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Trends in Citation Pattern in Agricultural Doctoral Theses of Bangladesh Agricultural University

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Abstract: *By the method of citation analysis an attempt has been made to identify the main sources of citations and prepare a list of the most important journals used in various disciplines of Agricultural Sciences in Bangladesh Agricultural University (BAU), Mymensingh (i.e. Veterinary Science, Agriculture, Animal Husbandry, Agricultural Economics & Rural Sociology, Agricultural Engineering & Technology and Fisheries). In addition to it, a list of 123 most cited primary journals in order to their merit has been prepared. The geographical and chronological scattering of citations has also been included in the study. The information inferred in the paper may be of helpful to Agricultural University Libraries of Bangladesh to arrive at a need-based consideration in the selection and acquisition of journals within the limited budgets.*

Keywords: *Citation Pattern, Agriculture, Doctoral Theses and Technology.*

Ealier a substantial number of such studies have been carried out in the world. Some of them are listed in this paper (Deo, V.N., 1995; Pichappan, P. 1990; Doraswamy, M. 2006; Lee, W.M., 2000; Thakur, M.K., 2006 and Ahmad, Moin, 2006).

Introduction

"Because of the rapidly growing boom in the publication of literatures like journals, books, government publications, proceedings, bulletins etc. in the field of Agricultural Science, it may not be feasible for any library to procure all the required reading materials for its potential users within the limited budget. Therefore, the knowledge of comparative and up-to-date details of the literature is of great significance. Citation analysis is one of the important tools for searching the major sources of literature"1. The goal of this study is to use citation used pattern whether the BAU library is meeting the needs of information to the researchers of various disciplines. " The academic and scientific agencies in the country are using journal's impact factor judging the merit and scholarship of research papers, for deciding appointments to academic and research positions and nominations for research awards, and for benchmarking the performance of scientific staff and research laboratories for inter-comparisons"2. This technique has also been used by several workers in the fields of Veterinary 3, Agriculture 4, Animal Husbandry 5, Agricultural Economics & Rural Sociology6, Agricultural Engineering & Technology 7 and Fisheries 8 etc. but very few attempts have been made to develop such a systemic study in the field of agricultural science and we have tried to do something more to it. In this study, authors have analyzed Ph.D. theses of a specific subject or various subjects in fields or as a specific journals etc. We have selected 237 Ph.D. theses in the various fields of agricultural sciences.

Scope and Objectives

The scope of this study needs to be developed in the field of Agricultural Science since the bulk of researches are going on rapidly. From 1973 and up to till date on 31st December, 2013, 404 scholars awarded Ph.D. Degree from this University in different disciplines.

An investigation has been made here to study the citations contained in Ph.D. theses submitted by the scholars of different disciplines of agricultural science and to analyse them to obtain the required information with respect to the objectives given below:

1. to identify the subject-wise citations;
2. to show the different forms of citations;
3. to find out the geographical distribution of the cited journals; and
4. to depicts the chronological scattering of cited literature.
5. to prepare a list of the top five most cited journals;
6. to prepare a list of journals which are commonly cited by the researchers;

Methodology

Out of 404 theses, we have selected 237(58.66%) theses proportionately for the analyzing purposes. The sample technique was the stratified random sampling with proportional allocation. From these selected theses, a total of 43,078 citations were collected in order to analyze in present study. All the citations noted in the bibliography were categorized into two main groups: non-periodical publications and periodical publications. Non-periodical publications consist of text books, reference books, Government Publications and theses. Periodical comprise journals, bulletins, proceedings or similar works, which appear regularly and continuously in a numbered sequence.

However, the newspapers and annual reports were excluded from selected theses. All the citations of periodical and non-periodical publications were noted, classified, tabulated, presented, analyzed and interpreted with the help of tables. The study presents analysis of several parameters like subject-wise citations, forms of citations and finally a list

of top five important journals were compiled and prepared on the basis of highly cited articles of the journals. To identify the names of the branch and researcher were also indicated for its chronological study all the citations, which covered the period from 1912 to 2004, were divided into three classes: old period (1912-1971), recent period (1972-2000) and most recent period (2001 - 2013). For determining the origin of country and year of publication of journals, the Ulrich's International Periodical Directory (26th ed., 2004) and other sources available in the library were also consulted.

Results & Discussion

1. Department- wise distribution of theses

Bangladesh Agricultural University is to consist of 43 departments under the 6 Faculties. Out of these departments, only 30 departments were offered 404 Ph.D. degrees during the periods of 1973 to 2013.

Table1 depicts the number of submitted thesis (awarded) in different departments and the few numbers of awarded theses were taken from those departments for our analyzing purposes.

There are 8 departments out of which 43 departments were offered 24 Ph.D. degrees under the Faculty of Veterinary. We have taken 15(62.5%) out of 24 theses for analyzing purposes and found that 2888 of citations are used by the research scholars. Again, there are 12 departments out of which 16 departments were offered 257 Ph.D. degrees under the Faculty of Agriculture. We have taken 148(57.59%) for the study out of 257 theses and found that 25,757 citations are used by the researchers.

Further, there are 5 departments under the Faculty of Animal Husbandry and all the departments offered Ph.D. degree. We have analyzed 18 (64.28%) theses out of 28 theses and 4335 of citations are found from the analyzed theses. Under the Faculty of Agricultural Economics & Rural Sociology, there are 3 departments of which 5 departments offered Ph.D. degree. The total number of Ph.D. degree was 27 and we have taken 15 (55.55 %) theses to analyze and found 2410 citations.

Faculty of Agricultural Engineering & Technology is consisted of 5 departments. Three departments were offered Ph.D. degree and the rest are not providing any Ph.D degree. The total number of theses was 21and we have taken 14(66.67%) theses in order to study and found 1845 citations are used. Faculty of Fisheries is the last one, which belong to 4 departments. Out of 47 submitted theses, 27 (57.45%) theses were analyzed and 5843 citations are used by the research scholars. It is noted that the departments under the faculties have not done any Ph.D. works which are not mentioned in (Table 1) and the arrangement of different departments are used based on descending order in relation to the theses submitted.

Table 1

Sl. No.	Name of the Department	No. of theses submitted	No.of theses analyzed	No. of citations contained in analyzed theses
FACULTY OF VETERINARY SCIENCE				
01.	Microbiology and Hygiene	06	03	554
02.	Anatomy and Histology	02	01	098
03.	Medicine	01	01	141
04.	Parasitology	02	01	136
05.	Pathology	03	02	406
06.	Physiology	01	01	453
07.	Surgery and Obstetrics	04	03	600
08.	Pharmacology	05	03	500
	Total	24	**15**	**2888**
	Percentage (%)	**100**	**62.5%**	**-**

Sl. No.	Name of the Department	No. of theses submitted	No.of theses analyzed	No. of citations contained in analyzed theses
FACULTY OF AGRICULTURE				
01.	Agronomy	72	40	5096
02.	Horticulture	47	30	4340
03.	Agricultural Ext. & Education	25	13	2031
04.	Plant Pathology	28	16	2048
05.	Genetics and Plant Breeding	29	16	2488
06.	Soil Science	19	12	2016
07.	Crop Botany	05	03	870
08.	Entomology	13	07	1582
09.	Biochemistry	01	01	1572
10.	Agricultural Chemistry	07	04	202
11.	Biotechnology	06	03	1750
12.	Environmental Science	05	03	1762
	Total	**257**	**148**	**25757**
	Percentage (%)	**100**	**57.59%**	**-**
FACULTY OF ANIMAL HUSBANDRY				
01.	Animal Breeding & Genetics	07	04	1020
02.	Animal Nutrition	08	05	1758
03.	Animal Science	03	02	265
04.	Poultry Science	05	04	746
05.	Dairy Science	05	03	546
	Total	**28**	**18**	**4335**
	Percentage (%)	**100**	**64.28%**	-
FACULTY OF AGRICULTURAL ECONOMICS & RURAL SOCIOLOGY				
01.	Agricultural Economics	19	10	1192
02.	Agricultural Finance	02	01	066
03.	Agricultural Business	06	04	1152
	Total	**27**	**15**	**2410**
	Percentage (%)	**100**	**55.55%**	-
FACULTY OF AGRICULTURAL ENGINERING & TECHNOLOGY				
01.	Farm Power and Machinery	08	05	551
02.	Irrigation & Water Management	12	08	1147
03.	Food Technology	01	01	147
	Total	**21**	**14**	**1845**
	Percentage (%)	**100**	**66.67%**	
FACULTY OF FISHERIES				
01.	Aquaculture	14	08	2289
02.	Fisheries Biology & Genetics	11	07	1351
03.	Fisheries Management	17	10	1773
04.	Fisheries Technology	05	02	430
	Total	**47**	**27**	**5843**
	Percentage (%)	**100**	**57.45%**	-
	Grand Total	**404 (100 %)**	**237(58.66 %)**	**43,078**

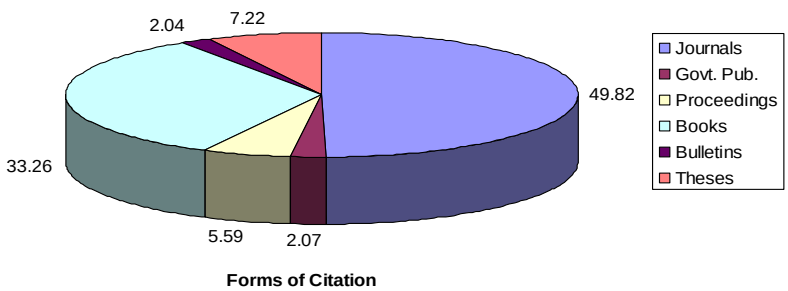
2. Forms of Citation

Table 2 shows the different forms of reading materials used by the researchers`' On the basis of the analysis made, it was found that the researchers made use of journals, Government publications, proceedings, books, bulletins and theses as the source of information (Table 2). But as best as 49.82% citations were from journals followed by 33.26% from books and the remaining sources were responsible for 16.92 % citations only.

Table 2

Name of the Faculty	Sl. no.	Documents cited	No. of citations	Percentage (%)	Cumulative (%)
Veterinary	01.	Journals	2169	75.10	-
	02.	Govt. Pub.	30	1.04	76.14
	03.	Proceedings	116	04.02	80.16

Name of the Faculty	Sl. no.	Documents cited	No. of citations	Percentage (%)	Cumulative (%)
	04.	Books	434	15.03	95.19
	05.	Bulletins	111	03.84	99.03
	06.	Theses	28	0.97	**100**
	Total		**2888**	**100**	-
Agriculture	01.	Journals	11972	46.48	-
	02.	Govt. Pub.	220	0.86	47.34
	03.	Proceedings	1276	4.95	52.29
	04.	Books	9948	38.62	90.91
	05.	Bulletins	485	1.88	92.79
	06.	Theses	1856	7.21	**100**
	Total		**25757**	**100**	-
Animal Husbandry	01.	Journals	2315	53.40	-
	02.	Govt. Pub.	48	1.11	54.51
	03.	Proceedings	146	3.37	57.88
	04.	Books	1219	28.12	86.00
	05.	Bulletins	48	01.11	87.11
	06.	Theses	559	12.89	**100**
	Total		**4335**	**100**	-
Agricultural Economics & Rural Sociology	01.	Journals	1072	44.48	-
	02.	Govt. Pub.	125	05.19	49.67
	03.	Proceedings	119	04.94	54.61
	04.	Books	917	38.05	92.66
	05.	Bulletins	29	01.20	93.86
	06.	Theses	148	06.14	**100**
	Total		**2410**	**100**	-
Agricultural Engineering & Technology	01.	Journals	708	38.38	-
	02.	Govt. Pub.	17	0.92	39.30
	03.	Proceedings	153	8.28	47.59
	04.	Books	907	49.16	96.75
	05.	Bulletins	24	1.30	98.05
	06.	Theses	36	1.95	**100**
	Total		**1845**	**100**	-
Fisheries	01.	Journals	3225	55.19	-
	02.	Govt. Pub.	452	7.73	62.92
	03.	Proceedings	597	10.22	73.14
	04.	Books	905	15.49	88.63
	05.	Bulletins	181	3.10	91.73
	06.	Theses	483	8.27	**100**
	Total		**5843**	**100**	-
Grand Total Citation of 6 Faculties	**Grand Total Citation of 6 Faculties**				
	Journals		21461	49.82	-
	Govt. Pub.		892	2.07	51.89
	Proceedings		2407	5.59	57.48
	Books		14330	33.26	90.74
	Bulletins		878	2.04	92.78
	Theses		3110	7.22	**100**
			43078	**100**	-



3. Country-wise distribution of cited journals

Table 5 presents that USA, India, UK, Bangladesh, Netherlands, Japan, Australia, Germany, Philippines, Iran, Pakistan, Switzerland and Newzeland produced 123 titles which account for 10.89% of the total number of journals covering 41.75% of the total number of citations. The remaining citations of other countries produced 89.11% titles which account of 58.25% citations are only journals. These citations are not counted because used below 3 times. The other sources are such as proceedings, theses, bulletins, government publications together account for 16.92% citations only.

With the help of citation analysis the top five most important primary journals in each branch have been identified, which will serve as a guide-line to the researchers to pick out the journals most relevant in their area of research.

Table 3

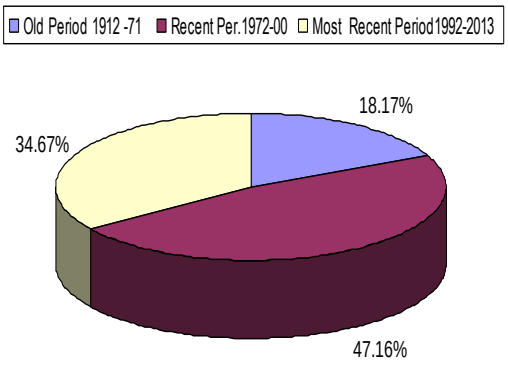
Sl. No.	Country	No. of Journals	Percentage (%)	No. of Citations	Percentage (%)
01.	Australia	03	0. 27	053	0.25
02.	Bangladesh	11	0 .97	625	2. 91
03.	Canada	03	0 .27	061	0. 28
04.	German	03	0 .27	137	0. 64
05.	India	25	2.21	2316	10.79
06.	Iran	01	0. 09	253	1.18
07.	Ireland	01	0.09	022	0.10
07.	Japan	04	0 .35	195	0.91
08.	Netherlands	04	0. 35	380	1.77
09.	Newzeland	01	0.09	014	0.06
10.	Pakistan	01	0. 09	009	0.04
11.	Philippine	02	0. 18	082	0.38
12.	Switzerland	01	0. 09	010	0. 05
13.	UK	25	2.21	1477	6.88
14.	USA	38	3.36	3325	15.47
Total Journal (according to top five most)		**123**	10.89	8959	41.75
	Rest used journals	1007	89.11	12502	58.25
	Grand Total	**1130**	**100**	**21461**	**100**

4. Chronological distributions of citation

Table 6 indicates the scattering of citations chronologically. The table shows that about 34.67% cited literature, irrespective of documents were published during most recent period (1992 - 2013). About 47.16% of the citations were published during recent period (1972-2000) and only 18.17% from old period (1912- 1971). This study may be very useful and time saving and assuring to the librarians in the acquisition of back-log of journals.

Table 4

Periodicals					*Non-periodicals*				
Period	***Journals*** No. of Cit. & %	Bulletin No. of Cit. & %	Proceedings No. of Cit. & %	Total No. of Cit. & %	Books No. of Cit. & %	Govt.Pub No. of Cit. & %	Thesis No. of Cit. & %	Total No. of Cit. & %	Grand Total & %
Old Period 1912 -71	3434 (7.97%)	233 (0.54 %)	469 (1.09 %)	4136 (9.60%)	3125 (7.25 %)	227 (0.53%)	341 (0.79%)	3693 (8.57 %)	7829 (18.17%)
Recent Per. 1972-00	9365 (21.74 %)	343 (0.80 %)	1481 (3.44 %)	11189 (25.97%)	7170 (16.64%)	463 (1.07%)	1494 (3.47%)	9127 (21.19 %)	20316 (47.16%)
Most Recent Period 1992-2013	8662 (20.11%)	302 (0.70%)	457 (1.06 %)	9421 (21.87%)	4035 (9.37%)	202 (0.47%)	1275 (2.96%)	5512 (12.80%)	14933 (34.67%)
Total	**21461 (**49.82**%)**	878 (2.04 %)	2407 (5.59%)	24746 (57.44%)	**14330 (**33.27**%)**	892 (2.07%)	3110 (7.22%)	18332 (42.56%)	43078 (100%)



Chronological distributions of citation

5. Top five most important journals in each branch

Since the number of journals in the various disciplines of agriculture is quite exhaustive, a comprehensive study have made keeping in view the economy of space only five most important journals as indicated by the frequency of their citations from the various disciplines is provided in (**Table 5, Appendix**). Researchers were used different types of journals considering below 5 times used journals have not been counted. Table 5 also shows the country of origin, the establishing date of journals and how many citations were used from individual journal in each branch. Besides this, Table 5 also has been depicted the total number of used citations along with there percentage of the top five most used journals.

6. Rank list of commonly cited journals in each Faculty

Table 6 (Appendix) presents the list of commonly cited journals under the Faculty of Veterinary Science, Agriculture, Animal Husbandry, Agricultural Economics & Rural sociology, Agricultural Engineering & Technology and Fisheries in descending order in respect to their number of citations. The list of rank is based on the analysis of the total citations 43078 from the number of journals are 1113. The titles which share the same rank are listed in an alphabetical order. Although the total number of cited journals are 1113 but we have considered only 123 journals those were cited at least seven times by the research scholars of various departments in different Faculties.

Findings

In the present study 43,078 citations were analyzed from 237 PhD theses in Bangladesh Agricultural University. On the basis of the above discussion the following findings are drawn:

1. It is observed that the highest number (257) of PhD degrees was awarded under the Faculty of Agriculture by Bangladesh Agricultural University during the period of 1973-2013.
2. Findings revealed that highest number of citations (25,757) and lowest number of citations (1845) were used by the researchers under the Faculty of Agricultural and Facutly of Agricultural Engineering & Technology respectively.
3. It is found from overall the findings that Books (33.27%) and Journals (49.82%) were widely cited by the researchers during their preparing theses.
4. Findings observed that foreign countries produced (89.11%) titles which account of (58.25%) citations in this study.
5. About 34.67% citations published during most recent period (1992-2013), 47.16% citations published during recent period (1972-2000) and 18.17% from old period (1912-1971).
6. Analysis has been shown in Table 5 reveals that 3.36% out of 10.89% journals came from USA, 2nd and 3rdly 2.21% journals came from UK and India. More than 34.67% literature was cited from most recent period in which journals contributed nearly 30% alone.
7. It is also found that the list of rank is based on the analysis of the total citations 43078 from the number of journals are 1113.

The major sources of information from the point of view of agricultural research (Veterinary Science, Agriculture, Animal Husbandry, Agricultural Economics & Rural Sociology, Agricultural Engineering & Technology and Fisheries), in Bangladesh Agricultural University, Mymensingh as a guidelines for the researchers to pick out the most relevant journals in their respective area of research.

Conclusion

Citation analysis in any research activites has become one of the popular methods to study subject relationtionships, citation forms, impact,

publication trends, and to identify top most journals in a particular subject field or for a particular research community. It is evident from the citations that PhD research scholars of the Bangladesh Agricultural University consulted enormous literature while preparing their dissertations.

It is expected that the study can enlighten the researchers to identify the primary sources of information from which citations have been made. Such studies will help the information scienctists in circulation of contents for the use of potential users. This study will also serve as guidelines to the librarians in the collection and acquisition of most useful journals within the capacity.

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Appendix
Table -5
Top Five most important journals in each branch of Agricultural Science

Sl. no.	Branch Rank	Name of the Journals	Country of origin	Year of found.	No. of citations	Percentage (%)
Faculty of Vet. Sc.		I. Indian J. of Animal Sciences	India	1931	26	28.89
01.	Anatomy & Histology	II. Acta Anatomy	Swizerland	1945	10	11.11
		III. J. of Agricultural Science	UK	1905	08	8.89
		IV. American J. Veterinary Research	USA	1940	08	8.89
		V. Indian Veterinary Journal.	India	1924	06	6.67
		Total citation (J) , 90			**58**	**64.45**
02.	Medicine	I. J. Clinical Microbiology	USA	1975	22	17.60
		II. American J. Veterinary Research	USA	1940	20	16.00
		III. Veterinary Record	UK	1888	17	13.60
		IV. Infectious Immunology	USA	1970	16	12.80
		V. J. American Veterinary Medical Association	USA	1877	14	11.20
		Total citation (J) , 125			**89**	**71.20**
03.	Microbiology & Hygiene	I. Avian Diseases	USA	1957	210	46.67
		II. Avian Pathology	USA	1972	35	7.78
		III. American J. Veterinary Research	USA	1940	24	5.33
		IV. Vaccine	UK		23	5.11
		V. Arch. Virology	USA	1939	20	4.44
		Total citation (J) , 450			**312**	**69.33**
04	Parasitology	I. Avian Diseases	USA	1957	16	12.80
		II. Infection Immunity	USA	1970	14	11.20
		III. Journal of Clinical Microbiology	USA	1975	13	10.40
		IV. J. American Veterinary Medical Association	USA	1877	12	9.60
		V. Journal of Protozoa	USA	1954	07	5.60
		Total citation (J) , 125			**62**	**49.60**
05	Pathology	I. Indian Veterinary Journal	India	1924	84	33.20
		II. Helminthology Abstract	UK	1932	40	15.81
		III. Indian Journal of Animal Science	India	1931	26	10.28
		IV. Indian Journal of Animal Health	India	1960	23	9.09
		V. Indian J. Veterinary Science	India	1924	10	3.95
		Total citation (J) , 253			**183**	**72.33**
06	Physiology	I. Journal of Animal Science	USA	1968	90	19.82
		II. Journal of Dairy Science	USA	1917	65	14.32
		III. Theriogenology	USA	1974	50	11.01
		IV. Veterinary Record	UK	1888	44	9.69
		V. Indian Veterinary Journal	India	1924	38	8.37
		Total citation (J) , 454			**287**	**63.22**
07	Surgery & Obstetrics	I. Veterinary Record	UK	1888	115	37.34
		II. Journal of Dairy Science	USA	1917	63	20.45
		III. Preventive Veterinary Medicine	Netherlands	1982	30	9.74
		IV. J. American Veterinary Medical Association	USA	1877	29	9.42
		V. Australian Veterinary Journal	Australia	1925	17	5.52
		Total citation (J) , 308			**254**	**82.47**

08	Pharmacology	I. Environmental Health Perspective	UK	1991	42	**11.54**
		II. J. Ethnopharmacology	USA	1983	34	**9.34**
		III. Diabetes Care	USA	1978	28	**7.69**
		IV. Indian J. Pharmacology	India	1981	25	**6.87**
		V. Toxicology Science	Ireland	1973	22	**6.04**
		Total citation (J) 364			**151**	**41.48**
Faculty of Agriculture		I. Journal of Agricultural Science	UK	1905	33	34.38
o1	Agricultural Chemistry	II. Journal of Soil Science	Iran	1950	15	15.63
		III. Journal of Agronomy	UK	1907	09	9.38
		IV. Journal of American Society	USA	1968	05	4.17
		V. Nature	UK	1869	05	4.17
		Total citation (J), 96			65	**67.71**
02	Agricultural Extension & Education	I. Indian J. Extension Education.	India	1965	180	36.36
		II. Journal of Applied Psychology	USA	1951	45	9.09
		III. Bangladesh J. Extension Education	Bangladesh	1995	36	7.27
		IV. Rural Sociology	USA	1936	18	3.64
		V. Indian J. Public Administration	India	1979	12	2.42
		Total citation (J) , 495			**291**	**58.78**
03	Agronomy	I .Indian Journal of Agronomy	India	1956	339	12.89
		II. Field Crop Abstract	UK	1948	152	5.78
		III. Indian. Journal of Agricultural Science	India	1931	147	5.59
		IV. Agronomy Journal	USA	1907	135	5.14
		V. Journal of Agricultural Science	Iran	1905	113	4.30
		Total citation (J) , 2629			**886**	**33.70**
04	Biochemistry	I. Plant Physiology	USA	1926	210	16.56
		II. Soil Science	UK	1950	92	7.26
		III. Plant & Soil	Netherlands	1949	51	4.02
		IV. Biochemistry	USA	1964	47	3.71
		V. Soil Science Society of American Proc.	USA	1989	45	3.55
		Total citation (J) , 1268			**445**	**35.09**
05	Crop Botany	I. Crop Science	USA	1961	48	7.62
		II. Annals of Botany	***UK***	1987	42	6.67
		III. Agronomy Journal	USA	1907	41	6.51
		IV. Australian J. Plant Physiology	Australia	1974	36	5.71
		V. Australian J. Agricultural Research	Australia		33	5.24
		Total citation (J) , 630			**200**	**31.75**
06	Entomology	I. International. Rice Research Newsletter	Philippine	1974	65	25.00
		II. Japanese J. of Applied zoology	Japan	1957	43	16.54
		III. Journal of Economic. Entomology	USA	1908	21	8.08
		IV. Rice Comm. Newsletter	Philippine	1897	17	6.54
		V. Pakistan J. Agricultural Research	Pakistan	1949	09	3.46
		Total citation (J) , 260			**155**	**59.62**
07	Genetics & Plant Breeding	I. Crop Science	USA	1961	205	16.21
		II. Indian J. Genetics	India	1941	149	11.78
		III. Heridity	Great Britain	1947	74	5.85

		IV. Genetics	USA	1916	69	5.45
		V. Indian Journal of Agricultural Science	India	1931	61	4.82
		Total citation (J) , 1265			**558**	**44.11**
08	Horticulture	I. Indian Journal of Horticulture	India	1943	99	6.89
		II. Horticulture Science	USA	1966	87	6.05
		III. Journal of Agricultural Science	Iran	1905	76	5.29
		Iv. Potato Journal	USA	1955	61	4.24
		V. Bangladesh Horticulture	Bangladesh	1973	54	3.76
		Total citation (J) , 1437			**377**	**26.24**
09	Plant Pathology	I. Indian Phyto-pathology	India	1948	149	13.73
		II. Phyto-pathology	USA	1911	126	11.61
		III. Plant Diseases	USA	1917	74	6.82
		IV. Bangladesh J. Plant Pathology	Bang	1974	60	5.53
		V. Canadian J. Plant pathology	Canada	1979	30	2.76
		Total citation (J) , 1085			**439**	**40.46**
10	Soil Science	I. J. of Soil Science	UK	1950	76	15.29
		II. Soil. Science Society of American Journal	USA	1936	72	14.49
		III. Plant and soil	Netherland	1949	59	11.87
		IV. Soil Sc. Society of American Proceedings	USA	1989	33	6.64
		V. Canadian J. Soil Science	Canada	1956	24	4.83
		Total citation (J) , 497			264	**53.12**
11.	Biotechnology	I. Plant Cell Tissue Culture	Japan	1960	108	**8.64**
		II. Plant Cell Report	German	1981	96	**7.68**
		III. American Potato Journal	USA	1963	60	**4.80**
		IV. Potato Research	USA	1955	47	**3.76**
		V. Indian J. Agronomy	India	1971	34	**2.72**
		Total citation (J) 1250			345	**27.60**
12.	Environmental Science	I. Agricul. & Forest Meteorology	Netherland	1964	**228**	**21.51**
		II. Compost Science & Utilization	USA	1993	**72**	**6.79**
		III. Soil Sc. Soc. of American Journal	USA	1989	**58**	**5.47**
		IV. Bangladesh Rice Journal	Bangladesh	1995	**51**	**4.81**
		V. Global Change Biology	USA	1972	**24**	**2.26**
		Total citation (J) 1060			**433**	**40.85**
Fac. of Animal Husbandry		I. Genetics	***USA***	***1916***	***32***	***19.39***
01	Animal Breeding & Genetics	II. Indian J. Animal Science	India	1931	26	15.76
		III. Indian Veterinary Journal	India	1924	16	9.70
		IV. Animal Production	UK	1954	14	8.48
		V. Small Rumminant Research	Netherland	1988	12	7.27
		Total citation (J) , 165			**100**	60.60
02.	Animal Nutrition	I. Poultry Science	USA	1908	550	58.76
		II. British Poultry Science	UK	1960	110	11.75
		III. Indian J. Poultry Science	India		40	4.27
		IV. Poultry Abstracts	UK	1975	16	1.71
		V. Bangladesh Journal of Animal Science	Bangladesh	1978	14	1.50
		Total citation (J) , 936			**730**	**77.99**
03	Animal Science	I. J. Ame. Leather Chemical Assoc.	USA	1952	85	19.54
		II. Leather Science	India	1954	37	8.51
		III. Indian Journal of Animal Science	India	1931	32	7.36
		IV. Leather Technology	Japan	1960	29	6.67

		V. Journal of Agricultural Science	UK	1905	23	5.29
		Total citation (J) , 435			**206**	**47.36**
04	Dairy Science	I. J. Animal Science	Bangladesh	1968	105	34.54
		II. J. Dairy Science	USA	1917	48	15.79
		III. Animal Production	UK	1954	39	12.83
		IV. Indian J. Dairy Science	India	1948	31	10.20
		V. Newzealand J. Agricultural Resarch	Newzealand		14	4.61
		Total citation (J) , 304			**237**	**77.96**
05	Poultry Science	I. Poultry Science	USA	1908	92	19.37
		II. British Poultry Science	UK	1960	35	7.37
		III. Indian Journal of Animal Science	India	1931	30	6.32
		IV. Poultry Abstracts	UK	1975	26	5.47
		V. World Poultry Science Journal	UK	1936	16	3.37
		Total citation (J) , 475			**199**	**41.89**
Agril Econ. & Rural		I. Indian J. Agricultural Economics	**India**	**1940**	**205**	**39.88**
01	Agricultural Economics	II.Bangladesh J. of Agril. Economics	Bangladesh	1980	38	7.39
		III. American J. Agricultural Economics	USA	1969	31	6.03
		IV. Journal of of Econometrics	USA	1933	27	5.25
		V. Bangladesh Development Studies	Bangladesh	1973	23	4.47
		Total citation (J) , 514			**324**	63.04
02.	Agricultural Finance	I. Indian J. of Agricultural Economics	India	1940	105	67.30
		II. Bangladesh J. of Agricultural Economics	Bangladesh	1987	18	11.54
		III. Bangladesh Development Studies	Bangladesh	1973	12	7.69
		IV. J. of Farm Economics	USA	1897	09	5.77
		V. Economic & Political Weekly	India	1966	06	3.85
		Total citation (J) , 156			150	96.15
03	Agri Business	I. Indian J. of Agril . Economics	India	1940	45	11.19
		II. Bangladesh Dev. studies	Bangladesh	1973	23	5.72
		III. American J. of Agril Economics	USA	1969	15	3.73
		IV. Bangladesh J. of Agril. Economics	Bangladesh	1980	12	2.99
		V. Econometrica	USA	1933	08	1.99
		Total citations (J), 402			103	25.62
Agril Eng. & Tech.		I. J. of Agricultural Engi. Research			63	**29.30**
01.	Farm power & Machinery	II. J. of Food Engineering	USA	1928	39	18.14
		III. Drying Technology	USA	1983	33	15.35
		IV. J. Food Technology	India	1966	30	13.95
		V. Energy	USA	1956	28	13.02
		Total citation (J) , 215			193	89.76
02	Irrigation & Water Management	I. Potato Abstracts	UK	1976	55	15.90
		II. J. of Indian Potato Assoc.	India	1974	42	12.14
		III. Agronomy Journal	USA	1907	35	10.12
		IV. Field Crop Abstracts	UK	1948	30	8.67
		V. American Potato Journal	USA	1973	21	6.07
		Total citation (J) , 346			183	52.89
03	Food Technology	I. Journal of Food Sc. & Technology	UK	1994	25	17.01

		II. Journal of Food Science	Canada	1956	13	8.84
		III. Journal of Food Engineering	USA	1928	12	8.16
		IV. Indian Food Packers	India	1986	08	5.44
		V. Chemical Engineering Science	UK	1951	06	4.08
		Total citations (J). 147			**64**	**43.54**
Faculty of Fisheries		I. Hydrobiology	Netherland	1985	88	6.46
01.	Aquaculture	II. American Fish Society	USA	1870	86	6.31
		III. Aquaculture	UK	1972	85	6.24
		IV. J. of Fish Research	Netherland	1982	68	4.99
		V. J. of Fish Biology	UK	1956	48	3.52
		Total citation (J) , 1363			**375**	**27.51**
02.	Fisheries Biology & Genetics	I. Aquaculture	UK	1972	72	10.54
		II. Indian J. Fisheries	India	1954	24	3.51
		III. Canadian J. of Zoology	Canada	1929	18	2.64
		IV. Bangladesh J. of Zoology	Bangladesh	1973	12	1.76
		V. Bangladesh J of Fisheries	Bangladesh	1986	08	1.17
		Total citation (J) , 683			**134**	**19.62**
03	Fisheries Management	I. Bangladesh J. of Zoology	Bangladesh	1973	180	18.89
		II. J. Inland Fisheries Society of India	India	1965	105	11.02
		III. Bangladesh J. of Fisheries	Bangladesh	1986	72	7.56
		IV. Bangladesh J. Agricultural Science	Bangladesh	1974	47	4.93
		V. Indian Journal of Fisheries	India	1954	19	1.99
		Total citation (J) , 953			**423**	**44.39**
04.	Fisheries Technology	I. Aquaculture	UK	1972	54	23.89
		II. J. of Marine Biology	Germany	1967	21	9.29
		III. Aqua Engineering	UK	1982	18	7.96
		IV. J. Expert Biology.	UK	1923	15	6.64
		V. J. Indian Aquaculture Society	India	1986	15	6.64
		Total citation (J) , 226			**123**	**54.42**

Table-6

Rank list of commonly cited journals in Agricultural Science

Sl. No.	**Rank No.**	**Name of the journals**	**Year of found.**	**Country of origin**	**No. of citations**	**Cumul. no. of citations**	**Percentage (%)**	**Cumul. %**
1	1	Poultry Science	1908	USA	642	-	7.13	-
2	2	Indian J. of Agronomy	1956	India	373	1015	4.14	11.27
3	5	J. of Agricultural Sc.	1905	Iran	253	1268	2.81	14.08
4	6	Crop Science	1961	USA	253	1521	2.81	16.89
5		Agril. & Forest Meterology	1964	Netherland	228	1749	2.53	19.42
6	3	Avian Diseases	1957	USA	226	1975	2.51	21.93
7	20	Agronomy Journal	1907	USA	220	2195	2.44	24.37
8	9	Aquaculture	1972	UK	211	2406	2.34	26.71
9	15	Plant Physiology	1926	India	210	2616	2.33	29.04
10	11	Indian J. of Agricultural Science	1931	India	208	2824	2.31	31.35
11	23	J. Animal Science	1942	USA	195	3019	2.17	33.52
12	41	Bangladesh J. of Zoology	1973	Bangladesh	192	3211	2.13	35.65
13	14	Journal of Soil Science	1950	UK	183	3394	2.03	37.68
14	21	Field Crops Abstracts	1948	UK	182	3576	2.02	39.70

15	16	Indian J. Extension Education	1965	India	180	3757	2.00	41.70
16	10	Veterinary Record	1888	UK	176	3932	1.95	43.65
17	12	Journal of Dairy Science	1917	USA	176	4108	1.95	45.60
18	4	Indian J. Agril. Economics	1940	India	149	4257	1.65	47.25
19	22	Indian J. of Genetics	1941	India	149	4406	1.65	48.90
20	24	Indian Phytopathology	1948	India	149	4555	1.65	50.55
21	13	British Poultry Science	1960	UK	145	4700	1.61	52.16
22	17	Indian Veterinary Journal	1924	India	144	4844	1.60	53.76
23	8	Indian J. of Animal Science	1931	India	140	4984	1.55	55.31
24	28	Phytopathology	1911	USA	126	5110	1.40	56.71
25	29	Plant & Soil	1949	Netherland	110	5220	1.22	57.93
26		Plant Cell Tissue Cult.	1960	Japan	108	5328	1.20	59.13
27	52	J. Inland Fish. Soc.of India	1965	India	105	5433	1.17	60.30
28	26	Genetics	1916	USA	101	5534	1.12	61.42
29	33	Indian Journal of Horticulture	1943	India	099	5633	1.10	62.52
30		Plant Cell Report	1981	German	096	5729	1.07	63.59
31	18	Hydrobiology.	1985	India	088	5817	0.98	64.57
32	34	Horticulture Science	1966	USA	087	5904	0.97	65.54
33	19	American Fisheries Society	1870	USA	086	5990	0.96	66.50
34	25	J. Am. Leather & Chem. Assoc.	1952	USA	085	6075	0.94	67.44
35	50	Bangladesh J. of Fisheries	1986	Bangladesh	080	6155	0.89	68.33
36	73	Soil Sc. Soc. of Ame. Proc.	1989	USA	078	6233	0.87	79.20
37	39	Heredity	1947	***UK***	074	6307	0.82	70.02
38	40	Plant Disease	1917	USA	074	6381	0.82	70.84
39		Compost Science & Uti.	1993	USA	072	6453	0.80	71.64
40	31	Soil Sc. of American Journal	1936	USA	072	6525	0.80	72.44
41	27	J. of Fisheries Research	1982	Netherland	068	6593	0.76	73.20
42	7	Int. Rice Research Newsletter	1974	Philippine	065	6658	0.72	73.92
43	45	J. of Agril. Eng. Research	1920	UK	063	6721	0.70	74.62
44	42	Potato Journal	1955	**USA**	061	6782	0.68	75.30
45	49	Bangladesh J. of Plant Pathology	1974	***Bangladesh***	060	6842	0.67	75.97
46	38	Bangladesh J. Agril. Econ.	1987	***Bangladesh***	056	6898	0.62	76.59
47	65	Potato Abstracts	1976	UK	055	6953	0.61	77.20
48	35	J. Am Vet. Medical Association	1877	USA	055	7008	0.61	77.81
49	47	Bangladesh Horticulture	1973	***Bangladesh***	054	7062	0.60	78.41
50	36	American J. Veterinary Research	1940	USA	052	7114	0.58	78.99
51		Bangladesh Rice J.	1995	Bangladesh	051	7165	0.57	79.56
52	37	Theriogenology	1974	USA	050	7215	0.56	80.12
53	32	J. of Fish Biology	1956	UK	048	7263	0.53	80.65
54		Potato Research	1955	***USA***	047	7310	0.52	81.17
55	57	Biochemistry	1964	***USA***	047	7357	0.52	81.69
56	70	Bangladesh J. of Agril. Sc.	1974	Bangladesh	047	7404	0.52	82.21
57	61	J. Applied Psychology	1951	USA	045	7449	0.50	82.71

58	55	Indian J. of Fisheries	1954	India	043	7492	0.48	83.19
59	66	Japanese J. of Applied Entomology	1957	Japan	043	7535	0.48	83.67
60	43	Poultry Abstracts	1975	UK	042	7577	0.47	84.14
61	60	Ann. Botany	1987	UK	042	7619	0.47	84.61
62	68	J. of Indian Potato Association	1974	India	042	7661	0.47	85.08
63		Environment Health Per	1991	UK	042	7703	0.47	85.55
63	46	Indian J. Poultry Science	1966	India	040	7743	0.44	85.99
64	48	Helminthology Abstracts	1932	UK	040	7783	0.44	86.43
65	69	J. of Food Engineering	1928	USA	039	7822	0.43	86.86
66		Leather Science	1954	India	037	7859	0.41	87.27
67	72	Bangladesh J. of Extn Edu	1995	Bangladesh	036	7895	0.40	87.67
68	73	Australian J. of Plant Physiology	1974	Australia	036	7931	0.40	88.07
69	51	Avian Pathology	1972	UK	035	7966	0.39	88.46
70	53	J.of Clinical Microbiology	1975	USA	035	8001	0.39	88.85
71		J. Ethnopharmacology	1983	USA	034	8035	0.38	89.23
72	78	Australian J. Rice Research	1956	Australia	033	8068	0.37	89.60
73	79	Drying Technology	1983	USA	033	8101	0.37	89.97
74	63	Ame. J. of Agril. Econ.	1969	USA	031	8132	0.34	90.31
75	75	Indian J. of Dairy Science	1948	India	031	8163	0.34	90.65
76	80	Canadian J. of Plant pathology	1979	Canada	030	8193	0.34	90.99
77	81	J. of Food Technology	1966	India	030	8223	0.34	91.33
78	62	Preventive Veterinary Medicine	1982	Netherland	030	8253	0.34	91.67
79	56	Leather Technology	1960	Japan	029	8282	0.32	91.99
80	82	Energy	1956	USA	028	8310	0.31	92.30
81		Diabetes Care	1978	USA	028	8338	0.31	92.61
82		J. of Food Sc. & Tech.	1994	UK	025	8363	0.28	92.89
83		Indian J. Pharmacology	1981	India	025	8388	0.28	93.14
84		Global Change Biology	1972	USA	024	8412	0.27	93.44
85	59	Bangladesh Dev. Studies	1973	Bangladesh	023	8435	0.25	93.69
86	64	J. Economics	1933	UK	023	8458	0.25	93.94
87	67	Japanese J. Appl. Scienc	1968	Japan	023	8481	0.25	94.19
88	71	Vaccine	1983	UK	023	8504	0.25	94.44
89	76	Indian J. of Animal Health	1960	India	023	8527	0.25	94.69
90		Toxicology Science	1973	Ireland	022	8549	0.24	94.93
91	85	J. of Economic Entomology	1908	USA	021	8570	0.23	95.16
92	86	Bangladesh J. of Animal Science	1968	Bangladesh		8591	0.23	95.39
93	87	American Potato Journal	1973	USA	021	8612	0.23	95.62
94	88	J. of Marine Biology	1967	Germany	021	8633	0.23	95.85
95	77	Arch. Virology	1939	German	020	8653	0.22	96.08
96		Japanese J. Appl. Sc.	1968	Japan	019	8672	0.21	96.29
97	93	Canadian J. of Zoology	1929	Canada	018	8690	0.20	96.49
98	94	Aquaculture Engineering	1982	UK	018	8708	0.20	96.69
99	92	Rural Sociology	1936	USA	018	8726	0.20	96.89
100	91	Rice Comm. Newsletter	1897	Philippine	017	8743	0.19	97.08
101	83	Australian Veterinary Journal	1925	Australia	017	8760	0.19	97.27
102	54	Infections Immunology	1970	USA	016	8776	0.18	97.45
103	58	J. of Agricultural Science	1905	UK	016	8792	0.18	97.63

104	84	World Poultry Science Journal	1936	UK	016	8808	0.18	97.81
105	98	J. of Experimental Biology	1923	UK	015	8823	0.17	97.98
106	99	J. of Inland Aqua. Society	1986	India	015	8838	0.17	98.15
107	30	Journal of Animal Science	1968	Bangladesh	014	8852	0.16	98.31
108	89	Animal Production	1954	UK	014	8866	0.16	98.47
109	97	NZ J. of Agricultural Research	1936	Newzeland	014	8880	0.16	98.63
110		J. of Food Science	1956	Canada	013	8893	0.14	98.77
111	101	Indian J. of Public Admn	1979	India	012	8905	0.13	98.90
112	90	Small Ruminant Research	1988	Netherland	012	8917	0.13	99.03
113		Bang. J. Animal Sc.	1968	Bangladesh	012	8929	0.13	99.16
114	95	Acta Anatomy	1945	Swizerland	010	8939	0.11	99.27
115	96	Indian J. of Veterinary Science	1924	India	010	8949	0.11	99.38
116	102	Pakistan J. of Agril Research	1949	Pakistan	009	8958	0.10	99.48
117	103	J. of Farm Economics	1897	USA	009	8967	0.10	99.58
118		Indian Food Packers	1986	India	008	8975	0.09	99.67
119	100	Journal of Protozoology	1954	USA	007	8983	0.09	99.76
120		Chemical Engineering Sc.	1951	UK	007	8990	0.08	**99.84**
121	106	Economic & Political Weekly	1966	India	007	8997	0.08	**99.92**
122	104	J. of American Society	1910	USA	007	9004	0.08	100
		Total						