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Webometric analysis of agricultural universities in India

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Abstract

University websites are increasingly used for a wide variety of purposes, such as uploading the prospectus, library catalogue, promote achievement of individuals, research groups, new publications, etc. Therefore, there is a necessity and desire to know about websites of academic organizations in general and Indian universities in particular. This paper aims to evaluate Agricultural Universities in India through webometrics method. A total of 54 Agricultural Universities were considered, which includes 44 State Agricultural Universities (SAUs), 1 Central University, 5 Deemed Universities, and 4 Central Universities with agriculture faculty. Various concepts like Google PageRank, Alexa Traffic Rank, and rich files are considered for evaluation. It also presents the network diagrams showing the link structures between the web nodes in webometric analysis.

Keywords: Webometric analysis, agricultural universities india, alexa traffic rank, pageRank, link network diagrams.

Introduction

The World Wide Web, an information space, is a highly complex conglomerate of all types of information carriers produced by all kinds of people and searched by all kinds of users (Bjorneborn, 2001). The World Wide Web has now become one of the main sources of information on academic and research activities, and therefore it is an excellent platform to test new methods of evaluating webometric activities (Noruzi, 2006). Quantitative studies of the Web, a "Webometrics" study by Almind and Ingwersen (1997) consists of four main research areas, viz.

(i) Web page content analysis
(ii) Web link structure analysis
(iii) Web usage analysis (including log files of users' searching and browsing behaviour)
(iv) Web technology analysis (including search engine performance)

Web page content analysis is a kind of subject analysis based on the content of the website. Web link structure study means citation analysis that provides links to other web page/sites. Web usage analysis is part of a more general user and usage research, and Web technology analysis refers to information systems evaluation. Webometric analysis on University websites have been carried out using the Web Impact Factors (WIFs) for Iranian (Noruzi 2005), Australasian Universities (Smith, 2002), and using hyperlink patterns in Canadian Universities (Vaughan, 2005) and Nigerian Universities (Nwagwu, 2008). Webometric analysis generally concentrates on the analysis of websites mainly in the performance of the academic web domains because universities are stable and well-defined institutions on the Web for a long time. University websites are increasingly used for a wide variety of purposes, such as uploading the prospectus, library catalogue, promote achievement of individuals, research groups, new publications, etc. Therefore, there is a necessity and desire to know about websites of academic organizations in general and Indian universities in particular. In this context, it is logical to investigate measures of the effectiveness of Indian agricultural Universities' Web sites, both to study the communication activity that they represent and to build useful evaluation metrics.

Previous reports:

The earlier study, "Citation analysis" by Rousseau (1997), considered hyperlinks to and from other websites as "bibliographical citations" in traditional analysis. Rodriguez and Gairin (1997) and Larson (1996) are also pioneers with their early exploratory link structure analysis with the first pure informetric analysis of the web. Ingwersen (1998) developed the idea of Web Impact Factor by measuring average link frequencies and pointed out that number of hyperlinks (Backlinks) that point to a Web document from other internet documents might be conceived as an indicator of the impact of this document and its producer(s) on the internet.

Li *et al.* (2003) found that academic websites are more mature than the other domains in the World Wide Web. Thelwall (2003) pointed that a high Web impact or online impact for a document indicates that it might contain information that may be useful for visitors to the source documents of the links. But this is not always the same. Heimeriks *et al.* (2003) found that for academic pages, high Web impact may not reveal something about the documents, but also about their owners: both of the document that includes the link and the linked-to document. Bar-Ilan (2004) conducted the experiment to check the motivation of link creation in Israeli Universities. Noruzi (2005) stated that inlinks (backlinks) are similar to citations in scientific e-articles and inlinks are fair quantitative tools for ranking, evaluating, categorizing and comparing websites. Shukla and Tripathi (2009), Jalal (2010), Jeyshankar and Ramesh

Babu (2009) have carried out similar studies. Walia and Kaur (2010) observed the selected websites from different point of view such as number of web pages, web impact factor, and number of rich files.

State agricultural universities in India

As agriculture plays a very important role in the Indian economy, setting up of adequate number of agricultural universities were considered very important in India. While the Royal Commission, set up in 1926, emphasized the importance of a strong research base for agricultural development in India, the second national education commission (1964-66) headed by the University Grant Commission Chairman Dr. D. S. Kothari recommended the establishment of at least one Agricultural University in each of the Indian state. The Indian Council of Agricultural Research (ICAR) is an autonomous organization under the Department of Agricultural Research and Education, Ministry of Agriculture, Government of India. It strives for maintaining and upgrading quality and relevance of higher agricultural education through partnership and efforts of the components of the ICAR-Agricultural Universities (AUs) System comprising State Agricultural Universities (SAUs), Deemed-to-be-Universities (DUs), Central Agricultural University (CAU) and Central Universities (CUs) with Agriculture Faculty. There are 54 agricultural universities spread across the country and ICAR is one of the largest national agricultural systems in the world. The State Agricultural Universities are major partners in growth and development of Agricultural Research and Education under National Agricultural Research System. For this study, all the state agricultural universities listed in the ICAR website (ICAR, 2010), which offers agriculture, or agriculture and veterinary are examined and are included.

Scope of the study

The present paper examines and explores through webometric study, considering the websites of agricultural Universities in India. There are 54 Agricultural Universities in India in which 44 are State Agricultural Universities (SAUs), 1 Central University, 5 Deemed Universities, and 4 Central Universities with agriculture faculty. The study aimed to establish a kind of academic ranking of websites of agricultural Universities in India by evaluating their PageRank, Alexa Traffic Rank and rich files. An attempt has been made in this study to rank all Indian agricultural universities on the basis of the webometric indicators.

Objectives of the study

The main objective of this study is to study the webometrics of the Universities' websites in Tamil Nadu. The other objectives includes

- To calculate the Google PageRank, Alexa Traffic Rank of the agricultural Universities' websites in India and rank them.
- To calculate the rich files taking into account the .pdf, .ppt, and .doc files only (.ps is ignored and not taken for the study).
- To generate link-network diagrams of the agricultural universities in India.

Methodology of the study

In this study, Alexa Traffic Rank of each website was taken up for the study. PageRank Checker has been used to calculate the Google PageRank for the University websites under study. The rich files were calculated using Google Scholar and tabulated. The rich files of the agricultural universities in India are calculated from the Google Scholar by:

eg. site:www.angrau.net filetype:pdf; www.angrau.net filetype:ppt; www.angrau.net filetype:doc.

Alexa traffic rank

A ranking system set by alexa.com, a subsidiary of amazon.com, basically audits and makes public the frequency of visits on various Web sites. The algorithm, Alexa traffic ranking is calculated, based on the amount of traffic recorded from users, over a period of three months. This traffic is based on parameters such as reach and page views. The reach refers to the number of Alexa users who visited a particular site in a day. Page view, as its name shows, is the number of times a particular page (URL) is viewed by a user. Alexa.com makes it clear though that, if a particular user visits the same URL multiple times on the same day, all those visits will be counted as one. The least the alexa traffic rank, the more heavily visited the site (Avangate, 1999). The first step of the ranking process is calculating the reach and number of page views for all the sites on the Web on a daily basis. The Alexa ranking is obtained by performing the geometric mean of reach and page views, averaged over a predefined period of three months.

Google PageRank

PageRank is a link analysis algorithm, named after Larry Page, used by the Google Internet search engine that assigns a numerical weighting to each element of a hyperlinked set of documents in the World Wide Web, with the purpose of "measuring" its relative importance within the set (Thelwall, 2002). This algorithm may be applied to any collection of entities with reciprocal quotations and references. The numerical weight that it assigns to any given element E is also called the PageRank of E and denoted by PR (E). The name "PageRank" is a trademark of Google, and the process has been patented. The PageRank is derived from a theoretical probability value on a logarithmic scale like the Richter scale. The PageRank of a particular page is roughly based upon the quantity of inbound links as well as the PageRank of the pages providing the links. It is known that other factors, e.g. relevance of search words

on the page and actual visits to the page, will also influence the PageRank.

Rich files

The rich files require corresponding software for viewing. These readers are mostly the ones who are widely used all across the world, or can be downloaded from the link given alongside the links to the file itself. Also, many of the files were provided in different formats so that the user can access the file in desired format.

Analysis and discussion

Alexa traffic ranks of the agricultural universities' websites of India

The alexa traffic ranks thus calculated for the Indian agricultural Universities' websites is given in Table 2. The least the traffic ranks, the more heavily visited site (Avangate, 1999). Accordingly, the University websites are ranked based on traffic rank. Tamil Nadu Veterinary and Animal Sciences University, Karnataka Veterinary, Animal and Fisheries Sciences University, Maharana Pratap University of Agriculture & Technology occupies 1st, 2nd and 3rd positions respectively. Banaras Hindu University stood 4th place. Mahatma Phule Krishi Vidyapeeth and Marathwada Agricultural University shares 5th position. Aligarh Muslim University occupies 7th position followed by Tamil Nadu Agricultural University in the 8th place. Govind Ballabh Pant University of Agriculture & Technology and Anand Agricultural University holds 9th and 10th places respectively.

Google PageRank of the Indian agricultural universities' websites

PageRank of the Indian agricultural Universities' websites calculated according to Google PageRank has been given in Table 3. Banaras Hindu University, Govind Ballabh Pant University of Agriculture & Technology, Visva-Bharati, all the three score 1st rank with 7 points out of 10 points. Aligarh Muslim University, Indian Agricultural Research Institute, Kerala Agricultural University, Mahatma Phule Krishi Vidyapeeth, Punjab Agricultural University, Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute), Tamil Nadu Agricultural University, Tamil Nadu Veterinary & Animal Sciences University, University of Agricultural Sciences, Bangalore, University of Agricultural Sciences, Dharwad shares 2nd rank with 6 points out of 10 points.

Rich files

Rich files are categorized into 4 types. They are .doc (DOCument files), .pdf (Portable Document Format files), .ppt (PowerPoinT presentation Files) and .ps (Post Script files). For this study, only .pdf, .ppt and .doc files are searched and tabulated. The .ps files are excluded from the study. The total number of rich files for each of the agricultural universities in India is shown in Table 4. Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya leads the list of Indian Agricultural Universities having 1482 rich files. Indian Veterinary Research Institute secured 2nd place with 626 rich files. Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute) came 3rd with 455 files followed by Uttar Banga Krishi Viswavidyalaya in the 4th place with 412 rich files. Tamil Nadu Agricultural University, University of Horticultural Sciences, Bagalkot holds 5th and 6th places with 361 and 359 rich files respectively. Acharya NG Ranga Agricultural University, Govind Ballabh Pant University of Agriculture & Technology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Swami Keshwanand Rajasthan Agricultural University are in 7th, 8th, 9th and 10th positions with 329,300, 299, 258 rich files respectively.

Link-network diagram of indian agricultural universities

The link-network diagram of the Indian Agricultural Universities is given in Figures 1 & 2 (Only site links were mapped). It is developed using Pajek Social Network Analysis [Pajek Wiki, 2008] and it shows the link structures between web nodes. This program runs under Windows NT/9x and provides some analysis tools for large networks and graph-drawing capabilities.

The major findings of the study are:

- A total of 54 agricultural Universities in India were considered which includes 44 State agricultural Universities, 5 deemed universities and 5 central universities with agriculture faculty.
- Govind Ballabh Pant University of Agriculture & Technology, Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute) holds a position in top 10 universities in Alexa Traffic Rank and Google PageRank.

Conclusion

The present study has been exploratory and there is possibility for future research in this area. This study could be extended further by comparing inter-state Universities within the country or by comparing institutions between countries. The alexa traffic rank of the academic websites within the country could also be calculated and compared. Also, through this webometric study, it was observed that a high proportion of the links from these websites were directed within the Universities web space. A refocus is required from webmasters of these Universities to seek out and link possible websites that can harmonize the resources available in their institutions. This refocus will further augment the awareness of the possibilities the web holds for academics in general and research in particular.

Table 1. Indian agricultural Universities' websites and their website addresses.

Name of the University	URL
State Agricultural Universities (SAUs)	
Acharya NG Ranga Agricultural University	http://www.angrau. net
Anand Agricultural University	http://www.aau.in
Andhra Pradesh Horticultural University	http://www.aphu.edu.in
Assam Agricultural University	http://www.aau.ac.in
Bidhan Chandra Krishi Viswavidyalaya	http://www.bckv.edu.in
Birsa Agricultural University	http://www.baujharkhand.org
Central Agricultural University	http://www.cau.org. in
Chandra Shekhar Azad University of Agriculture and Technology	http://www.csauk.ac.in
Chaudhary Charan Singh Haryana Agricultural University	http://hau.ernet.in
CSK Himachal Pradesh Agricultural University	http://www.hillagric. ernet.in
Dr. Panjabrao Deshmukh Krishi Vidyapeeth	http://www.pdkv. ac.in
Dr. Yashwant Singh Parmar University of Horticulture & Forestry	http://www.yspuniversity.ac.in
Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth	http://www.dbskkv.org
Govind Ballabh Pant University of Agriculture & Technology	http://www.gbpuat.ac.in
Guru Angad Dev Veterinary and Animal Sciences University	http://www.gadvasu.in
Indira Gandhi Krishi Vishwavidyalaya	http://igau.edu.in/site/
Jawaharlal Nehru Krishi Vishwavidyalaya	http://www.jnkvv. nic.in
Junagadh Agricultural University	http://www.jau.in
Karnataka Veterinary, Animal and Fisheries Sciences University	http://www.kvafsu.kar.nic.in
Kerala Agricultural University	http://www.kau. edu
Maharana Pratap University of Agriculture & Technology	http://mpuat.digitaluniversity.ac
Maharashtra Animal & Fishery Sciences University	http://www.mafsu. in
Mahatma Phule Krishi Vidyapeeth	http://mpkv.mah. nic. In
Marathwada Agricultural University	http://mkv2.mah. nic. in
Narendra Deva University of Agriculture & Technology	http://www.nduat. ernet.in
Navsari Agricultural University	http://www.nau.in
Orissa University of Agriculture & Technology	http://www.ouat.ac.in
Pandit Deen Dayal Upadhayaya Veterinary University and Gau-Anusandhan Sansthan, Mathura	http://www.upvetuniv.edu.in
Punjab Agricultural University	http://web.pau.edu
Rajendra Agricultural University	http://www.pusavarsity.org.in
Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya	http://www.rvskvv.nic. in
Sardar Vallabhbhai Patel University of Agriculture & Technology	http://www.svbpmeerut.ac.in
Sardarkrushinagar Dantiwada Agricultural University	http://www.sdau. edu. in
Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu	http://www.skuast.org
Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir	http://www.skuastkashmir.ac.in
Sri Venkateswara Veterinary University	http://www.vetversitytirupati.gov.in
Swami Keshwanand Rajasthan Agricultural University	http://www.raubikaner.org/index.asp
Tamil Nadu Agricultural University	http://www.tnau.ac.in
Tamil Nadu Veterinary & Animal Sciences University	http://www.tanuvas.tn.nic.in
University of Agricultural Sciences, Bangalore	http://www.uasbangalore.edu.in
University of Agricultural Sciences, Dharwad	http://www.uasd. edu
University of Agricultural Sciences, Raichur	http://www.uasraichur.edu.in
University of Horticultural Sciences, Bagalkot	http://www.bagalkot. nic.in
Uttar Banga Krishi Viswavidyalaya	http://www.ubkv. ac.in
West Bengal University of Animal & Fishery Sciences	http://wbuafscl.ac. in
Deemed-to-be Universities	
Central Institute of Fisheries Education	http://www.cife.edu.in/cife/index.php
Indian Agricultural Research Institute	http://www.iari.res.in
Indian Veterinary Research Institute	http://ivri.res.in
National Dairy Research Institute	http://www.ndri.res.in
Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute)	http://www.aaidu. org.in
Central Universities with Agriculture Faculty	
Aligarh Muslim University	http://www.amu. ac.in
Banaras Hindu University	http://www.bhu. ac.in
Nagaland University	http://www.nagauniv. org.in
Visva-Bharati	http://www.visva-bharati.ac.in/

Table 2. Indian agricultural Universities' websites and their Alexa traffic ranks.

Name of the University	Alexa Traffic Rank (as on 06.09.2010)	Rank
Tamil Nadu Veterinary & Animal Sciences University	8,561	1
Karnataka Veterinary, Animal and Fisheries Sciences University	14,364	2
Maharana Pratap University of Agriculture & Technology	76,198	3
Banaras Hindu University	84,144	4
Mahatma Phule Krishi Vidyapeeth	102,356	5
Marathwada Agricultural University	102,356	5
Aligarh Muslim University	157,057	7
Tamil Nadu Agricultural University	177,239	8
Govind Ballabh Pant University of Agriculture & Technology	211,654	9
Anand Agricultural University	495,375	10
Visva-Bharati	549,382	11
Indian Agricultural Research Institute	587,316	12
Punjab Agricultural University	609,543	13
Acharya NG Ranga Agricultural University	711,942	14
Kerala Agricultural University	798,826	15
Chaudhary Charan Singh Haryana Agricultural University	805,500	16
University of Agricultural Sciences, Bangalore	916,145	17
CSK Himachal Pradesh Agricultural University	1,000,810	18
Orissa University of Agriculture & Technology	1,027,004	19
Jawaharlal Nehru Krishi Vishwavidyalaya	1,137,929	20
Junagadh Agricultural University	1,322,207	21
Assam Agricultural University	1,436,829	22
University of Agricultural Sciences, Dharwad	1,464,523	23
Indian Veterinary Research Institute	1,599,957	24
Nagaland University	1,721,899	25
Bidhan Chandra Krishi Viswavidyalaya	1,847,204	26
Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya	2,079,959	27
Sardarkrushinagar Dantiwada Agricultural University	2,354,111	28
Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir	2,444,659	29
Navsari Agricultural University	2,489,587	30
Swami Keshwanand Rajasthan Agricultural University	2,512,510	31
Maharashtra Animal & Fishery Sciences University	2,588,042	32
Chandra Shekhar Azad University of Agriculture and Technology	2,622,419	33
National Dairy Research Institute	2,653,632	34
Indira Gandhi Krishi Vishwavidyalaya	2,724,989	35
Birsa Agricultural University	2,956,976	36
Guru Angad Dev Veterinary and Animal Sciences University	3,037,364	37
Dr. Yashwant Singh Parmar University of Horticulture & Forestry	3,072,933	38
Dr. Panjabrao Deshmukh Krishi Vidyapeeth	3,206,610	39
Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth	3,250,361	40
West Bengal University of Animal & Fishery Sciences	3,323,747	41
Rajendra Agricultural University	3,893,854	42
University of Horticultural Sciences, Bagalkot	3,935,330	43
Pandit Deen Dayal Upadhayaya Veterinary University and Gau-Anusandhan Sansthan, Mathura	4,200,739	44
Central Institute of Fisheries Education	4,270,456	45
Central Agricultural University	4,551,167	46
Uttar Banga Krishi Viswavidyalaya	4,736,757	47
Narendra Deva University of Agriculture & Technology	4,949,612	48
Andhra Pradesh Horticultural University	5,506,143	49
Sri Venkateswara Veterinary University	7,551,119	50
University of Agricultural Sciences, Raichur	7,999,544	51
Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu	8,810,463	52
Sardar Vallabhbhai Patel University of Agriculture & Technology	8,951,150	53
Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute)	13,757,118	54

Table 3. Indian agricultural Universities' websites and their Google page ranks.

Name of the University	Google page rank (out of 10)	Rank
Banaras Hindu University	7	1
Govind Ballabh Pant University of Agriculture & Technology	7	1
Visva-Bharati	7	1
Aligarh Muslim University	6	2
Indian Agricultural Research Institute	6	2
Kerala Agricultural University	6	2
Mahatma Phule Krishi Vidyapeeth	6	2
Punjab Agricultural University	6	2
Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute)	6	2
Tamil Nadu Agricultural University	6	2
Tamil Nadu Veterinary & Animal Sciences University	6	2
University of Agricultural Sciences, Bangalore	6	2
University of Agricultural Sciences, Dharwad	6	2
Acharya NG Ranga Agricultural University	5	3
Anand Agricultural University	5	3
Assam Agricultural University	5	3
Bidhan Chandra Krishi Viswavidyalaya	5	3
Birsa Agricultural University	5	3
Chandra Shekhar Azad University of Agriculture and Technology	5	3
Chaudhary Charan Singh Haryana Agricultural University	5	3
CSK Himachal Pradesh Agricultural University	5	3
Dr. Panjabrao Deshmukh Krishi Vidyapeeth	5	3
Dr. Yashwant Singh Parmar University of Horticulture & Forestry	5	3
Indian Veterinary Research Institute	5	3
Jawaharlal Nehru Krishi Vishwavidyalaya	5	3
Junagadh Agricultural University	5	3
Karnataka Veterinary, Animal and Fisheries Sciences University	5	3
Maharashtra Animal & Fishery Sciences University	5	3
Nagaland University	5	3
Narendra Deva University of Agriculture & Technology	5	3
Navsari Agricultural University	5	3
Orissa University of Agriculture & Technology	5	3
Pandit Deen Dayal Upadhayaya Veterinary University and Gau-Anusandhan Sansthan, Mathura	5	3
Rajendra Agricultural University	5	3
Sardarkrushinagar Dantiwada Agricultural University	5	3
Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu	5	3
Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir	5	3
Swami Keshwanand Rajasthan Agricultural University	5	3
University of Horticultural Sciences, Bagalkot	5	3
Andhra Pradesh Horticultural University	4	4
Central Agricultural University	4	4
Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth	4	4
Guru Angad Dev Veterinary and Animal Sciences University	4	4
Maharana Pratap University of Agriculture & Technology	4	4
Marathwada Agricultural University	4	4
Sardar Vallabhbhai Patel University of Agriculture & Technology	4	4
Uttar Banga Krishi Viswavidyalaya	4	4
West Bengal University of Animal & Fishery Sciences	4	4
Indira Gandhi Krishi Vishwavidyalaya	3	5
University of Agricultural Sciences, Raichur	1	6
National Dairy Research Institute	0	-
Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya	0	-
Sri Venkateswara Veterinary University	Not ranked	-
Central Institute of Fisheries Education	Not ranked	-

Table 4. Number of rich files of Indian agricultural Universities.

Name of the University	.PDF	.DOC	.PPT	Total
Rajmata Vijayraje Scindia Krishi Vishwa Vidyalaya	1130	333	19	1482
Indian Veterinary Research Institute	577	35	14	626
Sam Higginbottom Institute of Agriculture, Technology & Sciences (Formerly Allahabad Agricultural Institute)	433	21	1	455
Uttar Banga Krishi Viswavidyalaya	410	2	0	412
Tamil Nadu Agricultural University	295	61	5	361
University of Horticultural Sciences, Bagalkot	343	15	1	359
Acharya NG Ranga Agricultural University	270	59	0	329
Govind Ballabh Pant University of Agriculture & Technology	253	45	2	300
Dr. Panjabrao Deshmukh Krishi Vidyapeeth	291	8	0	299
Swami Keshwanand Rajasthan Agricultural University	254	14	0	258
Chaudhary Charan Singh Haryana Agricultural University	224	31	2	257
Guru Angad Dev Veterinary and Animal Sciences University	218	2	0	220
National Dairy Research Institute	215	0	0	215
Central Agricultural University	188	0	0	188
Aligarh Muslim University	143	38	1	182
Bidhan Chandra Krishi Viswavidyalaya	65	117	0	182
Andhra Pradesh Horticultural University	165	14	0	179
Birsa Agricultural University	155	6	0	161
Central Institute of Fisheries Education	145	8	0	153
Indira Gandhi Krishi Vishwavidyalaya	105	47	0	152
Nagaland University	90	57	0	147
Sardar Vallabhbhai Patel University of Agriculture & Technology	107	137	0	144
Dr. Yashwant Singh Parmar University of Horticulture & Forestry	122	16	0	138
Sri Venkateswara Veterinary University	110	4	0	114
West Bengal University of Animal & Fishery Sciences	103	0	0	103
CSK Himachal Pradesh Agricultural University	99	1	0	100
Indian Agricultural Research Institute	65	23	0	88
University of Agricultural Sciences, Raichur	78	7	0	85
Banaras Hindu University	68	10	0	78
Maharana Pratap University of Agriculture & Technology	74	3	0	77
Marathwada Agricultural University	45	24	0	69
Tamil Nadu Veterinary & Animal Sciences University	64	0	0	64
Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir	60	2	0	62
University of Agricultural Sciences, Dharwad	49	4	0	53
Junagadh Agricultural University	52	0	0	52
Karnataka Veterinary, Animal and Fisheries Sciences University	52	0	0	52
Narendra Deva University of Agriculture & Technology	50	0	0	50
Dr.Balasaheb Sawant Konkan Krishi Vidyapeeth	43	2	4	49
Kerala Agricultural University	43	4	2	49
University of Agricultural Sciences, Bangalore	6	43	0	49
Visva-Bharati	43	6	0	49
Anand Agricultural University	38	1	0	39
Orissa University of Agriculture & Technology	20	17	0	37
Pandit Deen Dayal Upadhayaya Veterinary University and Gau-Anusandhan Sansthan, Mathura	7	29	0	36
Rajendra Agricultural University	32	4	0	36
Navsari Agricultural University	5	26	0	31
Maharashtra Animal & Fishery Sciences University	4	22	0	26
Punjab Agricultural University	21	2	0	23
Mahatma Phule Krishi Vidyapeeth	8	0	0	8
Chandra Shekhar Azad University of Agriculture and Technology	4	0	0	4
Assam Agricultural University	2	0	0	2
Sardarkrushinagar Dantiwada Agricultural University	1	1	0	2
Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu	2	0	0	2
Jawaharlal Nehru Krishi Vishwavidyalaya	0	1	0	1

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Fig. 1. Link-network diagram using Pajek software (without labels).

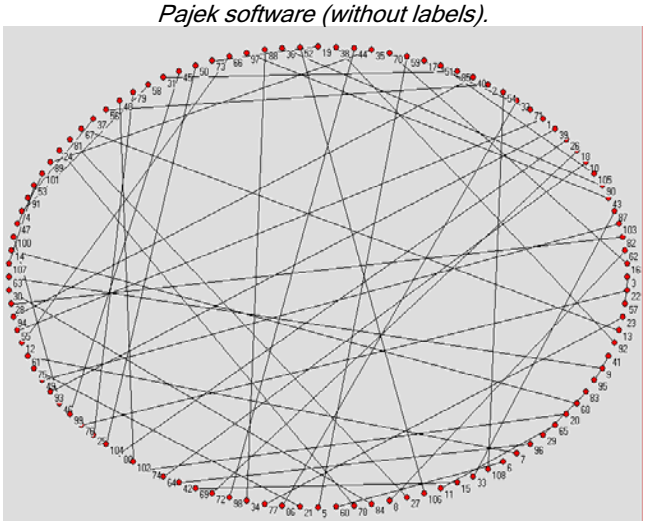
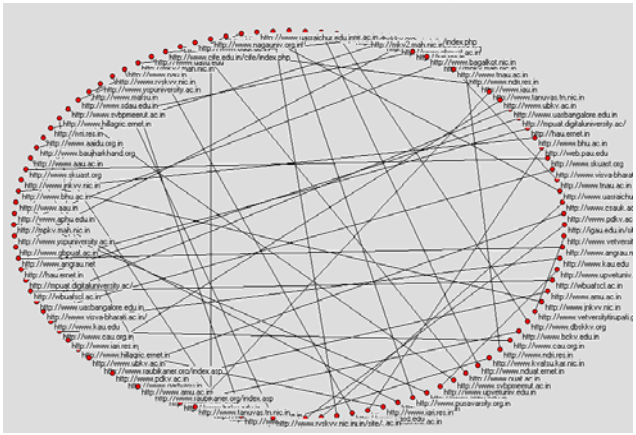


Fig. 2. Link-network diagram using Pajek software (with labels).



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