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Bibliometric Analysis of the Indian Journal of Agronomy for the year 2003-2013

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Abstract: Bibliometrics/Scientrometrics are one of the ways to measure the literature explosion. References appended to the articles of source journal Agriculture University library, Coimbatore "The Indian journal of agronomy ''. The present study is also intended to identify the growth and authorship pattern of productivity of articles It was observed from the study that the year 2008 was most participating year during the study period 2003 - 2013. The Relative Growth Rate (RGR) was high in terms of literature productivity and Degree Collaboration (DC) was also high in terms authorship pattern i.e., 1104 out of 1226 (0.900) and many more features were identified
Key terms : Bibliometrics, Relative Growth rate, ranking list of crops

INTRODUCTION

Bibliometrics is a relatively new subject or branch of science. It is interdisciplinary research method which utilizes quantitative analysis and statistics to describe patterns of publication with in a given field or body of literature. The basic units of Bibliometrics are all facets of written communications, such as, primary and secondary periodicals, articles and abstracts published in them, bibliographies of articles, books, monographs and other media of communication [Sengupta,1985]. It has sound theoretical base with contribution from Pritchard, Lotkas, Gross, Bradford, Zipf, Grarfield, Vickery and many others. The present study relates to Bibliometrics analysis of 1226 articles published in Indian journal of agronomy journal from 2003 to 2013. The data is analyzed to know the authorship pattern, degree of collaboration and Geographical distribution of papers.

OBJECTIVE

The objectives of the present study are to find the following
1. Year-wise distribution of paper
2. Authorship Pattern with degree of collaboration
3. Geographical distribution of paper
5. Institution wise distribution of paper
6. Ranking list of Crops

METHODOLOGY

The present study is related to Bibliometric analysis of 1226 articles published in Indian journal of agronomy journal to evaluate the research publication of Indian society of Agronomy in the field of science and Technology. Authorship pattern, The degrees of collaboration of authors, geographical distribution number of references and the number of pages manually and tabulated for necessary data, finally all the collected data were analyzed for making the observations. As agronomy is a multidisciplinary subject that includes a number of interrelated fields to the fore white targeting to address a particular piece of problems .In certain cases expert comment is sought while deriving the subject of contributions. On Indian journal of agronomy journal and cover the period from 2003 to 2013, to the data for analyzing the present study.

SCOPE AND COVERAGE OF THE STUDY

The present study to find out the pattern of information used by the journals in the field of science subject. The study is based on the references appended to Indian journal of agronomy journals by the department of Agronomy , University library, Agriculture University, Coimbatore during 2003-2013.

IJA Bulletin has been selected as the source journal. It is a quarterly research journal of the Indian Journal Agronomy and is devoted to the advancement and dissemination of the fundamental and applied knowledge of library and information science. The **"INDIAN JOURNAL OF AGRONOMY"** comprises of research articles on the applied aspects of Soil – Water - Environmental relationship on Different crops and short

communications of scientists.   The contribution to this journal mostly belongs to the Indian community. The views expressed by them closely suits to the Indian environment. The progress is charged through developments seen in the developed countries. Therefore, the journal has been chosen for the purpose of the study. The period covered in this study is from 2003-2013.

DATA ANALYSIS

For the purpose of this study, the Bibliographical data was collected from agriculture university library, Coimbatore for the period of 2003 to 2013.Collected data were statistically analyzed, calculated, tabulated and presented by using RGR method, K. Subramanian's formula for Degree of Collaboration for its growth rate of the literature, author contribution and their collaboration, ranking list crops growth and its grey areas etc.

Table 1: Year wise Distribution of Paper

Sl no.	Year	Articles	Percentage
1	2003	72	05.87
2	2004	71	06.61
3	2005	64	05.22
4	2006	143	11.66
5	2007	158	12.89
6	2008	99	08.07
7	2009	96	07.83
8	2010	151	12.32
9	2011	138	11.26
10	2012	125	08.56
11	2013	119	09.71
	Total	1226	100

The table represents the year-wise distribution of articles published in The Indian society of agronomy Journal . It shows that details regarding the distribution of 1226 articles published from 2003-2013. Maximum 158 (12.89 %) articles was published in 2007 and minimum number of contributions i.e., 64 (05.22%) in the year 2014.

Table 2: Author-wise Distribution of Paper

Authorship pattern	03	04	05	06	07	08	09	10	11	12	13	Total	%
Single author	7	2	6	15	16	13	11	11	15	13	13	122	9.95
Two author	25	43	30	70	76	40	33	60	38	37	52	504	41.11
Three author	24	16	11	33	45	32	29	50	48	35	32	355	28.95
Four author	12	17	9	17	18	12	18	20	29	13	13	178	14.52
Five author	4	3	5	7	2	2	5	7	8	7	8	58	47.31
Six and above	-	-	3	1	1	-	-	3	-	-	1	9	0.73
Total	72	81	64	143	158	99	96	151	138	105	119	1226	**100.00**

The findings of authorship pattern in Agronomy literature reveal the following facts. The two author's paper first in order (41.11%) where as three author's paper obtains the second order of priority (28.95%) the four author's paper records the third order of priority (14.52.95%).   The present study analyses the research papers contributed by author to ten authors. It is noticed that the number of contributions from 5 to 10 authors has been reduced. The volume wise analysis indicates that two author's paper record a predominant category in all years of publication.

Table 3: Authorship pattern with Degree of Collaboration

Year	Volume	No. of Authors		Total	Degree of collaboration
		Single	Multiple		
2003	48	7	65	72	0.902
2004	49	2	79	81	0.975
2005	50	6	58	64	0.906
2006	51	15	128	143	7.888
2007	52	16	142	158	0.898
2008	53	13	86	99	0.868

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2009	54	11	85	96	0.885
2010	55	11	140	151	0.927
2011	56	15	123	138	0.891
2012	57	13	92	105	0.876
2013	58	13	106	119	0.890
Total		122	1104	1226	

$$DC = \frac{1104}{122 + 1104} = 0.900$$

It was observed that the Degree of Collaboration was high i.e., 1226 (0.900) in terms of collective contribution and individually responsible authors' contribution was less towards the subject. (i.e., 122) The result was extracted by using the K. Subramanian's formula for Degree of Collaboration.

Table 4: Geographical Distribution of Paper

State	03	04	05	06	07	08	09	10	11	12	13	Total	%
Uttar Pradesh	10	9	12	22	17	23	13	41	18	29	23	217	17.69
Madhyapradesh	12	8	4	14	13	10	14	23	14	5	16	133	10.85
New Delhi	4	9	7	16	8	8	8	9	19	18	16	122	9.95
Haryana	8	5	4	12	7	3	10	7	9	11	8	84	6.85
Tamil Nadu (CBE)	1	3	3	7	14	4	7	9	4	13	11	76	6.19
Bihar	7	2	2	11	10	7		10	12	10	4	75	6.11
Rajasthan	3	7	7	5	5	10	5	4	9	9	10	74	6.04
West Bengal	--	6	4	9	6	1	2	6	11	4	6	55	4.49
Orissa	3	1	--	3	3	3	3	10	7	6	14	53	4.32
Maharashtra	3	1	5	3	11	10	6	--	3	5	5	52	4.24
Himachal Pradesh	5	3	2	5	9	3	4	8	3	3	2	47	3.83
Karnataka	3	5	1	5	7	3	6	5	3	3	2	43	3.50
Andhrapradesh	2	2	3	5	7	2	--	6	4	8	3	42	3.42
Punjab	2	6	2	4	3	5	3	6	7	3	1	42	3.42
Gujarat	3	4	2	3	3	1	4	8	1	1	5	35	2.85
Assam	3	--	--	--	9	2	4	2	3	2	2	27	2.20
Kashmir & Jammu	--		3	3	--		3	5	2	2		18	1.47
Kerala	--	--	1	2	--				4	1	1	9	0.73
Megmalaya	--	1	--	1	1	--			1	2	1	7	0.57
Bengladesh				1	1	--		1		1		4	0.33
Sikkim	--	--	1	--	1	--		1				3	0.24
Nagaland	1	--	--		--	1						2	0.16
Andaman	--	1	--	1	--							2	0.16
Tripura	--	1	--	--								1	0.08

Turkey					1	- -					1	0.08
Saudi Arabia	- -	- -	- -	- -	1	- -					1	0.08
Arunachal Pradesh					1	- -					1	0.08
Total	70	74	60	132	141	95	87	160	139	136	132	1226

Out of 1226 contributions of the study period during 2003 - 2013, it was observed that there were 27 state had contributed towards the subject field. Among them, Utta Pradesh was the highest contributor during the study period i.e., 271 (17.69%) and according to the study that the year 2005 was remarkable year in terms of articles productivity

Table 5: Institution-wise Distribution of Paper

Institution	No. of authors	Percentage
Academic institution	670	54.65
Research Institution	352	28.71
Special institution	204	16.64
Total	1226	100

The table shows institution wise distribution of contributions of this Indian Journal of agronomy. Out of 1226 contributions, the highest number, i.e., 670 (54.65%) has been contributed by Academic Institution and lowest number, i.e., 204 (16.64%) has been contributed by Special Institution.

Table 6 :Ranking lists of most frequently cited crops

s.no	Name of the crops	Rank	No. of crops	%	Cum no. of crops	Cum.%
1	Rice	1	193	15.74	193	15.74
2	Wheat	2	176	14.36	369	30.10
3	Intercropping	3	138	11.26	507	41.36
4	Mustard	4	79	6.44	586	47.80
5	Maize	5	66	5.38	652	53.18
6	Ground Nut	6	55	4.49	707	57.67
7	Soya Bean	7	49	4.00	756	61.67
8	Sorghum	8	34	2.77	790	64.44
9	Sunflower	8	34	2.77	824	67.21
10	Cotton	9	33	2.69	857	69.90
11	Pearl Millet	10	28	2.28	885	72.18
12	Pigeon Pea	11	26	2.12	911	74.30
13	Sugarcane	11	26	2.12	937	76.42
14	Green Gram	12	23	1.88	960	78.30
15	Grasses	13	19	1.55	979	79.85
16	Potato	13	19	1.55	998	81.40
17	Chick pea	14	17	1.39	1015	82.79
18	Oats	15	16	1.31	1031	84.10
19	Finger millet	16	15	1.22	1046	85.32
20	Pea	16	15	1.22	1061	86.54
21	Linseed	17	13	1.06	1074	87.60
22	General	17	13	1.06	1087	88.66
23	Lentil	17	13	1.06	1100	89.72
24	Black gram	18	12	0.98	1112	90.70
25	Safflower	19	10	0.82	1122	91.52
26	Toria	20	9	0.73	1131	92.25
27	Onion	20	9	0.73	1140	92.98
28	Rape Seed	21	8	0.65	1148	93.63
29	Sesame	21	8	0.65	1156	94.28
30	Cowpea	22	7	0.57	1163	94.85
31	Cluster Bean	23	6	0.49	1169	95.34
32	Jute	24	5	0.41	1174	95.75
33	Moung Bean	24	5	0.41	1179	96.16
34	Opium Paddy	25	4	0.33	1183	96.49
35	Henbane	25	4	0.33	1187	96.82
36	Coriander	25	4	0.33	1191	97.15

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37	Barley	25	4	0.33	1195	97.48
38	Cumin	25	4	0.33	1199	97.81
39	Legumes	26	3	0.24	1202	98.05
40	Ragi	26	3	0.24	1205	98.29
41	Gubi sarson	26	3	0.24	1208	98.53
42	Palmaroqa	26	3	0.24	1211	98.77
43	Raya	27	2	0.16	1213	98.93
44	Redgram	28	1	0.08	1214	99.01
45	Java	28	1	0.08	1215	99.09
46	Bell pepper	28	1	0.08	1216	99.17
47	Rpse;;e	28	1	0.08	1217	99.25
48	Celeary seed	28	1	0.08	1218	99.33
49	Tomato	28	1	0.08	1219	99.41
50	Dates	28	1	0.08	1220	99.49
51	Watermelon	28	1	0.08	1221	99.57
52	Banana	28	1	0.08	1222	99.65
53	Papaya	28	1	0.08	1223	99.73
54	Tobacco	28	1	0.08	1224	99.81
55	Davana	28	1	0.08	1225	99.89
56	Dil (oil Seed)	28	1	0.08	1226	99.97

CONCLUSION

The present study is related to Bibliometrics analysis of articles published in Indian society of agronomy journal from 2003-2013. The study has analyses various aspects such as authorship Pattern, degree of collaboration among the authors and geographical distribution of papers. The year-wise distribution of articles in Indian journal of agronomy journal shows that the highest number 158 (12.89%) total output1226 have appeared in the year 2003 & 2013. Maximum number of articles is 504 (41.11%) have been contributed by Two authors. This shows that single author research work were low among the contribution made to the Indian journal of agronomy journal. This has been further testified with the degree of collaboration. The degree of collaboration in Indian journal of agronomy journal is 0.900 which clearly contribution

REFERENCES

Bakri, A. & Willett, P. (2008). The Malaysian Journal of Library and Information Science-2006: A bibliometric study. *Malaysian Journal of Library & Information Science*, 13(1), 103-116.

Jena, K.L. (2006). A bibliometric analysis of the journal 'Indian Journal of Fibre and Textile Research, 1996-2004'. *Annals of Library and Information Studies*, 53(1), 22-30.

Bibliometric analysis of literature on diabetes (1995 - 2004), *Annals of Library and Information Studies*, 56(3), 150-155.

Mahapatra, R.K. & Jena, P. (2006). Scientific research productivity on Orissa: A bibliometric analysis. *Annals of Library and Information Studies*. 53(1), 18-21.

Mittal, R., Sharma, A. & Singh, G. (2006). Periodical literature on library and information science education: A bibliometric study. *Annals of Library and Information Studies*. 53(4), 224-229.

Madasamy, R. & Alwarammal, R. (2009). Doctoral degrees in library and information science in India during 2003-2008: A study. *Annals of Library and Information Studies*, 56 (4), 262-266.

Thavamani, K. (2013). Bibliometric analysis of the DESIDOC Journal of Library & Information Technology for the year 2007 - 2011. *International Journal of Information Dissemination and Technology*, 3(1),38-41.

Verma, N., Tamrakar, R. & Sharma, P. (2007). Analysis of contributions in 'Annals of Library and Information Studies'. *Annals of Library and Information Studies*. 54(2), 106-111.

Vijayanathan R, Mahendiran.R (2014), Use Pattern of Researcher's Technique :A scientometric Analysis, *International Journal of Science and Research*,Vol.3, No.5, p432-435

Warraich N.F. & Ahmad, S. (2011). Pakistan Journal of Library and Information Science: A bibliometric analysis. *Pakistan Journal of Library & Information Science*, 12, 1-7.

Williams, E.N. (2006). Bibliometric analysis of quantity and quality of nigeria's biomedical literature. *Library and Information Science Research Electronic Journal*, 16(2).

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