

RANKING OF PERIODICALS IN THE FIELD OF SOIL SCIENCE

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The present study analyses 4361 citations appearing in 22 Ph.D. theses in soil science received by Rajendra Agricultural University, Pusa, Bihar, during the years 1980-81 to 1987-88; attempts to identify the principal forms of literature used; prepares a ranked list of 38 most cited journals representing 84.40% of the total citations out of the 261 titles cited, provides the geographical distribution of the journals in the ranked list and the chronological distribution of all citations. Source analysis reveals that journals are the main source of information.

INTRODUCTION

The exponential growth rate of periodicals and their cost has affected the libraries very much. Confronting the vast demand of the researchers to keep themselves aware of the latest developments in their field of specialization the librarians, with limited resources at their disposal, are finding it increasingly difficult to make an optimum selection from among the journals available in any field.

According to a recent estimate 72 billion pieces of information are produced each year. Presently, in the field of science and technology alone, over 60,000 periodicals are published and approximately 1,000 new periodicals are added to the existing number of periodicals each year. Over 3 million articles appear in periodicals alone [1]. The contribution in agricultural science is also fairly high, around 250 thousand papers are normally published every year in agriculture and related fields which means around one thousand research papers per working day [2].

The constant price rise of periodicals has become a stumbling-block in the acquisition of all the journals related to a specific subject field. According to the Annual Survey of Periodicals Prices by Blackwells for 1983, there has been an overall increase of 10.3% on 1982 prices. Analysing the prices by country, USA and Canada had a 13.7% increase, UK 10.9% and

other countries 4.1 % [3]. In such a situation, when the special libraries are fighting hard with the growth of periodical literature and their steadily increasing cost to keep themselves up-to-date, the compilation of literature and ranking of journals with the help of citation analysis will serve a useful guide for the selection of the most useful titles.

Considering the output of Indian scientific literature, agriculture ranks second only to medicine [4]. However, no bibliometric studies have been carried out in the area of soil science so far. Hence, keeping in view the importance of this subject in the field of agricultural science, the bibliographies appearing in the Ph.D. thesis submitted to the department of soil science have been studied.

OBJECTIVES

The main objective of this study is to prepare a list of titles of journals in the field of soil science, ranked in the order of their frequency of citations, and to identify the main sources of citations. Moreover, it provides the quantitative analysis of periodical and non-periodical citations, countrywise distribution of the first 38 journals of the present list, and the span of time covered with regard to the literature studied. The ranked list of journals is generally prepared with the aim of helping the librarians to some extent in selection and acquisition of the most useful journals in the field [5] so as to enable scientists to get useful information in their area of research.

MATERIALS AND METHODS

A total of 22 theses submitted to the Department of Soil Science in the Rajendra Agricultural University, Bihar, during the years 1980-81 to 1987-88 for the award of Ph.D. degree were taken as source material for the present study. All the citations which appeared in the form of bibliography at the end of each thesis were recorded on 5" X 3" slips. In all, there

were 4361 citations, which were compiled and analysed (Table 1). These were divided into two main groups: non-periodical publications and periodical publications. Non-periodical publications consist of books, Government publications and theses. Periodicals comprise journals, bulletins, transactions, proceedings (Seminar/Conference) or similar works which appear regularly and continuously in a numbered sequence. However, newspapers and annuals are excluded [6]. Out of the 4361 citations 794 were from non-periodical publications (Table-2) and 3567 were from periodical publications (Table-3). Further, the periodical publications were again divided into 3 main groups i.e. journals, bulletins and proceedings. Out of the total 3567 periodical 3161 (88.6% of the total periodical citations) were from journals alone. For determining the country of origin and year of publication of the journals the Ulrich's International Periodical Directory (26th ed., 1987) and World List of Scientific Periodicals, Ed.4, 1964

were consulted. The current issues of the journals were also consulted for this purpose. Then, by counting the citations of journals and arranging them in decreasing order of citations, the ranked list of journals was prepared (Table 4);

SOURCES OF CITATIONS

As given in Table 1, a total of 4361 citations were collected from 22 Ph.D. theses, giving an average of 198 citations per thesis. It was found that the main sources of citations were journals, Government publications, books, proceedings, bulletins and theses. It is evident from Table 1 with journals contributing the highest number of citations (72.5%), followed by Government publications (8.7%) and books (6.7%). The remaining sources were responsible for 12.1% citations only.

Table 1
Sources of citations

Sl.No.	Forms of literature	No of citations	Percentage
1.	Journals	3161	72.5
2.	Govt. Publications	379	8.7
3.	Books	292	6.7
4.	Proceedings	239	5.5
5.	Bulletins	167	3.8
6.	Theses/Dissertations	123	2.8
	Total	4361	100.00

CITATIONS TO NON-PERIODICAL PUBLICATIONS

As observed from Table 2 a large number of references

cited from non-periodicals were from Government publications, which accounted for 47.7% of the total non-periodical citations followed by books and theses (36.8% and 15.5% respectively).

Table 2

Citations from Non-periodicals

Sl.	Documents	No. of refer- ences cited	Percentage	Overallno. Percentage
1.	Govt.Publications	379	47.7	8.7
2.	Books	292	36.8	6.7
3.	Theses	123	15.5	2.8
	Total	794	100.00	18.2

CITATIONS TO PERIODICAL PUBLICATIONS

On the basis of analysis it was found that researchers used journals in a greater proportion than any other periodical publications. Table 3 reveals that out of 3567 citations to periodical publications, journals scored the

highest, i.e., 88.6% followed by proceedings and bulletins with the citation percentage of 6.7% and 4.7% respectively. The high percentage of journal citations reveals the degree of importance of journal literature to researchers.

Table - 3

Citations to Periodical Publications

Sl. no.	Documents	No. of refer- ences cited	Percentage	Overall percentage
1.	Journals	3161	88.6	72.5
2.	Proceedings	239	6.7	5.5
3.	Bulletins	167	4.7	3.8
	Total	3567	100.0	81.8

RANKING OF JOURNALS

One of the primary objectives of the study is to identify the journals most frequently used by researchers in the field of soil science. Accordingly, a ranked list of first 38 journals with a minimum of 10 citations each are given in table 4 with full details. These journals

are arranged in decreasing order of citations received by them and alphabetically in case of identical number of citations. The rest of the journals (223) are given at the end as a single group in order to avoid unduly long list.

Table 4

Rank list of highly cited journals

Sl. no.	Rank no.	Name of the JI	Yr.of found- ation	Country of origin	No.of citations	%	Cumul. citations	Cum.%
1	1	J Indian Soc Soil Sci	1953	India	714	22.59	714	22.59
2	2	Soil Sci Soc Am J	1936	USA	382	12.08	1096	34.67
3	3	Soil Sci	1916	USA	266	8.42	1362	43.09
4	4	Pl Soil	1949	Nethrl.	238	7.53	1600	50.62
5	5	Indian J Agric Sci	1931	India	142	4.49	1742	55.11
6	6	J Soil Sci	1950	UK	102	3.23	1844	58.34
7	7	Agric J	1911	India	64	2.02	1908	60.36
8	8	Agron J	1909	USA	59	1.88	1967	62.24
9	9	Firt News	1956	India	58	1.83	2025	64.07
10	9	Pl Physiol	1926	USA	58	1.83	2083	65.90
11	10	J Envir Quality	1972	USA	57	1.80	2140	67.70
12	11	J Agric Sci	1905	USA	47	1.49	2187	69.19
13	12	Indian J Agron	1956	India	42	1.33	2229	70.52
14	13	Indian Fmg	1940	India	33	1.04	2262	71.56
15	14	Geoderma	1967	Nethrl.	32	1.01	2294	72.57
16	15	Soils Fert	1938	UK	27	0.85	2321	73.42
17	16	Soil Sci Pl Nutr	1955	Japan	25	0.79	2346	74.21
18	16	J Nucl Agric Biol	1972	India	25	0.79	2371	75.00
19	17	Can J Soil Sci	1921	Canada	23	0.73	2394	75.73
20	18	Curr Sci	1932	India	19	0.60	2413	76.33
21	18	Proc Indian Nat Sci Acad	1935	India	19	0.60	2432	76.93
22	19	Indian J Agric Res	1967	India	18	0.57	2450	77.50
23	19	Aust J Soils Res	1963	Aust.	18	0.57	2468	78.07
24	20	J Econ Ent	1908	USA	16	0.51	2484	78.58
25	20	Nature	1969	UK	16	0.51	2500	79.09
26	20	J Sci Soil Manure, Tokyo	1930	Japan	16	0.51	2516	79.60
27	21	Agrochimica	1957	Italy	15	0.47	2531	80.07
28	21	Indian J Agric Chem	1968	India	15	0.47	2546	80.54
29	21	J Pl Nutr Soil Sci	1922	W.Ger.	15	0.47	2561	81.01
30	21	J Res PAU	1964	India	15	0.47	2576	81.49

31	22	Fert Tech	1964	India	13	0.41	2589	81.89
32	23	Curr Agric	1977	India	12	0.38	2601	82.27
33	23	Fd Fmg Agric	1968	India	12	0.38	2613	82.65
34	23	Ranchi Univ J Agri Res	1966	India	12	0.38	2625	83.03
35	24	Soviet Soil Sci	1958	USA	11	0.35	2636	83.38
36	24	Proc Bihar Acad Agric Sci	1953	India	11	0.35	2647	83.73
37	24	Proc Nat Acad Sci India	1931	India	11	0.35	2658	84.08
38	25	Oryza	1961	India	10	0.32	2668	84.40
39		223 Titles having less than 10 citations			493	15.60	3161	100.00

From table 4 it is observed that 60.36% references were cited from the first 7 titles and the next 31 titles accounted for another 24.04 %. In this way,

these 38 journals in the rank list represented about 84.40% of the total journals citations, whereas the remaining 223 titles have contributed about 15.60% of the journal citations.

Table 5

Geographical distribution of 38 highly cited journals

Sl no	Country	No of Journals covered	% of Journals	No. of citations shared	% of citations
1	India	19	7.28	1245	39.39
2	USA	8	3.07	896	28.34
3	UK	3	1.15	145	4.59
4	Netherlands	2	0.77	270	8.54
5	Japan	2	0.77	41	1.30
6	Canada	1	0.38	23	0.73
7	Australia	1	0.38	18	0.57
8	Italy	1	0.38	15	0.47
9	West Germany	1	0.38	15	0.47
Total		38	14.56	2668	84.40
10	Remaining titles	223	85.44	493	15.60
Total		261	100.00	3161	100.00

Table 5 gives the geographical scattering of 38 most cited journals which covered 2668 citations (84.40%) out of 3161. It is clear from the table that most of these journals were published from India (7.28%) followed by USA (3.07%), UK (1.15%), Netherlands (0.77%) and Japan (0.77%) whereas each one of the four countries Canada, Australia, Italy and West Germany was responsible for 0.38% of journal citation. From the above table it is clear that researchers in the field of soil science in the country depend mostly on Indian journals.

Table-6 presents the scattering of all references chronologically. The period of citations was divided into decennium. The table shows that the researchers have used various types of literature published during the period 1971 to 1980 as much as of 1807 out of the total 4361 citations. If the total period is divided into two broad parts, it is found that only 314 citations were from the literature published during the early period of 1900-1959, whereas 4047 citations were from literature published during the next 38 years period (1951 to 1988). It clearly indicates a phenomenal growth in the publication of scientific literature after 1950 and the trend of citing the most recent literature in the field.

Table 6

Distribution of citations according to their period of publication

Span of Period	Types of Literature cited						Total
	Non-periodical Publications			Periodical Publications			
	Books	Govt. pub.	Theses	Journals	Bulletins	Proceedings	
Early 1900	1	-	-	2	-	-	3
1901-10	1	2	-	-	-	-	3
1911-20	-	4	-	5	-	-	9
1921-30	7	3	1	13	-	-	24
1931-40	8	21	1	67	8	4	109
1941-50	24	16	1	118	6	1	166
1951-60	61	41	6	305	20	18	451
1961-70	95	95	31	756	39	40	1056
1971-80	83	157	38	1327	72	130	1807
1981-88	12	40	45	568	22	46	733
Grand Total	292	379	123	3161	167	239	4361

CONCLUSION

The study conducted on the basis of the citation analysis is confined to the Ph.D. Theses from the Department of Soil Science. It was observed that the major sources of information are journals (72.5%) followed

by Government publications (8.7%). The remaining sources such as books, proceedings, bulletins and theses account together for 18.8% citations only.

A ranked list of journals is prepared which can be used by the department of Soil Science as the base for selecting journals for subscription. On one hand the list will

serve as a guide to the researcher to pick out the journals most relevant in his area of research and on the other and it will help the documentalist engaged in circulation of contents to mark them to potential readers. The ranking of journals will also help the librarian in regular screening of library materials.

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