USE PATTERN OF E-JOURNALS IN PLANTATION CROPS RESEARCH INSTITUTES OF SOUTH INDIA

K. N. Madhu

This paper is an attempt to assess the use pattern of electronic journals among the scientists of select Plantation Crops Research Institutes of South India. The data collected from the survey through a structured questionnaire is analysed and interpreted to realise the objectives and test the formulated hypothesis. The findings reveal that majority of the scientists hailing from rural areas (66.18%) have posses Ph.D. degree in the respective field of the study. Among the population of 207 scientists, 194 (93.28%) use e- journals and other 13 (6.28%) do not consult them. Most of the scientists make use of 'Open Access' journals (91.66%) and also e-journals subscribed through CeRA consortium (75.49%). Besides, that majority of the scientists consult full text and abstract of the research articles 'to a larger degree' and 'Table of Contents" and Bibliographical Description 'to a smaller level. The absence of full coverage, unfamiliarity with e- journals and difficulty in reading from a computer screen etc. are cited as a reason for their non-use. The hypothesis tested using chi-square is found as null type.

Keywords: e-Journals; Use Pattern; Online Resources; Agricultural Research.

INTRODUCTION

Libraries in Research Institutes pertaining to Agriculture and its allied fields in India face various challenges to meet the user requirements emerging out of various factors such as exponential growth of knowledge, price escalation and budget restrictions. Moreover, a sea change is evident in the information seeking habits and spiralling expectations of the users. Today's generation is more fascinated towards the e-journals rather than traditional hard bound journals for their various merits like fast, instant, anywhere-anytime accessibility, cost effectiveness etc. Since, e-journals are growing at very high rates, therefore many opportunities for furthering research activities in Plantation Crops Research Institutes have come up [1]. Besides, "Shared subscription" or "Consortia-based subscription" to electronic resources is now considered to be a feasible strategy to increase the access of e-journals across the research institutes on highly discounted subscription. Moreover, in the electronic environment big publishers have started to exploit this condition by charging exorbitant prices and adopting "Big Deal" model. Under this model, commercial publishers either make bundling of subscriptions of print journals with its online version or make a package for several titles [2]. Though consortia-based subscriptions can be successfully deployed to meet the pressures in these libraries like minimized budget, increasing user demand and rising costs of journals but there is a need to assess the user pattern afresh. Therefore, the present study is an endeavour to undertake the user study of scientists of Crop Research Institutes' of South India.

K. N. Madhu
Indian Institute of Plantation Management [IIPM]
Jnana Bharathi Campus,
Bengaluru - 560056
6madhu@gmail.com

REVIEW OF RELATED LITERATURE

The literature in a particular area play vital role in research activities and makes first step in the pursuit. Hence, review of related literature need to be conducted in a systematic manner to achieve optimum results. The present study confines itself to only a few works which were undertaken in India and abroad during the last five years.

Khaiser & Dhruva Kumar [3] report that large number of research scholars of the University of Mysore of four departments (Environmental science, Sericulture science, Zoology, and Genetics) are aware about '4-7' Open Access (OA) Journals representing 48% in their respective field, followed by those who are aware about more than 10 OA Journals in their respective fields representing 18.2%. Nearly 9 scholars (13.6 %) are aware about 1-3 OA Journals and 7 (10.6 %) are not aware of about OA Journals. On the other side, findings of a study by **Mei-Ling Wang** [4] revealed that 95.8% of users in Taiwan and Mainland China opine importance of e-journals wherein 443 scholars consider them 'very important' and 192 scholars identify them 'important'. Thus these are termed 'important' by social scientists on both sides of the strait. However, **Nisha & Ali** [5] while examining the use of e-journals by the users of IIT Delhi and Delhi University, found that most of the users were aware of e-journals but not using them either for building and updating their knowledge or for collecting relevant material for the study and research purpose. The main aim of consulting these journals was retrieving information regarding research, publishing research papers and manuscripts, assignments, presentations, seminars, and largely to update their own knowledge. **Singh** [6] analysed the downloaded log of full text from one of the major publishers of Scientific and Technical (S&T) journals website of a "Technology Institute of India'. He identified the top 10 most used journals during five years which reveals that the number of top titles for 25% downloads is less than 1% for the said period and titles for next 25% download fall in the range of 2-3% . The other 25% downloads fall in the range of 5-6% and about 50% of the titles are never used. The percentage of titles shown above has remained constant throughout with minor variations. Findings of the study conducted by **Rajeev & Jat** [7] show that 33 free full text online journals with abstracts of online journals are accessed through DOAJ based on subject headings, languages, country, keywords and their accessibility in Health Sciences-Nursing. **Leduc & Schöpfel** [8] reported that with regard to online collections, the usage appears to be relatively intensive, especially when compared to usage statistics from universities in the same fields. This reflects an emerging research activity in business schools and a projected and required international orientation. **Kumar & Reddy** [9] reported that a high percentage of research scholars (43.92%) use both print and e-journals and majority of the research scholars (73.03%) use e-journals for their M. Phil/Ph.D research work and most of them use UGC-INFONET e-journals. A good number of research scholars use the database of JCCC frequently. The research scholars use 'Directory of Open Access Journals' (29.3%), PubMed Central (22.07%) and Indian Journals (22.27%). A study by **Patel** [10] found that the Sardar Vallabhbhai Patel Institute of Technology, Vasad, Gujarat (SVIT-Vasad), faculty still uses contents and make journal browsing to support current awareness and meet other information seeking needs. The users rely heavily on library- subscribed databases and still pay attention to the journal names while selecting articles. The differences in behaviour across academic ranks and engineering sub disciplines are apparent. The Associate Professors make searching through browsing comparatively less and feel less comfortable in it as compared to Assistant Professors or Professors.

A study by **Qasim & Khan** [11] revealed that the scientists are more attracted toward e-journals especially those provided by CSIR-NISCAIR Consortia, NKRC than those available via direct subscription and almost all the scientists are consulting e-journals from their campus cabin for research purposes and to update their knowledge. The infrastructure in using e-journals are adequate without any technological problem especially for hardware and software support with high bandwidth Internet speed exists as CSIR-IGIB provides largest computing facility in Asia outside Japan (ranked 158th among the World's Top 500 Super Computers). It is also identified that there is dire need for training in using e-resources and retrieving pinpointed information from the databases. A study by **Ling *et al.*** [4] find out that each social scientist in Taiwan and Mainland China use an average 307

e-journal articles and spent about 380 hours annually and use e-journals mainly for research purposes, writing of papers. Four types of e-journal study behaviour for social scientists reported from Taiwan and Mainland China are: screen browsing; screen based-reading, print reading and screen-based collocating. While **Vasishta** [12] reported that technical university libraries are trying to set up useful websites but the library websites of most of the institutes seem to be at primitive stage. Majority of libraries' websites have very simple and basic features. Overall, they fall short of their potential to act as a platform for proper dissemination of electronic journals. On the other hand, **Malapela & Jager** [13] maintain that in University of Zimbabwe, that the faculty's research needs as expressed in the *core journal titles list* are met by the library's collections. It shows that the overall average electronic access to agricultural journals required by the Faculty of Agriculture is 85.5% when 14.5% of the journals (for which researchers have expressed need) are not available on any of the database platforms of the library. The negotiated access schemes (or donated journal schemes) which include AGORA, ARDI, HINARI, and OARE provide 63%, 47%, 51% and 53.5% access points respectively and without them, the electronic availability rate for the University of Zimbabwe falls from an average of 85.5% to 39.5%. This clearly shows the contribution of these schemes for improving the availability rate of electronic journals at the University. **Nisha & Ali** [5] identified several inherent problems especially with the use of e-journals e.g. slow downloading as revealed by maximum IIT Delhi and Delhi University users. While accessing e-journals, mechanical deficits like non-availability of a particular issue, lack of training and limited access to terminals was noticed.

OBJECTIVES

The major objectives of the present study are to understand the:

- Awareness level and use of e- Journals.
- Pattern of accessing e- journals and segments of information accessed.
- To suggest measures to overcome the problems.

HYPOTHESIS

The hypothesis formulated is: "There is no association between demographic variables and various forms of information used in e-journals".

SCOPE

The present study is limited to scientists of following seven 'Plantation Crops Research Institutes' located in South India.

- Central Plantation Crops Research Institute (CPCRI) Kasaragod, Kerala.
- Rubber Research Institute (RRI), Kottayam, Kerala.
- Indian Institute of Spices Research (IISR), Kozhikode, Kerala.
- Directorate of Cashew Research (DCR), Puttur, Karnataka.
- Central Coffee Research Institute (CCRI) Chikmagalur, Karnataka.
- Indian institute of Oil Palm Research (IIOPR) Pedavegi, Andhra Pradesh.
- Tea Research Foundation (TRF) Valparai, Tamil Nadu.

METHODOLOGY

In order to fulfil the objectives of the study, a structured schedule covering relevant aspects was designed and later circulated to all the (275) scientists of seven Plantation Crops Research Institutes in South India from January to March 2016. The investigator received 207 dully filled in schedules from the scientists constituting 75% of the total population. The data collected was organised and tabulated using simple statistical methods and presented in the form of different tables.

During further analysis, calculating the weighted average of the arithmetic average, each value of the variable was multiplied by its corresponding assigned weights and the products so obtained were aggregated. This was divided by the weights and the resulting figures made weighted arithmetic averages.

Symbolically:

$$\bar{X} = \frac{W_1X_1 + W_2X_2 + \cdots + W_nX_2}{W_1 + W_2 + \cdots + W_n}$$

Where, X_w stands for the weighted arithmetic average. X_1, X_2, X_3 etc… for the values of the variable and W_1, W_2, W_3 etc…., for the respective weights.

The data collected was further analysed by using chi-squares test for testing hypothesis (H_0) that **"There is no Association between demographic variables and various forms of information used in e-journals"** and the subsequent results are presented in table8, 9 and 10. In these tables, symbols '*' indicate 5% level of significance, '**' indicate 1% level of significance '**NS'** indicate not significant and **C** = contingent coefficient '**C**'. Multiple responses were allowed in the study.

DATA ANALYSIS & DISCUSSION

Demographic Characteristics

It is important to make an assessment regarding the demographic characteristics of the population under study that could have a determining effect on their responses regarding awareness and use of electronic information resources. The demographic characteristics of the respondents constituted gender, age, social background, qualification and experiences. These characteristics of the respondents could associate their use of electronic information resources.

Social and Gender Distribution of Population

Gender is one of the relevant factors in examining the use of electronic information resources. The Table 1 gives an account of the gender distribution among scientists.

Table 1: Social and Gender Distribution of Population

N=207			
Gender	**Frequency**	**Social Background**	**Frequency**
Male	127(61.35)	Urban	70 (33.82)
Female	80 (38.82)	Rural	137 (66.18)

Note: The figures given in the parenthesis indicate percentage of respective data.

The gender-wise distribution consists of 127 (61.35%) male scientists and 80 (38.65%) female scientists and 70 (33.82%) scientists come from urban background and 137 (66.18%) scientist belong to rural set up. Hence, from the analysis, it is thus clear that majority of the population constitute male scientists of rural social background.

The analysis about the age, educational qualification and research experience of the users is given in table 2. Age has been another important factor to be studied in the usage of electronic information resources. The study intends to establish the age of users which according to some studies discussed in the literature review, has a significant bearing on the use of electronic resources, i.e. the different age group among the users could exhibit different levels of perception towards electronic resources. For convenience, the users are categories into four different age groups. Among the 207 scientists, 75 (36.47%) are in the age group of 30-39 years, 61 (29.47%) are in the age group of 40-49 years, 69 (33.33%) are in the age group of 50-59 years and remaining 2 (0.97%) are in the age groups of 60 years and above. Educational qualification is an intellectual input and act as an influential factor in determining the level of use of electronic information resources and level of satisfaction. Among the 207 scientists, 153 (73.91%) of them possess doctoral (PhD) degree and 8 (3.86%) have earned M. Phil degree while 44 (21.26%) have master degree and a very few i.e. 2 (0.97%) of them are under. "Experience" is another important associated aspect (teaching or research) and depends on the level of teaching and age of research experience that could be associated with use of electronic information resources. Among the total scientists, 46 (22.22%) have between 1-5 years of research experience, 49 (23.67%) possess 6-15 years of research experience, 60 (28.99%) contain between 16-25 years of research experience and 52 (25.12%) embrace more than 25 years of research experience.

Distribution of Respondents by Age, Level of Educational and Experience

Table 2: Distribution of Respondents by Age, Level of Educational and Experience

N=207					
Age		**Educational**		**Research Experience**	
Age	**Frequency**	**Educational Qualification**	**Frequency**	**Research Experience**	**Frequency**
30-39 years	75(36.47)	Doctorate (PhD)	153(73.91)	1-5 years	46(22.22)
40-49 years	61(29.47)	M Phil	8(3.86)	6-15 years	49(23.67)
50-59 years	69(33.33)	Master Degree	44(21.26)	16-25 years	60(28.99)
60 and above	2(0.97)	Others - UG	2(0.97)	More than 25 years	52(25.12)

Note: The figures given in parenthesis indicate percentage of the respective data.

It is observed from the above analysis that majority of the scientists (28.99%) have 16-25 years of research/teaching experiences which is quite significant and could lead upfront in contributing further to the development of horticulture and agriculture industry to a higher scale leading to the overall development of the nation. Here, we see the representation of both Scientists from of all the age groups with the mixture of youth and experience involved in overall development of the horticulture and agriculture departments. It is also observed that majority of the scientists (73.91%) possesses doctoral degrees.

Use of e- Journals

Table 3, shows the use of electronic journals by the respondents. Among the 207 scientists, 194 (93.28%) of them used electronic journals and rest of them 13 (6.28%) did not use the electronic journals. It may be observed from the analysis that huge proportions of the scientists (93.28%) are using e-journals.

Table 3: Use of e- Journals

Use (Option)	**N=207**
	Frequency
Yes	194(93.28)
No	13(6.72)
Total	(100)

Note: Figures in parenthesis indicate percentage of respective data.

Means of Access

Table 4: Means of Accessing e-Journals

Means of Accessing Electronic Journals	**N=194**
	Frequency
Library subscribes to it	132 (63.77)
It is an open access journal	170(82.13)
Personal Subscription to it	29(14.01)
NAIP project on e-GRANTH consortia	48(23.19)
Through NARS-CeRA consortia	99(47.783)
Through Krishikosha digital repository	24(11.59)

Note: The figures in parenthesis indicate percentage of the respective data.

Table 4 indicates that majority of the scientists found and used e-journals through 'open access journals' which are available online and relevant to the field of plantation crops research. This was followed by 63.77 % of scientists who stated that they used e-journals subscribed by library. 47.83% of the scientists used e-journals through NARS-CeRA consortia, 23.19 % scientists used the e-journals through e-GRANTH consortia. A small portion of scientists also found to have accessed e-journals through Krishikosha digital repository (11.59%). It was also interesting to note that 14.01% of the scientists have found to be accessing e-journals through personal subscription.

It may be observed from the analysis that major portion of the respondents were using open access journals (91.66%) which were available on internet, majority of the respondents were found to be used e-journals through CeRA consortium (75.49%) and their library subscribed e- journals (74.75%).

Purpose of Using e- Journals

Table 5: Purpose of Using e- Journals

Purpose of Using e-Journals	N=194
	Frequency
Reference purpose	173 (83.57)
To prepare presentation/note	110(53.14)
To write article	141(68.12)
To keep abreast latest development	120(57.97)
To do the Research	163(78.74)

Note: The figures in the parenthesis indicate the percentage of the respective data.

Data in table 5 shows the purpose of using e-journals by the respondents. Among the 194 scientists, 173 (83.57%) of them used e-journals for the reference purpose, followed by research 163 (78.74%), writing article 141 (68.12%), keeping abreast of latest development 120 (57.97%) and preparation of presentation/note110 (53.14%).

It could be observed from the analysis that majority of the scientists found to be using e-journals for reference purpose (91.66%), to do research (82.10), and to prepare presentation/ note (71.07%).

Portion Used by the Respondents

Table 6: Portion Used by the Respondents

Forms of Information Used in Electronic Journals	N= 194					WA
	5	4	3	2	1	
Full Text Article	123 (63.40)	40 (20.62)	24 (12.37)	5 (2.58)	2 (1.03)	4.15
Abstract	122 (62.89)	56 (28.87)	15 (7.73)	--	1 (0.52)	4.25
Table of Content (TOC)	30 (15.46)	78 (40.21)	72 (37.11)	9 (4.64)	5 (2.57)	3.39
Bibliographical Information	20 (10.31)	78 (40.21)	78 (40.21)	12 (6.19)	6 (3.09)	3.27

Note: The figures in the parenthesis show percentage of the respective data.

a) Weight assigned for values are, 5 -To a great Extent, 4 - To moderate Extent, 3 - To a little Extent, 2 - Not at all, 1- Cannot say

b) Values Presented in numbers are associated weighted values

c) Multiple responses are allowed

Source: Primary Data

Further, respondents were asked to indicate the level of use of e-journals. Data presented in table 6 indicates the forms of information used in e-journals by scientists. Among the 194 scientists, 123 (63.40%) of them used full text articles, 122 (62.89%) of them used Abstract of the articles which was found to be used to a 'greater extent'. The table of content (TOC) (40.21%) and Bibliographical information (40.21%) was found to be used 'to a moderate extent'. Looking at the WA scale with the response of the scientists, abstract of the article (4.25) & full text of the article (4.15) were found to be used 'to moderate extent' and table of content (3.39) & bibliographical information (3.27) were found to be used 'to a little extent' by the majority of the scientists.

It could be observed from the analysis that majority of the scientists were using full text articles and abstract of the articles 'to a greater extent' and table of content and bibliographical information were used 'to a little extent'.

Reasons of Non-Use

The scientists who did not use the e-journals were asked to give the reason for not using them. The questionnaire listed five possible reasons about not using the e- journals and the investigator asked them to mark all the listed reasons they considered in their case. The summery of the possible reasons were presented in table 7.

Table 7: Reasons for not Using e-Journals

Reasons for not Using e-Journals	N=13
	Frequency
Prefer print than electronic	9(69.23)
Don't like reading on screen	4(30.77)
Quality is not equal to print	2(15.38)
Not familiar with e-journals	1(7.69)
Lack of coverage of e-journals titles	1(7.69)

Note: The figures in the parenthesis show percentage of the respective data.

The data presented in table 7 indicates that among the 13 scientists 9 (69.23%) of them preferred print journals over the e-journals, 4 (30.77%) of them reported that they did not like to read from the screen, 2 (15.38%) of them reported that the e-journals quality is not equal to print. Very few scientists (7.69%) of them also indicated that they are not familiar with e-journals and 7.69% of them reported that they could not use them due to lack of coverage of e-journals titles.

It could be observed from the analysis that the printed journals are perceived to be more convenient sources of information by majority of scientist. It also observed that lack of coverage, unfamiliarity with electronic journals and difficulty to read from screen, quality is not equal to print by the users were found to be few reasons for not using the e-journals. A study by **Eqbal** [14] emphasized on proper feedback system to know about electronic facility and further states that user studies should be conducted to know about electronic information needs of users as well as to identify problems faced by the users while searching information through e-journals.

Association of Demographic Variables & e-Journal Use

The necessary primary data were collected through structured schedule and analysed by using chi-square statistic, in order to test the null hypothesis (H_0) that **"There is no Association between demographic variables and various forms of information used in e-journals"** and the result are presented in table 8,9 & 10. In table 8, 9 and 10, *; indicate 5% level of significance, **; indicate 1% level of significance and **NS** indicate not significant. **C** = contingent coefficient '**C**'. Multiple responses are allowed.

Table 8: Association between Demographic Variables Gender, Age & Use of E-Journals by Scientists

Using Various Forms of Information	Gender				Age			
	χ^2	Critical Value		C	χ^2	Critical Value		C
		χ^2 (0.05)	χ^2 (0.01)			χ^2 (0.05)	χ^2 (0.01)	
Full Text Article	**11.557***	9.488	13.277	0.237	**42.152****	21.026	26.217	0.422
Abstract	**14.179****	7.815	11.345	0.265	**15.595**^{NS}	16.919	21.666	0.272
Table of Content (TOC)	**3.005**^{NS}	11.071	15.086	0.123	**18.487**^{NS}	24.996	30.578	0.294
Bibliographical Information	**4.028**^{NS}	9.488	13.277	0.142	**7.408**^{NS}	21.026	26.217	0.191

With regard to gender, the abstract use in e- journals was found to be highly associated at 1% with scientists' gender, whereas full text article use was significant at 5% with scientists' gender but the table of content (TOC), bibliographical information use in e- journals does not have any association with scientist's gender. Further, the extent of the association 'c' contingency coefficient is presented in table 8.

Looking at age, the result indicated that full text article use in e-journals was highly associated at 1% with scientists' age, whereas the abstract, table of content (TOC) and bibliographical information use were not associated with scientists' age. Further the extent of the association 'c' contingency coefficient is presented in table 8.

Table 9: Association between Demographic Variables Social Background, Qualification & Use of E-Journals by Scientists

Using Various Forms of Information in Electronic Journals	Social Background				Qualification			
	χ^2	Critical Value		C	χ^2	Critical Value		C
		χ^2 (0.05)	χ^2 (0.01)			χ^2 (0.05)	χ^2 (0.01)	
Full Text Article	**7.917**^{NS}	15.507	20.090	0.198	**5.477**^{NS}	15.507	20.090	0.165
Abstract	**1.967**^{NS}	7.815	11.345	0.100	**7.901**^{NS}	12.592	16.812	0.197
Table Of Content (TOC)	**7.402**^{NS}	11.071	15.086	0.191	**3.942**^{NS}	18.307	23.209	0.141
Bibliographical Information	**16.093****	9.488	13.277	0.276	**14.880**^{NS}	15.507	20.090	0.266

With regard to social background, Bibliographical information use in e-journals was found to be highly associated at 1% with scientists' social background, whereas Full text article, abstract and Table of Content use were not associated with scientists' social background. Further, the extent of the association 'C' contingency coefficient is presented in table 9. With regard to qualification, the scientist's demographic variable qualification was not associated with any of the forms of information used in e-journals. Further, the extent of the association 'C' contingency coefficient is presented in table 9.

Table 10: Association between Demographic Variables Research Experience & Use of e-Journals

Using Various Forms of Information in Electronic Journals	Experience			
	χ^2	Critical Value		C
		χ^2 (0.05)	χ^2 (0.01)	
Full Text Article	**35.423****	21.026	26.217	0.392
Abstract	**26.305****	16.919	21.666	0.345
Table of Content (TOC)	**32.248****	24.996	30.578	0.377
Bibliographical Information	**15.419**^{NS}	21.026	26.217	0.271

With regard to experience, the Full text article, abstract and Table of Content used in e-journals were found to be highly associated at 1% with scientists' experience, whereas Bibliographical information use was not associated with experience. Further, the extent of the association 'C' contingency coefficient is presented in table 10.

FINDINGS

- Majority of the scientists belong to male gender and hail from rural settings. A sizable number of scientists (28.99%) have significant (16-25 years) research/teaching experience which may pave way for lead upfront in contributing to the development of Horticultural and Agricultural fields.
- Most of the scientists (73.91%) are holding doctoral degree in their respective subject.
- Among Scientists, majority (93.28%) use e-journals.
- A large number (91.66%) of scientists are using OA journals, and majority are using e-journals through CeRA consortium (75.49%) and other subscribed e-journals (74.75%) by their respective research institute libraries.
- Most of the scientists (91.66%) are using e-journals for reference purpose only, followed by Research purpose (82.10) and to prepare presentation/notes (71.07%).
- Majority of the scientists are using full text articles and abstracts 'to a greater extent' when 'Table of Contents" and 'Bibliographical Description' are used 'to a little extent'.
- The lack of coverage, unfamiliarity with e-journals and difficulty to read from screen, and quality variation to that of print versions is cited reasons for non use of electronic journals.

SUGGESTIONS

The following suggestions are put forward for the effective use of e-journals by the scientists of 'Plantation Crops Research Institutes' in South India.

- The Research institute libraries should take a major role to create awareness among scientists about the e-journal access through CeRA consortium by conducting training programmes, workshops, audio video presentations, demonstrations, etc. on regular basis. The top management of the research institutes should support the library in every possible way and scientists should cooperate in this regard by fully utilizing in an effective manner.
- The research libraries should convert the non-users to potential users by educating them about the potentiality of the e-resources for meeting their research needs. In this context, the website of the library and newsletter of the institution should highlight the available e-journals in the library regularly.
- The Research libraries should increase the number of internet nodes exclusively for scientists and internet bandwidth should be increased.
- The scientists should be divided on the basis of their knowledge to use of ICT for imparting user education. Those who lack knowledge to use the e-resources should be given special training on computer and internet.
- Higher speeds wi-fi facilities in the campus need to be developed by the research institute library, so that scientists can use the online e–resources and internet within the campus according to their convenience.
- Qualified Information Technology (IT) experts should be made available to solve the problems of networking and hardware.
- Non –ICAR Plantation Crops Research Institutes like CCRI, RRI &UPASI TRF etc. should subscribe to more e-journals and also frequently conduct orientation/ training programme for more utilization by scientists.

CONCLUSION

The findings show that scientists use various electronic information resources to do the research activities in Plantation Crops Research Institute in South India. The study reveals that Plantation Crops Research Institute libraries give more importance to providing access to electronic information resources. It is observed from the study that large proportion of the scientists (93.28%) are found to be using

e-journals, and majority of the scientists are using OA journals (91.66%) which are normally available online, majority of them are found to use e-journals through CeRA consortium (75.49%) and the e-journals (74.75%) subscribed by the library. It is observed that majority of the scientists use e-journals for reference purpose (91.66%), to do research (82.10), and to prepare presentation/note (71.07%). It is inferred from the analysis that majority of the scientists are using full text articles and abstract of the articles 'to a greater extent' and table of content and bibliographical information were used 'to a little extent'. The lack of coverage, unfamiliarity with electronic journals and difficulty to read from screen, quality wise not equal to print by the users, are found to be few reasons for not using the electronic journals. The library professionals should take leading role to create awareness among scientists about the CeRA consortium and online databases such as Science Direct, Springer link, Annual Reviews, CAB abstracts, Nature, CSIRO etc. by conducting training programmes, workshops, audio video presentations, demonstrations, etc. on regular basis. The top management of the Research Institute should support the library in every possible way and scientists should cooperate in this regard by fully utilizing in an effective manner.

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