rank in the ranked order.

In context of the CAB Abstracts the study found that this source obtained the fourth rank most used source by the respondents followed by Agriindex, Current Contents and Agricultural Engineering Index. The data related to the degree of its use can be seen from the table-3&4. The above tables revels that this source is used only by the respondents i.e., 12.14% and 12.77% as frequently and often while 25.24% respondents use as sometimes. A majority of respondents i.e., 35.78% indicate as non-use, this is because of general coverage of agricultural literature. The Agricultural scientists of category-II use this source more than other categories of agricultural scientists. The other indexing and abstracting sources as used by the agricultural scientists fall in the following order i.e., Plant Breeding Abstracts (rank-5), Crop Physiology Abstracts (rank-6), Biological Abstracts (rank-7), Biotechnology Abstracts (rank-8), Indian Science Abstracts (rank-9), Rural Development Abstracts (rank-10) and Irrigation & Drainage Abstracts (rank-11). The reason for the low usage of these indexing and abstracting sources is due to its specific coverage, and lack of familiarity with the sources among agricultural scientists.

Use of agricultural databases

A list of important databases in the field of agricultural sciences has been given in the questionnaire to know the opinion of respondents in regards of their use. The agricultural scientists were asked to indicate their frequency of their use. The given table 5 indicates the use of the databases by the agricultural scientists.

Table 5: Use of databases by agricultural scientists

Name of the Database	Frequency of Use						
	Frequently	Often	Sometimes	Rarely	Never	Weighted Index	Rank
AGRIS	225 (60%)	75 (15.2%)	64 (17.06%)	11 (2.93%)	00	4.39	1
CAB Abstracts	198 (52.8%)	118 (31.64%)	48 (12.8%)	11 (2.93%)	20 (5.33%)	4.32	2

AGRICOLA	200 (53.33%)	110 (29.35%)	43 (11.46%)	22 (5.86%)	00	4.29	3
BIOSIS	172 (45.86%)	68 (18.13%)	112 (29.86%)	03 (0.8%)	20 (5.33%)	3.98	4
SCI SERACH	122 (32.53%)	112 (29.86%)	38 (10.13%)	65 (17.33%)	38 (10.13)	3.55	5
INIS	72 (19.2%)	98 (26.18%)	98 (26.13%)	68 (18.13%)	39 (10.4%)	3.24	6

Note: Number of respondents is 375. Weighted index is calculated on 5-point scale with weight assigned as follows: Frequently = 5, Often= 4, Sometimes = 3, Rarely = 2, and Never = 1

AGRIS (International Information System for Agricultural Sciences and Technology) which is produced by Food and Agriculture Origination (FAO), Rome an organ of United Nations since 1975. The AGRIS International is the most popular and comprehensive abstracting source covering every aspects of the primary literature published world over in agriculture sciences and technology. It contains more than eight millions records and available in print, CD and Online through various vendors and aggregators. Table-5 shows that the 60% of respondents used this source frequently followed by 15.2% and 17.06% consult this source often and sometimes respectively. Interestingly it is also found that none of the respondents found who is not familiar/using this source. Hence, it established the fact that it is the most popular and useful agriculture database among agricultural workers in India. It received first rank with a weighted index of 4.39. Similarly the CAB Abstracts a product of CABI Publishing (Commonwealth Agricultural Bureax International) of Willingford, UK publishing since 1973 is also an outstanding agricultural database covering more then seven millions records on every bit of information in agricultural sciences and allied subjects. Unlike the other agricultural databases the beauty of the CAB database is that it available on very specific subjects such as Ag Econ CD (for agriculture economics), Pesti CD (for pesticide), Crop CD (for crop sciences), Horti CD (for horticulture), Plant Gene CD (for plant breeding and genetics), Soil CD (for soil science), Vet CD (for veterinary sciences) and Tree CD (for forestry and arboriculture). In regards of this database the study found that 52.8% of respondents used this database frequently followed by Often i.e., 31.64%, sometimes i.e., 12.8% and rarely i.e., 2.93%. In regards of its frequency and use it received a weighted index i.e., 4.32 with second rank in the rank order.

AGRICOLA (Agricultural Online Access) is also a very comprehensive abstracting source in the field of agricultural sciences and allied subjects, produced by the National Agricultural Library, USA since 1970. It contains over five millions citations to journal articles, monographs, theses and dissertations, patents, software, audio-visual materials, and technical reports related to agricultural sciences and applied technology. These records describe publications and resources encompassing all aspects of agriculture and allied disciplines, including animal and veterinary sciences, entomology, plant sciences, forestry, aquaculture and fisheries, farming and farming systems, agricultural economics, and earth and environmental sciences. It is indicated from the Table-5 that the AGRICOLA is the third major agriculture database used by the agriculture scientists with a third rank. The other databases namely BIOSIS, SCISEARCH and INIS are the less used databases by the agricultural scientists. This is due to the more coverage on life

sciences rather then agriculture in particular. However, these databases has significance place to agricultural scientists in finding the literature on life science in context to agricultural science and technology.

Use/purpose of resources in day to day affairs

The use/purpose of resources in day to day research activities of the agricultural scientists was also investigated under the study. The respondents were given a list of well noticeable purposes and asked to them select the appropriate ones. The findings on the responses received from the respondents can be viewed from the given table.

Table 6: Use/purpose of resources in day to day affairs

Purpose	No. of Responses	Percentage	Rank
Teaching and Training	68	18.13%	2
Research Project	78	20.8%	1
Research Guidance	33	8.8%	7
Writing Book	52	13.86%	3
Writing Research Report	40	10.66%	5
Writing Article for Journal	43	11.46%	4
Writing Papers for Seminar/ Conference Proceedings	39	10.40%	6
Writing for Newspapers	13	3.46	8
TV Interviews	09	2.40%	9
Total	375	100%	

Note: Percentage is calculated on the basis of total respondents i.e., 375

It is found from that study the some respondents have marked more than one purposes. It is further found that all categories of agricultural scientists have marked more than one purpose of current research. The result clearly shows that maximum number of agricultural scientists in all categories with 20.8% marked first rank, research project as use/purpose of resource in day to day affairs. Followed by teaching and training i.e., 18.13% with second rank, writing a book i.e., 13.86% with third rank, writing an article for journal i.e., 11.46% with fourth rank, writing a research report i.e., 10.66% with fifth rank, and writing paper for seminar and conference proceedings i.e., 10.40% with sixth rank. . Further, table also shows that the other purposes such as research guidance, writing for newspapers and TV interviews were marked less number of respondents.

Satisfaction with the indexing and abstracting sources

The respondents were asked whether or not they are satisfied with the existing abstracting and indexing sources. It was found from the study that about 70.3% of the respondents expressed their satisfaction whereas 29.7% were not satisfied with these sources and demanded to subscribe more subject oriented indexing and abstracting sources rather then in general in nature.

Satisfaction with keeping well informed with current advances

Keeping abreast with current advances in one's own field of specialization is essential. Therefore, an in-depth analysis on this aspect was investigated. The respondents were asked to indicate how they are able to keep up with advances in their respective fields.

Table 7 reveals that majority of the respondents i.e., 68.21% feel satisfactory whereas only 10.14% feel very well while a substantial number of respondents i.e., about 21.64% found not well in keeping up with current advances.

Table 7: Keeping up with Current Advances

	Keeping up with current advances	Number of Respondents	Percentage
1.	Very well	37	10.14
2.	Satisfactory	249	68.21
3.	Not well	79	21.64

Total number of Respondents was 365

Difficulties in seeking required information

The agricultural scientists were asked to identify the information barrier (s) according to their degree of relevance on a three-point scale (i.e., high, moderate and low). The respondents presented divergent opinions about various types of problems/barriers faced by them in finding and using agricultural information. A finding related to this aspect has been presented through the table 8 and 9.

Table 8: Difficulties in seeking required information

Kind of difficulty	Scale			
	High (%)	Moderate (%)	Low (%)	Total
Lack of time	173 (48.2)	146 (40.7)	40 (11.14)	359
Inadequate library resources	167 (45.50)	141 (38.41)	59 (16.10)	367
Complexity of arrangement of contacts in the sources	114 (40.30)	125 (44.18)	44 (15.54)	283
Lack of access to library material due to library rules/procedures	78 (23.70)	55 (16.72)	196 (59.57)	329
Lack of co-operation from the library staff	26 (8.04)	67 (20.74)	230 (71.20)	323
Lack of suitable abstracting and indexing services	52 (16.88)	137 (44.48)	119 (38.64)	308
Inadequate library services	103 (30.50)	97 (28.70)	138 (40.82)	338

Information not readily available	78 (25.00)	124 (39.74)	110 (35.30)	312
Volume of literature too high	87 (27.79)	134 (42.81)	92 (29.40)	313
Lack of published information about ongoing research	100 (33.90)	96 (32.50)	99 (33.60)	295

Table 9: Rank Order

Kind of Difficulty	Categories					
	I	II	III	IV	Mean	Rank
Lack of time	2.63	2.21	2.39	2.16	2.3	1
Information scattered in many sources	2.13	2.31	2.46	2.37	2.32	2
Inadequate library services	2.20	2.21	2.50	2.20	2.29	3
Lack of published information about ongoing research	2.06	2.14	1.91	1.89	2.00	5
Volume of literature too large	2.00	2.06	2.21	1.47	1.98	6
Information not readily available	1.94	1.81	2.00	1.80	1.88	7
Inadequate library resources	1.74	1.83	2.11	1.80	1.87	8
Lack of suitable abstracting and indexing services	1.69	1.63	2.00	1.80	1.78	9
Lack of access to library material due to library rules/ procedures	1.63	1.29	1.96	1.60	1.64	11
Lack of co-operation from the library staff	1.24	1.29	1.71	1.11	1.37	12

Scale Weights 1 2 3

Level of Difficulty Low Moderate High

Though 'lack of time' is a common problem faced by majority of the respondents, followed by Information scattered in many sources' is considered to be a high difficulty by (40.30%) and moderate by (44.16%), whereas (15.54%) consider it as low. Due to the increasing cost of foreign publications, especially journals, which contain the current information, libraries, are not in a position to subscribe all the journals required by their users. The constraint, 'inadequate library resources' has been felt high by (45.50%) and (38.40%) as moderate. Difficulty of tracing research done in other countries' and 'lack of published information about ongoing research' are stated high by (46.72%) and (33.90%) respectively.

Due to the rapid increase in the published literature in agricultural sciences, the 'volume of literature is too large' and 'information is not readily available', this problems is experienced high by (27.79%) and (25%) of the respondents

respectively. Lack of suitable abstracting the indexing services' is experienced high by (16.88%), whereas (44.48%) and (38.68%) consider it moderate and low. The other difficulty faced high by few respondents is 'slowness of publication' (14.40%). The barriers, which pose less of a problem of the agricultural scientists in seeking the required information and keeping up with current advances, are 'lack of access to library materials due to library rules/procedures' and 'lack of co-operation from the library staff'. This is indeed an encouraging indication for the libraries and information workers, that the agricultural scientists recognize their contribution in keeping up to date and there is least problem as far as the access to library material and cooperation of the library staff is a concerned. An overview of the problems irrespective of their degree of relevance shows that the problems of 'lack of time' and 'information scattered in many sources' are faced by majority of the respondents. Table 8 and 9 shows the mean and rank order of the problems faced by different categories of agricultural scientists. There is no significant difference with regard to degree of relevance of first four high-ranking problems as experienced by different categories of agricultural scientists. As far other difficulties are concerned, there is slight difference in the degree of relevance as experienced by different categories of agricultural scientists.

Conclusion

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. The leading sources of information for agricultural scientists identified in this study in order of use are: databases, journals; books, research reports, monographs, etc., conversation with colleagues and experts, and attending lectures, conferences, seminars, etc were also find to some extent useful sources of information by the agricultural scientists. The study also found that the Agriindex, AGRIS (of FAO), CAB Spectrums (of CABI, Willingford, UK) are the most used indexing and abstracting/databases by the agricultural scientists in all libraries/information centres and ranked one, in terms of frequency of its usage. In the context of difficulties faced by the agricultural scientists, the study argues that there must be regular information literacy programmes to the users in order to maximum use of the library resources.

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