

## New Frontiers in Document Delivery and Resource Sharing: A Collaborative Consortium approach by Indian Libraries

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### Abstract:

*The trend of digital repositories, union catalogues, digital platform for collaborative networking and resource sharing has become increasing important and more relevant today among Indian agricultural libraries. Libraries are exploring new ways to fulfill the information requirement of their patrons through resource sharing and document delivery using the online platform accessible everywhere. The article discusses Inter Library Loan and Document Delivery Services (DDR) facilitated through Consortium Journal Gateway in collaboration with 134 member agricultural libraries under Indian National Agricultural Research System. CeRA the (Consortium for e-Resources in Agriculture) provides a platform for online access to e-journals and inter Library Loan. DDR Services has been established to share resources subscribed by individual libraries as well as consortium journals using the web portal of CeRA. The article also presents an interesting case study of the use of DDR services by patrons of the first Indian Agricultural University that played a vital role in bringing a green revolution in the country.*

**Keywords:** Inter Library Loan, Document Delivery Request, CeRA, Agricultural universities, Indian Agricultural Libraries, Resource sharing

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### Introduction

Over the recent years, the Indian libraries have undergone dramatic changes due to influence of information technology and technological interventions. The libraries, are now, more focused towards providing access to information /learning resources from digital and online resources. The libraries have moved from automation to digitization and to digital platforms to open up their resources and deliver web based services accessible round the clock irrespective of locations.

Indian agricultural and research system has a large network of seventy four Agricultural Universities and 98 Research Institutes, National Research Centers, Project Directorates and National Bureauex (1) spread across different states of the country to further agriculture growth in terms of research, teaching, and to generate trained and qualified manpower to work towards achieving food security for 1.311 billion people of India, (2) these include Central and State Agricultural Universities, Deemed Universities and Agricultural colleges

besides the specialized Crop Research Institutes functional under the Indian Council of Agricultural Research. All these Institutions have libraries to support their academic missions. The libraries serve as the academic heart of the universities to support teaching programs, research and extension activities by investing in an environment conducive to research and learning.

Each and every library cannot be sustained individually, without sustainable flow of adequate funds. Considering these facts, importance of digital libraries, union catalogues, digital repositories and digital platform for collaborative networking and sharing resources has become more relevant today among the Indian Libraries. The Indian agricultural libraries were progressing heavily in automation and digitization in the past two decades due to want of financial resources, skills and expertise. The launch of world bank supported National Agricultural Innovative Project (NAIP) in 2006 implemented by the Indian Council of Agricultural Research (ICAR) (3) marked new horizon, brought new ideas, vision and transformation in library services and transition from print to digital sources. These projects largely aimed to strengthen agriculture research more IT oriented to meet the current market trends and changing demands of the consumers which also applied to the patrons / users of the libraries.

Under strengthening of “Digital Library and Information Management” of Indian National Agricultural Research System (NARS) several innovative projects were conceived in the year 2007, that evolved, materialized and now sustained. These include projects like e-Granth under which Krishikosh- a repository for digitization of rare books and institutional resources; project Krishiprabha for digitization of research scholars, PhD thesis, CeRA the Consortium for e-Resources were developed, these initiatives transformed the Indian Agricultural Libraries in a big way leading them to digital platforms and collaborative resource sharing.

CeRA-The consortium for e-Resources for Agriculture is an e-journal consortium facilitating online access of select journals to all agricultural research institutes and state universities under National Agricultural Research System (NARS) of the Indian Council of Agricultural Research. The consortium was conceived and established as a project under the major National Agricultural Innovative Project in 2008 for facilitating access to scientific online journals and continues to provide access to several e-journals in a sustainable way by adding /including number of journals from time to time. In the year 2016-2017 journals from soil sciences and other disciplines were added, the consortium also provided access to Web of Sciences to some Institutes like the Indian Agricultural Research Institute (IARI). The central subscription and creation of a web portal called CeRA opened a new system for resource sharing among all Research Institutes of ICAR and Agricultural Universities in the country through IP authentication. The CeRA Jccc.in having more than 60,000 links on the web and continues to grow over the years.

### **The Consortium Journal Gateway**

The big question is to know how the consortium works. J-Gate Custom Content for Consortium (JCCC) is a virtual library of e-journal resources or a portal customized to provide an electronic gateway to global e-journals accessible everywhere including subscribed as well as open access journals. The E-journal gateway and database solution is managed by Informatics India Ltd., Bangalore, India. Launched in the year 2001 the portal provides seamless access to millions of journals, articles available online offered by 13,156 publishers. J Gate at present hosts contents from 47,174 e-journals (4) with more than 10,000

journals added almost every day, the site is constantly updated to ensure freshness and reliability of the content. The portal captures and indexes articles from more than 23,706 Open access e-journals and maintains links to them (5) for quick and effortless accessibility.

The important features of J-Gate is that it supports online subscription to journals, achieving, Electronic Document Delivery (DDR) and other services related to consortium users, for example, provide access to those journals that are not subscribed by the consortium by including exclusive journals subscribed individually by the consortium member university libraries to promote Inter Library loan or Document Delivery services. J-Gate facilitates a common interface for all the publishers' content subscribed or not subscribed by the consortium precisely J-Gate@ consortia acts as a search platform for the academic community and provides resource sharing facility for the members of the consortium.

### **CeRA e-Journal consortium**

CeRA consortium covers more than 3000 scholarly journals comprising a collection of consortium subscribed journals, library subscribed, and open access journals. The consortium includes journals from major publishers as indicated below in the table and caters to more than 134 research institutions and state universities (registered user group members) across the country falling under the Indian National Agricultural Research system. These journals have been made available over the network /CeRA Platform, for use by the scientific community and are in agreement to share their resources and infrastructure for Inter Library Loan or Document Delivery.

**Table 1. Consortium and Journals subscribed by ILL Libraries**

Subscriptions	Publishers	No of Journals
Subscribed By CeRA*	Annual Review	22
	CSIRO	08
	Elsevier	358
	Indian Journals	131
	Springer	70
	Taylor Francis	1079
Subscribed by ILL Libraries *	Different publishers	1700 plus

\*CeRa - The e-journal consortium for National Agricultural system. Current Science 102(6) 2012 p.850-851

The Comprehensive content database of the consortium journals is quite user friendly in terms of searching and accessing resources. It is classified into three levels of subject category and is searchable by all popular combinations like title, author, subject categories, keywords publishers etc. Fig 1. The database also provides links to full text articles from both open access and subscribed journals with contact details of authors were available.

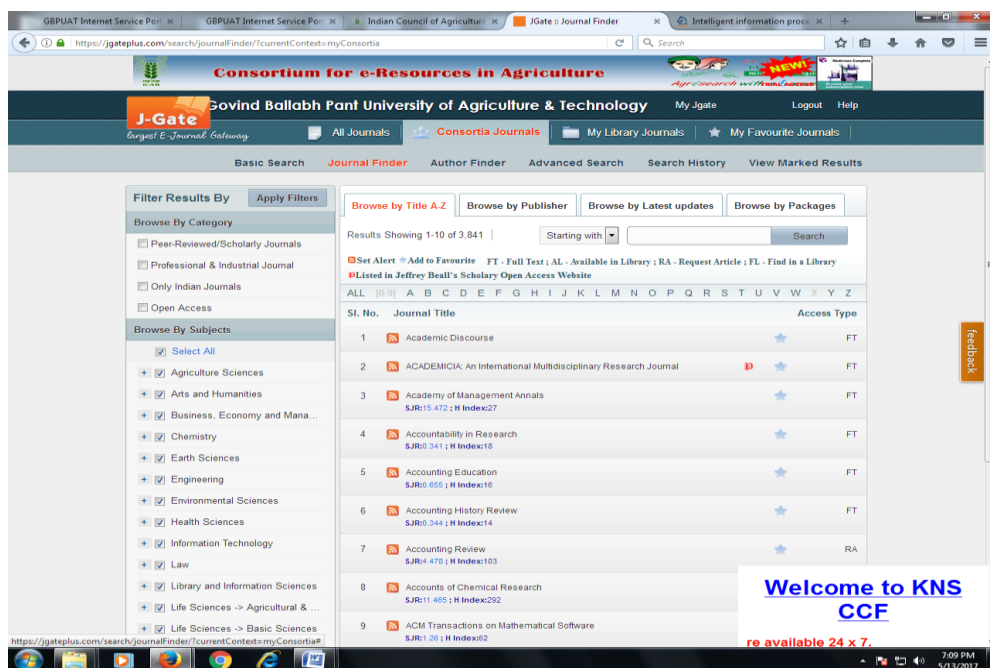


Fig.1 Access to online Journals through CeRA portal

The web portal of CeRA also rolls out Document Delivery Request (DDR) services for the journals subscribed by member libraries (other than CeRA) and promotes resource sharing. The journals subscribed by libraries under consortium can be requested by patrons of any Agricultural university or Research Institute, for which a hard /soft copy is provided by the host library under the agreement. The consortium has twin objectives for resource sharing of e-research/journal material and also to deliver documents in print.

### Document Delivery and Interlibrary Loan

The Document delivery request service allows the students and faculty members to have journal articles delivered to them through their university/ institutes library. The DDR services were initiated by CeRA in collaboration with about 134 libraries of the member institutes to fulfill Interlibrary Lending requests from patrons across the country. The Libraries in collaboration or all libraries of the member institutes under ILL together subscribes to about 1700 journals that are not available through the Consortium (6). Patrons of the CeRA member Institute /University can request for a copy of an article from journals not subscribed by their libraries from other CeRA member institutions under DDR service.

The DDR service developed in all CeRA member institutes and university facilitates sharing of print version of scientific articles for those libraries who do not have it without any additional cost. Due to a large number of article requests five articles per user per session are entertained, request exceeding more than five articles has a charge of a very small amount of Rs 10 per article. (7) A nominal charge has been extended to encourage patrons to make best use of the DDR Services over web portal.

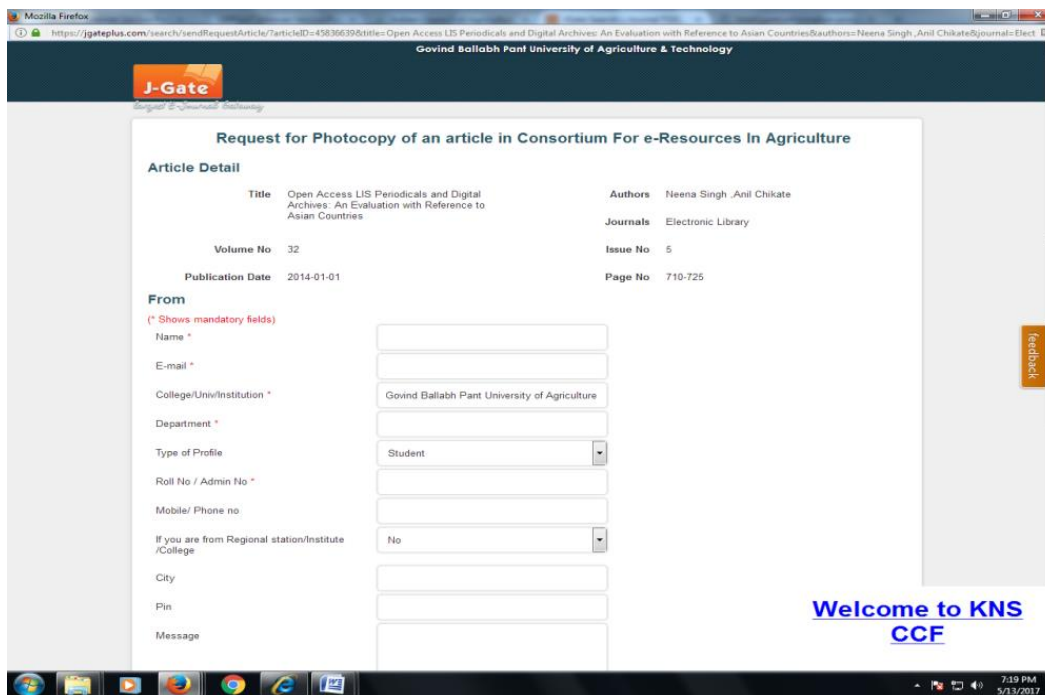


Fig. 2 Document Delivery Request through CeRA web portal

The Indian Agricultural libraries have a huge collection of back volumes of journals in print subscribed over the period of years and others currently subscribed journals. The arrangement under CeRA consortium for a Document Delivery Request has been quite fruitful for the researchers and the academic community.

The individual library subscribed journals resource database of CeRA at J-gate portal is updated regularly for resource sharing. Request for journals can be made online through the CeRA-JCCC portal to different libraries hosting these journals and have them delivered through the library Fig 2.

### Document Delivery Process

Through CeRA J-gate platform photocopies of journal articles can be requested online by the research scholars and faculty members from any member University or Research Institute library within the consortium directly without depending on the library (library staff) almost free. The respective university library that host the journal (in case of print journal) coordinates to provide the photocopies of the requested article and mails it to the patron's university library, where from it can be collected. Patrons can also track request history and fulfillment status of request made through the portal itself.

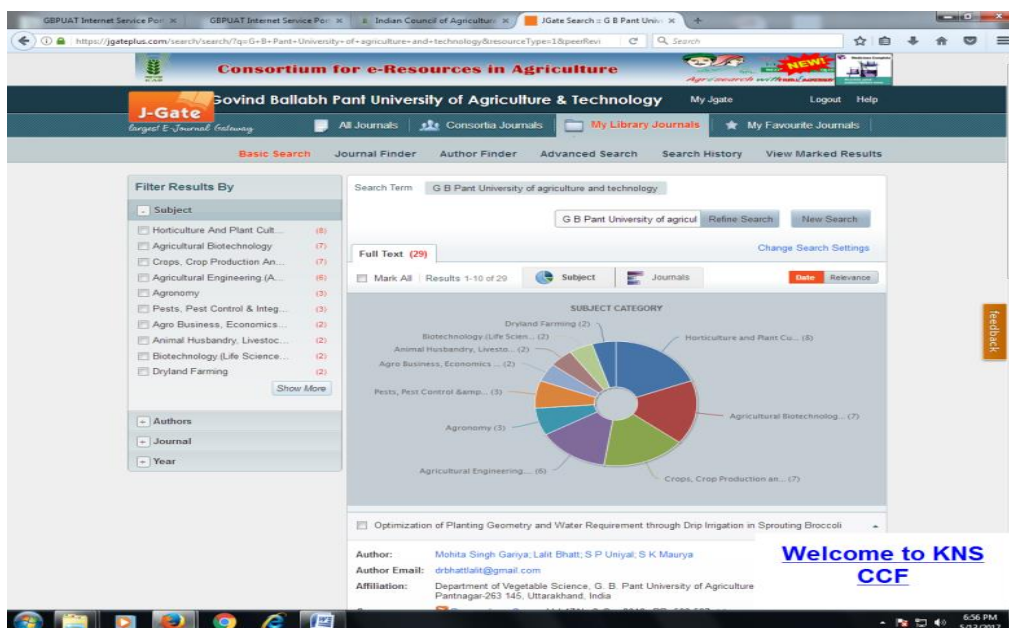


Fig.3 CeRA portal providing access to e- journal and facilitating DDR

The DDR service arranges to deliver articles from journals subscribed by different member libraries which are not subscribed by the consortium. Currently, more than 147 Institutions in National Agricultural Research System (NARS) have 24x7 online access to important selected journals in CeRA platform through IP authentication. It is noted that the service has been well utilized by the academic community. According to study by Chandrashekar et al. there has been a continuous growth in Document Delivery Request (DDR) service since the year 2008-09 with 2453 document request to 14853 in the year 2010-11 from a whole consortium across the country.(8)

The consortium continues to play a key role in research and development activities in NARS. The aim is to facilitate access to e-journals and to provide a platform for resource sharing through inter library loan and document delivery requests by students and the research community. The present article also explores the use of CeRA platform and DDR services at G B Pant University of Agriculture and Technology. The main objectives of the study are to know the number of document requests made by the university community from 2012 to 2016; Requests made discipline wise and the most popular institutions for document request under inter library loan.

### DDR Service: Case study of GB Pant University of Agriculture & Technology

The university library is integral to the G B Pant University of Agriculture & Technology's mission to provide agricultural knowledge and information to support three fold function of the university i.e. teaching, research, and extension activities. The library works in partnership with the university's academic community to provide access to quality information and to foster scholarship.

The library was established in 1960's as the first Agricultural university of the country established by the government to promote agricultural research and teaching when the country was facing shortage of food grains and the mission was to bring green revolution in the country and to generate skilled manpower in agricultural services. The contribution of the university was recognized by Norman Borlaug as the "Harbinger of Green Revolution in India" (9). The university research community provided a significant force in the

development and transfer of high yielding variety seeds and related technology (10) to the farmers.

The library started with a small collection and was first housed in the directorate of research building. Later in 1984, it was opened in a grand five-story building. It supports the university community with extensive collection and services. The library spaces are divided into service areas, collections and offices and can accommodate 500 patrons at a time. On the main floor the students can check out books, get research help from a librarian at the reference desk, use Online Catalogue and reference resources. It is centrally located facing the administrative building and all colleges surround in a semicircle. The library houses nearly 4.11 lakh (0.411 million) volumes and provides electronic access to thousands of periodical titles besides books and databases. (11) It is managed and operated by 10 faculty, librarians and several support staff. The University library has a special place in the country owing to the fact that it supported the university in heralding the green revolution in 1960's and imparting quality education to students in the field of Agriculture and Technology.

The university is member of CeRA since the consortium was established in the year 2007. The library provides its updated subscribed journals holding every year to CeRA-J-Gate portal for resource sharing facilitating document request and delivery. The database of journals subscribed by the different individual libraries of universities and ICAR research institutes across the country are made available through J-Gate portal of the consortium. The table below shows the number of requests made by the students, faculty members and researchers of the university.

**Table 2: Document Requests by Academic Community of GBPU&AT from other Institutions.**

Years wise distribution										
Months	2012		2013		2014		2015		2016	
	No.	%	No.	%	No.	%	No.	%	No.	%
Jan	10	16.66	06	6.06	06	10.35	02	2.35	02	2.86
Feb	04	6.66	25	25.25	03	5.17	01	1.18	10	14.28
March	05	8.34	09	9.09	02	3.45	06	7.06	22	31.43
April	07	11.66	02	2.02	07	12.07	04	4.70	07	10.00
May	09	15.00	12	12.12	11	18.96	33	38.83	05	7.14
June	04	6.66	06	6.06	03	5.17	01	1.18	05	7.14
July	05	8.34	02	2.02	01	1.73	02	2.35	01	1.43
August	02	3.34	07	7.07	01	1.73	04	4.70	02	2.86
Sept	03	5.00	08	8.08	09	15.51	25	29.42	10	14.28
Oct	02	3.34	07	7.07	05	8.62	04	4.70	01	1.43
Nov.	07	11.66	06	6.06	02	3.45	02	2.35	03	4.29
Dec	02	3.34	09	9.09	08	13.79	01	1.18	02	2.86
Total	60		99		58		85		70	
Percentage	100%		100%		100%		100%		100%	

Table 2. Illustrates the state of documents requested by patrons year wise and most active period in terms of months where documents were requested most. It is observed that the highest requests were made in the year 2013 with a total of 99 document requests made under Document Delivery followed by 85 requests in the year 2015. If we look at the time

of the year when most requests for journal articles were made by the researchers' it varies while in the year 2013 is February and 2016 is March. May and September received the most requests throughout the year. The possible reasons for active period is perhaps the start of the academic year (extending in two semesters) in July through December and January through June. The students involve themselves in projects/research work and assignments by February and March which is to be completed by semester end. September is an active month for document request where students look into e-resources to complete their assignment by the end of December.

Below, table 3 indicates the distribution of documents requested by students and faculty researchers of G.B Pant university. It is noted that most requests for documents through interlibrary loan (using CeRA platform) were made by the student community, especially the postgraduate students, who are likely to be more dependent on research information to complete their research assignments and project works required essentially for completing their degrees. An Indian Post Graduate program in agricultural sciences incorporates a research component and project work besides the basic course content that is offered. More than 70% of Document request were made by the student community from different libraries under ILL over the period of five years.

**Table 3: Request for Document Delivery by Patrons**

Documents requested by different categories of patrons											
Sl No.	Patrons	2012 No.	2012 %	2013 No.	2013 %	2014 No.	2014 %	2015 No.	2015 %	2016 No.	2016 %
1	Students	50	83.33	87	87.88	53	91.38	63	74.11	35	50.00
2	Faculty researchers	10	16.67	12	12.12	5	8.62	22	25.88	35	50.00
	Total percentage	60	100	99	100	58	100	85	99.99	70	100

Faculty researchers were less dependent on documents from other libraries under inter library loan. Less than 30% request was made in all years from 2012 to 2015, Fig.4 depicting that the CeRA-DDR portal was almost underutilized by them. Maximum requests were made in the year 2016 with nearly 50 % documents delivered in different disciplines. It is likely that faculty members are not aware of the DDR services and the online platform for interlibrary loan. The DDR services are much more popular among the student community. Students learn about the online platform and services from fellow students and the Information literacy courses offered to them. The figures in table two also indicate that awareness and the use DDR services gradually increased among the faculty researchers from less than 20 % in 2012 to almost 50 % in the year 2016 which is quite encouraging and may be concluded that faculty have started taking interest in DDR services over online platform. However, further studies are required to have a clear picture of the popularity of DDR services among faculty in the future.



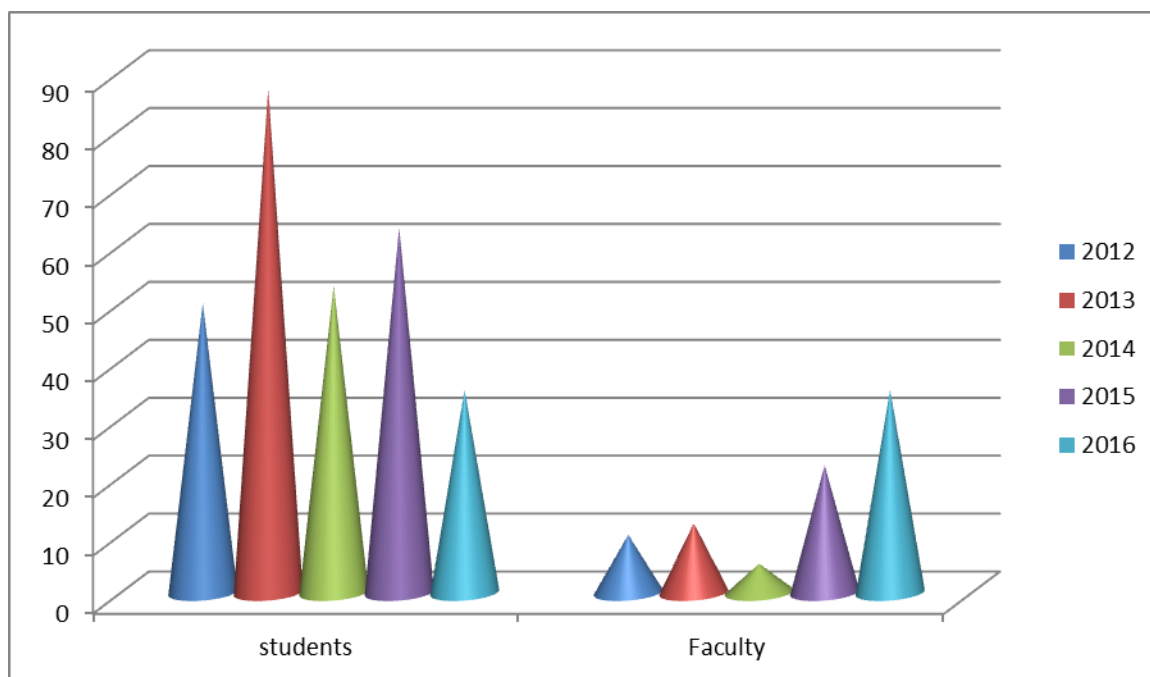


Fig 4 – Showing request of students and faculty

**Table 4: Documents Requested Subject or Discipline wise**

Discipline wise distribution of document request										
Departments	2012		2013		2014		2015		2016	
Plant Pathology	03	5.00	10	10.10	08	13.79	02	2.35	02	2.86
Veterinary Science	07	11.67	08	8.08	04	6.90	43	50.58	36	51.43
Horticulture/ Vegetable Sc.	15	25.00	25	25.25	19	32.76	05	5.88	06	8.57
Agronomy	04	6.67	09	9.09	06	10.35	11	12.94	10	14.28
Environmental Science	00	0.00	03	3.03	01	1.72	01	1.18	01	1.43
Entomology	03	5.00	04	4.04	03	5.17	03	3.53	01	1.43
Animal Nutrition	01	1.66	05	5.05	02	3.45	07	8.23	03	4.28
Biological Science / Microbiology/ Life sciences /Physiology	05	8.33	06	6.06	07	12.07	03	3.53	02	2.86
Genetics &Plant breeding	07	11.67	06	6.06	02	3.45	04	4.71	07	10.00
Food Technology	10	16.67	07	7.07	01	1.72	04	4.71	01	1.43
Soil Sciences	03	5.00	02	2.02	03	5.17	01	1.18	00	0.00
Seed Sc.& Technology	01	1.66	04	4.04	02	3.45	00	0.00	01	1.43
Agricultural Engineering	01	1.66	02	2.02	00	0.00	00	0.00	00	0.00
Molecular Bio Genetic Eng.	00	0.00	08	8.08	00	0.00	01	1.18	00	0.00
Total Percentage	60	99.99%	99	99.99%	58	100%	85	100%	70	100%

The university has seven constituent colleges such as College of Agriculture, College of Veterinary and Animal Husbandry, Home Sciences, Basic Sciences and Humanities, Agribusiness Management, Fisheries and College of Technology. Table 4 reveals the distribution of documents requested by, the patrons discipline /the department wise . It is observed that most requests from 2012 to 2013 were made by the patrons from Horticulture and Vegetable Sciences and they have been most involved in using the CeRA platform for accessing the e-journals and the document delivery services. Researchers from Veterinary Sciences requested maximum articles in years 2015 and 2016. Besides, the Horticultural Sciences and Veterinary Sciences, researchers from Food Technology and Agronomy discipline showed continual interest in requesting documents from other libraries having research information of their interest. Figure 5 below is a pictorial chart of discipline wise document request.

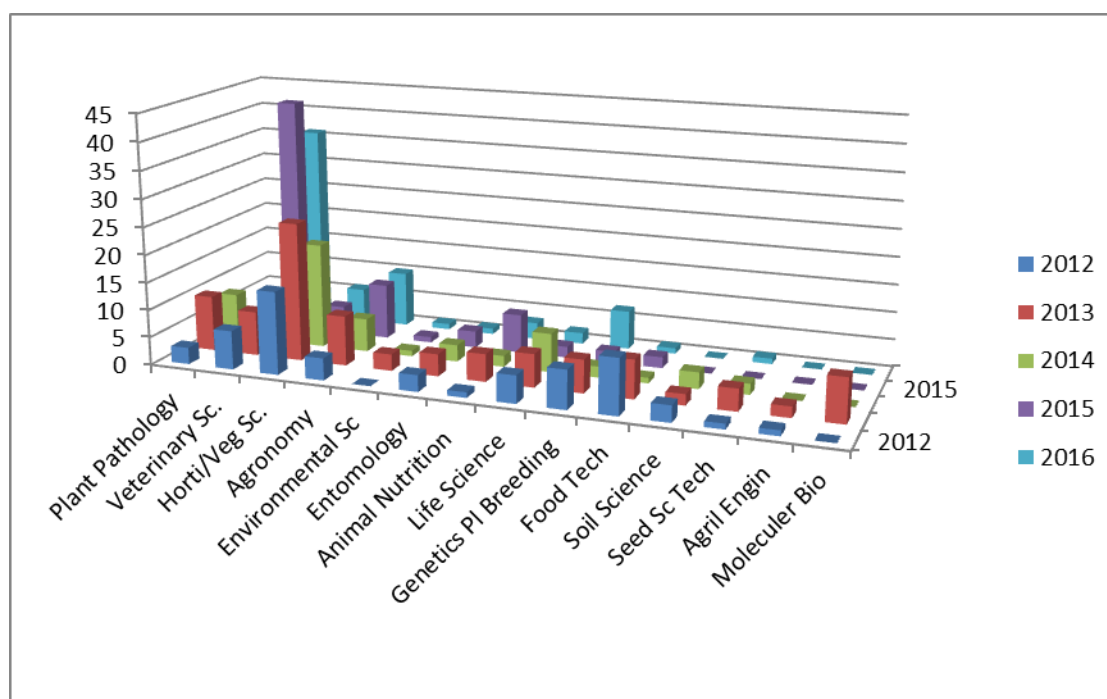


Fig. 5 Discipline wise request

**Table 5. Popular Institutions for Inter Library Loan**

SL N 0.	ICAR Research Institutions and Universities	2012		2013		2014		2015		2016	
1	Anand Agriculture University, Gujarat	00	0.00	06	6.06	02	3.45	10	11.76	10	14.28
2	CCS Haryana Agricultural University	07	11.66	19	19.19	11	18.96	46	54.12	36	51.43
3	Central Institute of Fisheries	00	0.00	04	4.04	00	0.00	00	0.00	00	0.00
4	Central Aviation Research Institute	00	0.00	00	0.00	00	0.00	01	1.18	00	0.00
6	Central Cotton Research Institute	00	0.00	02	2.02	00	0.00	02	2.35	00	0.00
7	Central Tobacco Research Institute	00	0.00	00	0.00	00	0.00	00	0.00	00	0.00
8	Central Tuber Crop Research Institute	00	0.00	05	5.05	06	10.34	06	7.06	04	5.71
9	Cotton Research Institute	00	0.00	01	1.01	02	3.45	00	0.00	01	1.43

10	Directorate of Cashew Research Institute	00 0.00	00 0.00	01 1.73	01 1.18	00 0.00
11	Directorate of oil Seed Research Institute	02 3.33	03 3.03	02 3.45	00 0.00	00 0.00
12	Directorate of Rice Research Institute	02 3.33	04 4.04	02 3.45	00 0.00	08 11.43
13	Indian Statistical Agril. Research Institute	03 5.00	04 4.04	00 0.00	00 0.00	00 0.00
14	Indian Agricultural Research Institute	24 40.00	22 22.22	09 15.51	01 1.18	00 0.00
15	Indian Grassland Research Institute	02 3.33	02 2.02	02 3.45	00 0.00	01 1.43
16	Indian Institute of Pulse Research	03 5.00	03 3.03	00 0.00	00 0.00	00 0.00
17	Indian Veterinary Research Institute	06 10.0	08 8.08	03 5.17	10 11.76	08 11.43
18	Jaishanker Telangana Agriculture University	00 00.0	03 3.03	00 0.00	02 2.35	01 1.43
19	Maharashtra Animal and Fisheries	00 00.0	01 1.01	01 1.73	00 0.00	00 0.00
20	Navsari Agricultural University	00 00.0	02 2.02	04 6.89	00 0.00	00 0.00
21	NG Ranga Agriculture University	10 16.66	03 3.03	12 20.69	00 0.00	00 0.00
22	Indira Gandhi Agricultural University, Raipur	00 0.00	03 3.03	00 0.00	00 0.00	00 0.00
23	Tamil Naidu Veterinary Animal Sciences	03 5.00	02 2.02	00 0.00	00 0.00	00 0.00
	Vasant Rao Marathwada Agril. University	00 0.00	01 1.01	00 0.00	02 2.35	00 0.00
24	Y S Parmar Univ. of Horticulture & Forestry	00 0.00	02 2.02	01 1.73	04 4.71	01 1.43
	Total Percentage	60 100 %	99 100%	58 100%	85 100%	70 100%

The table 5 presents the Research Institutes and Universities where from most requests were made by the research scholars and faculty members of G B Pant University of Agriculture and Technology. Perusing year wise requests it is noted that both in 2012 and 2013 Indian Agricultural Research Institute (IARI) New Delhi and CCS Haryana Agriculture University were popular destinations for requesting research articles, more than 20 article requests were made from IARI under DDR services. CCS Haryana Agriculture University, Haryana (CCSHAU) received a maximum request by researchers in 2015 and 2016. The popularity of these institutes owes to the fact that IARI, is one of the largest agro biological libraries in South East Asia housing more than 3.75 lakh (0.375 million) publications. (12) It is acknowledged as the defacto National Agricultural Library of India due to its fortune collection. CCS Haryana Agriculture University is located in Haryana state of northern India not very far away from both IARI, New Delhi and G B Pant University of Agriculture and Technology, in Utrakhand. It is also one of the biggest agricultural universities in Asia (13) and is quite popular among the agricultural community due to its rich collection of documents. CCSHAU library houses over 3.60 Lakh (0.360 million) volumes of publications and both universities are among the top 10 ranked universities in the country (4). Interestingly, few documents were requested from universities located in southern parts of India and other states due to the fact that the patrons of G B Pant University of Agriculture found most articles of their interest from these two institutions and only those information that was not available from these institutions were requested from other agricultural universities across the country.

## Conclusion:

In concluding remarks the author would like to emphasize that the functionality of CeRA online platform that, provides “One Stop” access to consortium e-journals and journals subscribed by individual libraries spread across the country for resource sharing through Inter Library Loan is a wonderful service. Document Delivery Request services have been integrated into the consortium for best use of journals subscribed by libraries (i.e.often physically confined to the library’s premises) accessible to patrons of all consortium members across the country. This is not only an interesting way of resource sharing and document delivery but it is also a worthy virtual experience for the researchers and the academic community.

The case study discussed reports, interesting findings of the use of DDR services by patrons of G B Pant University of Agriculture and Technology. Discipline wise, the study reveals that most requests for documents were made by researchers from Horticulture and Vegetable Sciences closely, followed by patrons from Veterinary and Agronomy. Highest number of requests were made in the years 2013 and 2015, while the request was made throughout the year, maximum requests were made in the months of February, March, May and September. The study also reveals that patrons from G.B Pant University were more comfortable in requesting documents from Agricultural Institutions in North India. Indian Agricultural Research Institute (IARI) New Delhi and CCS Haryana Agricultural University were the most popular destinations for DDR. The Student’s community was much more active and involved in using the CeRA platform for requesting documents than the faculty from the university. Interlibrary loan and document delivery through online platform has virtually been is a new experience for the Indian agricultural community and continues to grow. In order to popularize the services among the academic community, the library professionals need to work further towards creating awareness and educating the patrons. It is likely that a number of students and faculty are not aware of the platform and the DDR services. With successful and sustainable functioning of the CeRA flat form offering electronic inter library loan services, resource sharing and document delivery services, will continue to serve the Indian agricultural community, all that is required, is to create awareness for best use of the platform. Nevertheless, we can expect exciting times ahead in the use of virtual interlibrary loan and document delivery continually, maturing and evolving.

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