

A BIBLIOMETRIC STUDY OF THE JOURNAL OF OILSEEDS RESEARCH

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Analyses 498 research articles comprising 241 full length research papers and 257 short communications published during 1984 to 1992 in Journal of Oilseeds Research (vol. 1 - vol. 9) to find out (i) space allotment for full length research papers and short communications, (ii) authorship pattern, (iii) author productivity, (iv) prominent contributors, (v) important locations of oilseed research, (vi) pattern of tabular and graphical presentation, (vii) citation pattern, (viii) obsolescence of oilseed literature, (ix) Bradfordian distribution of citations, (x) important keywords figuring in the titles and (xi) time lag between the submission and publication of an article. Some of the important findings are: (i) the number of pages allotted per issue for full length papers as well as short communications vary widely, (ii) the single-authored papers account for only 12%, two-authored papers are found to be maximum and account for 39%, (iii) author productivity is in agreement with Lotka's law, especially, when the value of α is 2.07 and the number of papers is ≤ 5 , (iv) the places - Hissar, Rajendranagar (Hyderabad), Bangalore, New Delhi, Kanpur, Dhanbad, Ludhiana and Pantnagar are found to be the important areas of research in India and (v) on an average a full length research paper has 3 to 4 tables, and short communications 1 to 2 tables. No set pattern is observed in other types of graphic presentations. Important countries and highly cited journals have also been listed. Citations appended to articles do not follow Bradford's Law.

INTRODUCTION

William Carey, the doyen of Indian printing was possibly the first European to show great concern about the improvement of Indian agriculture. To the best of our knowledge it was he who contributed the first learned article on Indian agriculture in modern times. The article was devoted to the

state of agriculture in the district of Dinajpur, then forming part of Bengal, now Bangladesh, and published in 1808[1]. It was again Carey who was responsible for the establishment of the first agricultural society in India. The society, named Agricultural and Horticultural Society of India was established at Calcutta in 1820 with the objective of developing agricultural and horticultural resources of India [2]. Like other crops grown in India, oilseeds also attracted the attention of Europeans.

In the initial stages, articles on oilseeds appeared in various journals devoted to agricultural and other fields. It is only at the late 1880s, that availability of serials in the form of data periodicals devoted to oilseeds, e.g., *Forecast of the Linseed Crops (f.1887)*, *Report on the Linseed and Rapeseed Crops, North - Western Provinces (f.1889)*, *General Memorandum on the Sesamum (Til or Jinjill) India (f.1890)*, etc is noticed. However, a regular journal on oilseeds could not be noticed till the independence. In 1948, Bombay Oilseeds and Oil Exchange Limited started publishing the multilingual popular monthly called *Oils and Oilseeds Journal*. In mid-1950s several commodity committees were established under the auspices of Indian Council of Agricultural Research. One of the commodity committees, i. e. Indian Central Oilseeds Committee, started publishing from 1955 *Indian Oilseeds Journal*, and continued till 1965. This journal was in English and used to publish research articles, informative articles, notes and news, etc.

A research journal on the subject was awaited till 1980s. Almost one hundred years after the publication of the first serial on the subject, *The Journal of Oilseeds Research*, an organ of the Indian Society of Oilseeds Research emerged.

Indian Society of Oilseeds Research (ISOR) founded in 1983 is a registered society of individu-

als, organisations and institutions engaged in oilseeds research and development and vegetable oil technology in India. The foremost amongst its objectives is the promotion of research in various aspects of oilseed production.

The Journal of Oilseeds Research (JOR) is published half yearly since 1984. Articles from JOR are being regularly abstracted in *Field Crop Abstracts*, *INIS Atomindex*, *Irrigation & Drainage Abstracts*, *Soyabean Abstracts*, *Tropical Oilseed Abstracts*, *AGRINDEX* and *Biological Abstracts*. Currently, JOR is being circulated to the life members (151) and annual members (354). It publishes full length research papers and short communications in each issue.

OBJECTIVES

Nine volumes of JOR (1984-92) comprising 18 issues have been studied to find out:

- i) space allotment to full length papers and short communications;
- ii) authorship pattern;
- iii) author productivity;
- iv) prominent contributors;
- v) important locations of oilseed research;
- vi) pattern of tabular and graphical presentation;
- vii) citation pattern;
- viii) obsolescence of oilseed literature;
- ix) cited journals;
- x) Bradfordian distribution of citations;
- xi) keyword frequencies; and
- xii) time lag between the submission and publication of the article.

Normal count procedure [3] was used to generate data. The degree of collaboration [4], publication density, and publication concentration [5] were also calculated. Keywords figuring in the titles of the articles were counted to determine high frequency keywords.

The choice of the unit of analysis and of the initial set has a strong influence on the measures and results of any bibliometric study. Generally, authors are used when the study focuses on the influence of individuals; articles are used to study the influence of a particular idea contained in the article, key terms to follow an idea over time as it crosses

disciplines, and journals when the study focuses on the institutional embodiment of a discipline [6].

RESULTS AND DISCUSSIONS

Space allotment

The number of full length papers in an issue of JOR ranges between 8 and 20, with the mean of 13.4 and standard deviation 3.6. Twenty full length papers were published in 1989, in issue no. 1 of vol. 6. The number of short communications in an issue of JOR ranges between 8 and 25, with the mean of 14.2 and standard deviation 4.8. Twenty five short communications were published in 1987 in the third issue of volume 4.

The number of pages allotted per issue for full length papers ranges between 62 and 147 with the mean of 101 and standard deviation 27. 147 pages for ten full length papers were allotted in 1989 for issue no. 2 of vol. 6. The number of pages allotted per issue for short communications ranges between 23 and 82, with the mean of 49 and standard deviation 18. Eighty two pages were occupied by short communications in 1987 in issue no. 2 of vol. 4. Total number of pages per issue ranged between 87 and 196 with the mean of 148 and standard deviation 32.5. A full-length paper on an average occupied between 6.29 and 14.7 pages in an issue, with the overall mean of 7.6 and standard deviation 1.9. On an average, a short communication covered between 2.56 to 4.54 pages with an overall mean of 3.5 and standard deviation 0.4.

Authorship pattern

From Table 1, it appears that 12%, 39% and 29% papers are respectively single -, two -, and three authored. The rest of the papers (i.e. 20%) are jointly contributed by four and more authors. The maximum number of authors in a paper is found to be eight. The authorship pattern in the case of short communications closely follows the pattern of full length papers (Fig.1). 10%, 39% and 31% short communications are single -, two -, and three authored. The rest (20%) are the joint contributions of four, five and six authors. The collaboration coefficient is found to be 0.88 for full-length papers and 0.89 for short communications.

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Table 1

Authorship pattern in Journal of Oilseeds Research

Vol.	Year	Papers	Number of papers under various authorships								Collabo- ration co- efficient
			One	Two	Three	Four	Five	Six	Eight	Total	
1.	1984	FP	2	5	7	3	-	-	-	17	0.88
		SC	-	10	6	5	-	-	-	21	
2.	1985	FP	1	13	8	3	1	-	-	26	0.96
		SC	3	14	14	6	1	-	-	38	
3.	1986	FP	3	8	7	4	3	-	-	25	0.88
		SC	4	9	9	5	2	-	-	29	
4.	1987	FP	2	11	6	4	3	1	-	27	0.93
		SC	4	14	10	7	3	-	-	38	
5.	1988	FP	3	9	10	2	2	-	1	27	0.89
		SC	2	14	9	6	1	-	-	32	
6.	1989	FP	2	15	6	4	1	2	-	30	0.93
		SC	3	14	8	5	-	1	-	31	
7.	1990	FP	6	6	7	1	3	1	-	24	0.75
		SC	1	8	8	2	-	-	-	19	
8.	1991	FP	3	14	10	2	1	-	-	30	0.90
		SC	6	8	7	4	-	-	-	25	
9.	1992	FP	7	14	10	3	1	-	-	35	0.80
		SC	3	8	9	4	-	-	-	24	
TOTAL		FP	29	95	71	26	15	4	1	241	0.88
		SC	26	99	80	44	7	1	-	257	
PERCENTAGE		FP	12.03	39.42	29.46	10.79	6.22	1.66	0.42	100.00	

The authorship pattern in various fields such as agriculture, anthropology, business and economics, counselling, education, finance, life sciences, medicine, and psychology [7-23] consistently show increase in the number of two - or more-authored papers. The increasing complexity of research, the

knowledge explosion combined with increased specialization and large, often interdisciplinary, projects have forced researchers to share their expertise. Recent studies on sugarcane [24], otolaryngology [25], agriculture [26] and nursing [27] also indicate similar pattern.

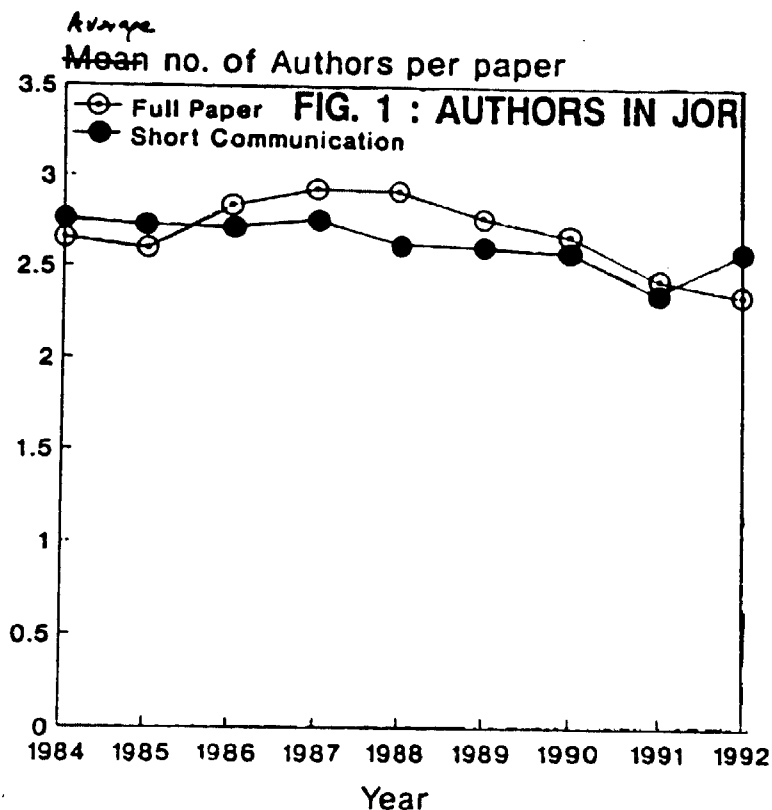


Fig. 1 : Authors in JOR

Author productivity

Table 2 indicates that 538 authors have one, 128 authors have two, 55 authors have three and 33

authors have four papers each to their credit. In the case of short communications also similar pattern emerges. Here 344 authors have one, 71 authors have two, 33 authors have three, and 19

Table 2

Author productivity in Journal of Oilseeds Research during 1984-1992 (All authors considered)

No. of papers (A)	No. of authors (B)	Percentage	Authorships (A x B)	Percentage
1	538	68.02	538	40.57
2	128	16.18	256	19.31
3	55	6.95	165	12.44
4	33	4.17	132	9.95
5	18	2.28	90	6.79
6	7	0.88	42	3.17
7	4	0.51	28	2.11
8	5	0.63	40	3.02
9	2	0.25	18	1.36
17	1	0.13	17	1.28
Total	791	100.00	1326	100.00

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authors have four short communications each to their credit. The maximum number of papers and short communications that go to the credit of an individual is found to be nine & eight respectively.

To what extent author productivity conforms to Lotka's law has also been tested. Table 2(a) shows the author productivity considering all the authors and also the first author only.

Table 2(a)

*Author productivity in Journal of Oilseeds Research during 1984-1992
(Only first authors considered)*

No. of papers (A)	No. of authors (C)	Percentage	Authorships (A x C)	Percentage
1	282	76.42	282	56.62
2	61	16.53	122	24.50
3	16	4.34	48	9.64
4	5	1.36	20	4.02
5	4	1.08	20	4.02
6	1	0.27	6	1.20
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
17	-	-	-	-
Total	369	100.00	498	100.00

According to Lotka's law

$$f(y) = \frac{A}{y^\alpha} \quad (i)$$

Where $f(y)$ stands for the authors producing y articles, and A and α are constants.

Considering the fact that 538 authors have produced one article each, the value of the constant

A can easily be derived.

Putting the value of $f(y)$, i.e., 538, and y , i.e., 1 in equation (i)

$$538 = \frac{A}{1^\alpha} = A$$

Now, taking the value of α as 2, the following results are obtained.

Table 2(b)

No of expected authors derived with the value of $\alpha = 2$

No. of papers	No. of authors (observed)	No. of authors (expected)
1	538	538
2	128	135
3	55	60
4	33	34
5	18	21
6	7	15
7	4	11
8	5	8
9	2	7

It may be observed from the table that the expected values are quite close to observed values as long as the number of paper does not exceed 5. Lotka's

law does not hold good beyond this number in this case.

Table 2(c)

No of expected authors derived with the value of $\alpha = 2.07$

No. of papers	No. of authors (expected)	No. of authors (observed)
1	538	538
2	128	128
3	55	55
4	31	33
5	19	18
6	13	7
7	10	4
8	7	5
9	6	2

In this case (Table 2(c)), practically an ideal match for the expected values and observed values upto 5 papers is observed, beyond which no match is observed.

Whether Lotka's law applies in case only the first authors of the articles are taken is also tested. As can be seen from Table 2(d), it does not.

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Table 2(d)

No of expected authors derived with the value of $\alpha = 2$

No. of paper	No. of authors (expected)	No. of first authors (observed)
1	282	282
2	71	61
3	31	16
4	18	5
5	11	4
6	8	1

Prolific contributors

The most productive authors found in this study in order of the number of contributions are T P Yadava, Prakash Kumar, IJ Anand, A B Deokar, K

Giriraj, V J Patel, Hari Singh, S.P. Singh, IS Yadav, etc. (Table 3). Trofimenko opines that authors publishing only one or few papers during a life time can hardly contribute to the progress of science [28].

Table 3

Major contributors to Journal of Oilseeds Research

Sr.no.	Name	FP	SC	TA
1.	Yadava T.P.	9	8	17
2.	Deokar A.B.	4	5	9
3.	Kumar, Prakash	6	3	9
4.	Anand I. J.	4	4	8
5.	Giriraj K.	2	6	8
6.	Singh, Hari	4	4	8
7.	Singh S. P.	4	4	8
8.	Yadav I.S.	4	4	8
9.	Patel V. J.	4	3	7
10.	Rai M.	5	2	7
11.	Srivastava A.N.	4	3	7
12.	Yadav A.K.	4	3	7
13.	Hiremath, Shantha R.	2	4	6
14.	Labana K.S.	3	3	6
15.	Nagabhushanam G.V.S.	5	1	6
16.	Reddy B.N.	3	3	6
17.	Reddy P.S.	3	3	6
18.	Seenappa K.	3	3	6
19.	Seetharam A.	4	2	6

FP = Full Paper SC = Short Communications TA = Total Authorship

Locations of Research

Important locations where research on oilseeds were conducted are Hisar, Rajendranagar (Hydera-

bad), Bangalore, New Delhi, Junagarh, Kanpur, Dharwad, Ludhiana, Pantnagar, etc. (Table 4).

Table 4

Important locations of oilseeds research in India

LOCATION	ORGANISATION	FP	SC	TOTAL
Hissar	Haryana Agricultural University	21	21	42
Rajendranagar. (Hyd).	Directorate of Oilseeds Research, Andhra Pradesh	20	22	42
Rajendranagar. (Hyd).	Andhra Pradesh Agricultural University	15	22	37
Santoshnagar. (Hyd).	Central Research Institute for Dryl and Agr.	6	2	8
Patancheru. (Hyd).	International Crops Res Institute Semi-Arid Tropics	7	1	8
Bangalore	University of Agricultural Science	14	18	32
New Delhi	Indian Agricultural Research Institute	18	11	29
Kanpur	Chandra Sekhar Azad University of Agr. & Tech.	9	12	21
Dharwad	University of Agricultural Science	10	10	20
Ludhiana	Punjab Agricultural University	9	11	20
Pantnagar	G.B. Pant University of Agriculture & Technology	10	8	18
Jabalpur	Jawaharlal Nehru Krishi Vishwa Vidyalaya	8	8	16
Junagadh	Gujarat Agricultural University	4	10	14
Junagarh	National Research Centre for Groundnut	6	6	12
Kalyani	Bidhan Chandra Krishi Viswa Vidyalaya	9	5	14
Jalgaon	Mahatma Phule Agricultural University	7	6	13
Coimbatore	Tamil Nadu Agricultural University	4	8	12
Rahuri	Mahatma Phule Agricultural University	5	6	11
Parbhani	Marathwada Agricultural University	4	6	10
Bapatla	Andhra Pradesh Agricultural University	5	3	8

FP = Full Paper SC = Short Communications TA = Total Authorship

Fox [29] identified the following major factors influencing publication productivity of scientists - *psychological characteristics, work habits, age, environmental location, prestige of department or institution*. In her study institutional prestige emerged as one of the strongest correlates of publication productivity.

About 70% of China's research papers come from as few as 24 institutions, reflecting the centralised nature of the Chinese scientific enterprise. Laboratories under Chinese Academy of Sciences play a dominant role and only a few universities seem

to be active in scientific research [30].

Illustrations

Presentation pattern in JOR in terms of tables per paper (Fig.2) indicates full length papers have 3 to 4 tables and short communications 1 to 2 tables each. But presentation pattern in terms of figures and photographs is found to be highly fluctuating (Fig.3). During 1989 large number of visuals were found both for full length papers and for short communications.

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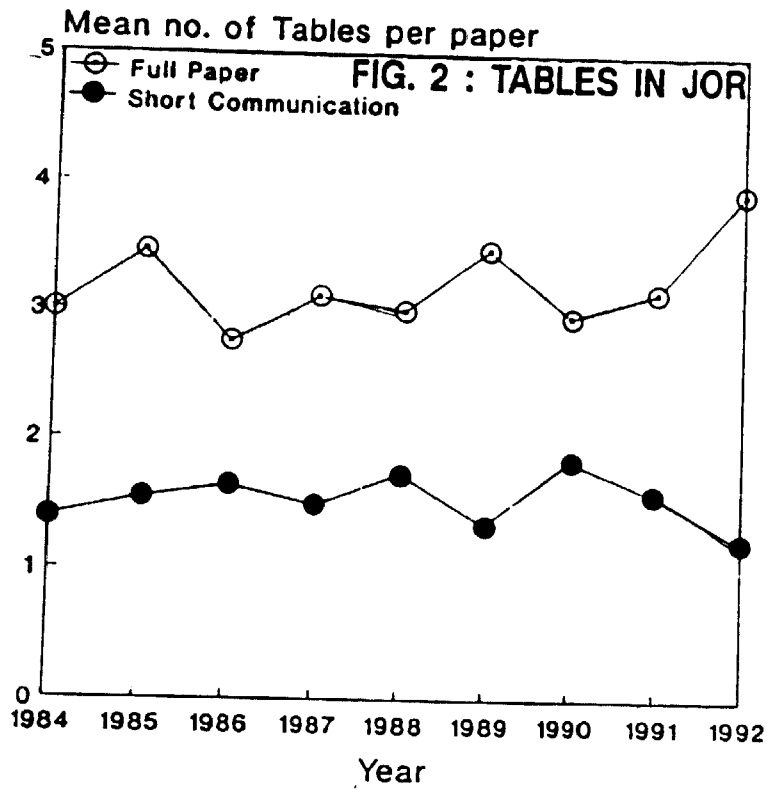


Fig. 2 : Tables in JOR

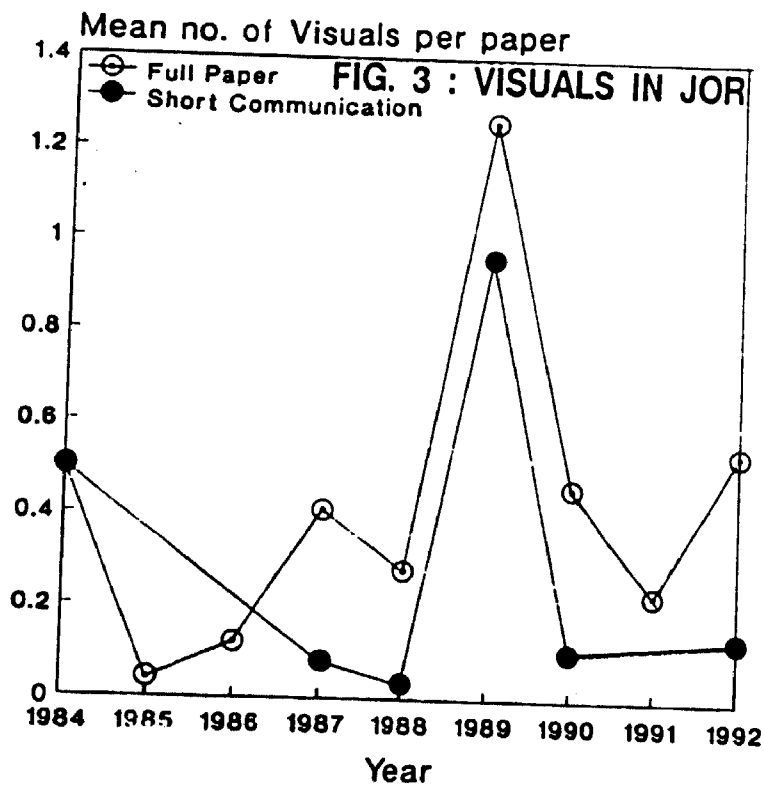


Fig. 3 : Visuals in JOR

References

Table 5 reveals that four full length papers and eight short communications are devoid of references.

Some authors cite a few most pertinent references whereas others are more thorough in their literature search. The small number of articles with no references at all possibly belong to a group of au-

Table 5
Citations in Journal of Oilseeds Research

Year	Papers	Number of papers with various citation ranges						TOTAL
		0	1-5	6-10	11-15	16-20	21-	
1984	FP	-	4	11	2	-	-	12
	SC	-	13	7	1	-	-	
1985	FP	-	6	14	2	2	2	26
	SC	2	27	8	1	-	-	
1986	FP	-	6	15	4	-	-	25
	SC	1	19	9	-	-	-	
1987	FP	-	8	10	8	1	-	27
	SC	-	17	20	1	-	-	
1988	FP	1	6	11	7	2	-	27
	SC	1	22	7	2	-	-	
1989	FP	1	12	8	4	3	2	30
	SC	2	17	10	2	-	-	
1990	FP	1	7	8	3	1	4	24
	SC	2	9	8	-	-	-	
1991	FP	1	5	10	11	1	2	30
	SC	-	18	6	1	-	-	
1992	FP	-	6	15	7	3	4	35
	SC	-	15	9	-	-	-	
TOTAL	FP	4	60	102	48	13	14	241
	SC	8	157	84	8	-	-	
PERCENTAGE	FP	1.66	24.90	42.32	19.92	5.39	5.81	100.00
	SC	3.11	61.09	32.69	3.11	-	-	

FP = Full length paper and SC = Short Communication

thors who think that they are unique in their particular field. One can think of authors who simply do not want to admit that there exist other researchers in a particular field. Hence, they may be viewed as a different statistical population [31].

Sixty full length papers (24.90%) and 157 short communications (61.09%) have references in the

range 1 to 5. One hundred and two full length papers (42.32%) and 82 short communications (32.69%) have references in the range 6 to 10. 48 full length papers (19.92%), and 8 short communications (3.11%) have references in the range 11 to 16. The full length papers having references between 15 and 20 are only 13 (5.39%), and above 20 are only 14 (5.81%).

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Short communications with more than 15 references have not been encountered in this study.

The trend for mean number of references per full length paper and short communications is given in

Fig 4. Rising trend observed in the mean number of references till 1990 in the case of full length papers starts declining afterwards. In the case of short communications uniform pattern around five references is noticed.

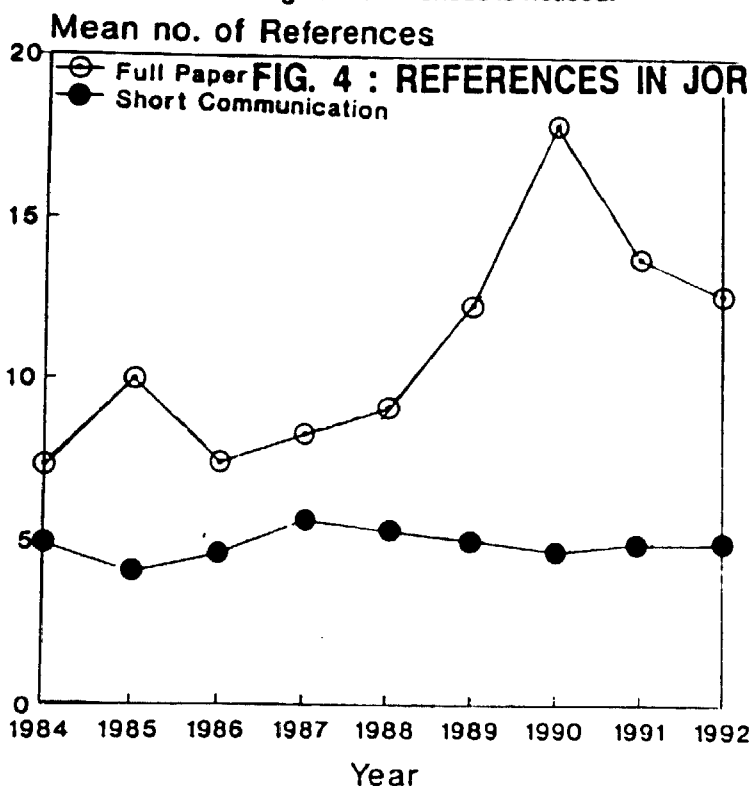


Fig. 4 : References in JOR

Large samples of papers published in *Journal of Biological Chemistry* (JBC) during 1910-85 were examined in order to study the referencing pattern, throughout the period 1910-85. All measures show that there has been a growth in the number of references per paper, during most of the period. However, the growth becomes prominent from 1950's onwards refuting Meadows "upper limit" [32].

It is difficult to foretell, but one may nevertheless anticipate that at some point of time the growth trend will eventually slow down, and enter a "saturation phase" in which the number of references per paper will grow much slower each year. One may readily assume that authors, perhaps pressed by editors, will strive to be more selective in the references they append to their paper and to impose a maximal limit to their number so that the

reference list remains in reasonable proportion compared to the main part of the paper. It may be assumed that the trend observed in the case of JBC are more or less true to most, if not all other journals in biochemistry.

Obsolescence

Table 6 indicates that 25 percent of latest literature belongs to immediate past 5.44 years in the case of full length papers and 6 years in the case of short communications. Half-life period is found to be 10.11 years and 10.78 years for full length papers and short communications respectively. Seventy five percent of latest citations belong to last 18.44 years for full length papers and 19.33 years for short communications. Ninety percent of the cited literature belongs to the last 27-28 years. In the case of full length papers maximum age of citation is found to be 70 and that of short commu-

Table 6

Ages of citations and their percentages

Vol.	Year	Paper	Ages of Citations (Starting from 1st year)				
			Years				
1.	1984	FP	4	8	17	25	72
		SC	4	7	17	26	50
2.	1985	FP	5	10	20	27	75
		SC	6	9	15	25	48
3.	1986	FP	6	10	19	29	61
		SC	6	12	20	28	53
4.	1987	FP	6	12	21	31	57
		SC	7	12	20	27	57
5.	1988	FP	6	15	25	35	71
		SC	7	13	22	30	77
6.	1989	FP	5	9	17	30	77
		SC	7	11	19	28	56
7.	1990	FP	6	9	16	23	63
		SC	7	11	20	30	45
8.	1991	FP	6	10	16	24	68
		SC	5	11	20	28	51
9.	1992	FP	5	8	15	24	79
		SC	5	11	21	26	56

	Percentage	25%	50%	75%	90%	100%
		(Half Life)				
	FP	5.44	10.11	18.44	27.55	69.22
	SC	6.00	10.78	19.33	27.56	54.78

nications 55.

Sources cited in journals from the developing countries tend to be much older than those cited in the journals of the most developed nations. For example, in a sample of chemistry papers by Indians, 19-25% citations belonged to last five years. However, in American chemistry papers, 46-56% citations were of the last five years [34]. In an Indian journal on environmental sciences only about 14% of the sources cited were four years old or less, while 53% of the sources cited were more than ten years old. Comparable figures for an en-

vironmental journal published in a highly developed country were 32% and 27%. [35].

Journals Cited in JOR

Table 7 ranks the journals on the basis of citations received by them. Top ten journals in the descending order of citations received are: *Indian J. Agric. Sci.* (206), *Indian J Agron* (165), *Agron J* (139), *Crop Sci* (125), *Indian J Genet* (119), *Madras Agric J* (103), *J Oilseeds Res* (90), *Indian Farming* (52), *Pesticides* (51), and *Indian J Ent* (47). These ten journals account for 37.68% citations.

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Table 7

Ranked list of journals based on citations

Sr.no.	Titles	Citations	Cumulative citations	Percentage	Cumulative percentage
1.	Indian J. agric Sci	206	206	7.08	7.08
2.	Indian J. Agron	165	371	5.67	12.75
3.	Agron J	139	510	4.77	17.52
4.	Crop Sci	125	635	4.29	21.81
5.	Indian J. Genet.PI Br	119	754	4.09	25.90
6.	Madras Agric J	103	857	3.54	29.44
7.	J Oilseeds Res	90	947	3.09	32.53
8.	Indian Farming	52	999	1.79	34.32
9.	Pesticides	51	1050	1.75	36.07
10.	Indian J Ent	47	1097	1.61	37.68
11.	J. Maharashtra Agric Univ	47	1144	1.61	39.29
12.	Indian Phytopath	43	1187	1.48	40.77
13.	Indian Oilseeds J	40	1227	1.37	42.14
14.	J Res P.A.U.	38	1265	1.32	43.46
15.	Oleagineux	32	1297	1.10	44.56
16.	Crop Improvement	30	1327	1.03	45.59
17.	J.Indian Soc. Soil Sci.	29	1356	1.00	46.59
18.	Curr Sci	28	1384	0.96	47.55
19.	Mysore J. Agric Sci	27	1411	0.93	48.48
20.	Can J PI Sci	25	1436	0.86	49.34
21.	Oilseeds J.	25	1461	0.86	50.20
22.	Peanut Sci	25	1486	0.86	51.06
23.	Phytopathology	24	1510	0.82	51.88
24.	Expt Agric	23	1533	0.79	52.67
25.	Fert News	22	1555	0.76	53.43
26.	Plant Soil	22	1577	0.76	54.19
27.	H.A.U. J. Res	21	1598	0.72	54.91
28.	Plant Physiol	20	1618	0.69	55.60
29.	Genetics	20	1638	0.69	56.29
30.	J Am Oil Chem Soc	20	1658	0.69	56.98
31.	Aust J Biol Sci	19	1677	0.65	57.63
32.	Indian J Agric Res	19	1696	0.65	58.28
33.	SABRAO J	19	1715	0.65	58.93
34.	J Econ Ent	18	1733	0.62	59.55
35.	Euphytica	17	1750	0.58	60.13
36.	Heredity	16	1766	0.55	60.68
37.	Indian Agriculturist	16	1782	0.55	61.23
38.	Pl. Dis Repr	16	1798	0.55	61.78
39.	J Agri Sci (UK)	15	1813	0.52	62.30
40.	JNKVV Res J	15	1828	0.52	62.82

(Contd.)

Table 7 (Contd.)

Sr.no.	Titles	Citations	Cumulative citations	Percentage	Cumulative percentage
41.	Theor Appl Genet	15	1843	0.52	62.34
42.	Aust J agric Res	14	1857	0.48	63.82
43.	Field Crop Abstr	14	1871	0.48	64.30
44.	Adv Agron	12	1883	0.41	64.71
45.	Indian J Pl Physiol	12	1895	0.41	65.12
46.	J Biol Chem	12	1907	0.41	65.53
47.	J Oil Tech Asan India	11	1918	0.38	65.91
48.	Pantnagar J Res	11	1929	0.38	66.29
49.	Sci Cult	11	1940	0.38	66.67
50.	Seed Sci Technol	11	1951	0.38	67.05
51.	Indian J Pl Prot	10	1961	0.34	67.39
52.	Indian J Weed Sci	10	1971	0.34	67.73
53.	Phytomorphology	10	1981	0.34	68.07
54.	Seeds Farms	10	1991	0.34	68.41
55.	Agri Res J Kerala	9	2000	0.31	68.72
56.	J Food Sci Tech Mysore Ind	9	2009	0.31	69.03
57-65	9 JIs with 8 papers each	72	2081	2.47	71.50
66-71	6 JIs with 7 papers each	42	2123	1.44	72.94
72-82	11 JIs with 6 papers each	66	2189	2.27	75.21
83-96	14 JIs with 5 papers each	70	2259	2.40	77.61
97-118	22 JIs with 4 papers each	88	2347	3.02	80.63
119-157	39 JIs with 3 papers each	117	2464	4.02	84.65
158-223	66 JIs with 2 papers each	132	2596	4.53	89.18
224-538	315 JIs with 1 papers each	315	2911	10.82	100.00

Twenty one top journals account for 50 percent of the citations. The number of cited journals encountered in this study is 538. Citation density i.e. the number of papers cited/number of journals cited, is 5.41 in this case. Citation concentration i.e. number of journals containing half of the cited papers times 100/ total number of journals used, is 3.9 in the present case.

It looks rather strange that, in the ranked list, Journal of Oilseeds Research (JOR) figures only in the 7th place. Citations figuring in JOR, are in most cases, expected to be related to oilseeds. Hence, it is only natural that JOR should have topped the list. This does not happen mainly because JOR started only in 1984, and majority of the citations figuring in the journal pertain to pre-1984 era. Journal wise citations in JOR are depicted in Fig.5.

Table 8

Further information on first 56 journals figured in table 7

Sr.no.	Year of starting	Issues per year	Circulation	SCI JCR 1992		Coverage in I & A services	Country
				IF	II		
1.	1931	12	2,000	0.008	0.000	38	INDIA
2.	1956	04	1,500	0.000	0.000	23	INDIA
3.	1907	06	9,200	0.840	0.157	51	USA
4.	1961	06	7,300	0.630	0.168	39	USA
5.	1941	04	1,500	—	—	20	INDIA
6.	1911	12	750	—	—	30	INDIA
7.	1984	2	350	—	0.041	08	INDIA
8.	1951	12	51,200	—	—	32	INDIA
9.	1921	12	1,200	—	—	04	USA
10.	1939	04	—	—	—	14	INDIA
11.	1976	03	700	—	—	26	INDIA
12.	1948	04	1,725	—	—	22	INDIA
13.	1948	12	250	—	—	—	INDIA
14.	1964	04	—	—	—	19	INDIA
15.	1946	—	3,000	—	—	—	FRANCE
16.	1974	02	—	—	—	—	INDIA
17.	1953	04	2,100	—	—	20	INDIA
18.	1932	24	3,000	0.630	0.168	27	INDIA
19.	1967	04	600	—	—	33	INDIA
20.	1921	04	900	0.360	0.042	47	CANADA
21.	1969	04	300	—	—	03	INDIA
22.	1974	02	800	—	—	09	USA
23.	1911	12	4,558	2.008	0.350	44	USA
24.	1965	04	—	0.378	0.167	—	UK
25.	1956	12	4,000	—	—	15	INDIA
26.	1949	18	—	0.954	0.250	45	NETHERLANDS
27.	1971	04	500	—	—	18	INDIA
28.	1926	12	5,400	2.925	0.455	39	USA
29.	1916	12	5,000	3.673	0.813	34	USA
30.	1924	—	—	0.983	0.129	—	USA
31.	1948	04	700	—	—	37	AUSTRALIA
32.	1967	04	1,500	—	—	25	INDIA
33.	1969	02	—	—	—	—	JAPAN
34.	1908	06	4,300	0.911	0.188	53	USA
35.	1952	24	1,750	0.351	0.119	28	NETHERLANDS
36.	1947	06	—	1.236	0.398	32	UK
37.	1957	04	600	—	—	22	INDIA
38.	1977	12	—	—	—	—	USA
39.	1905	02	—	0.617	0.250	43	UK

Contd.

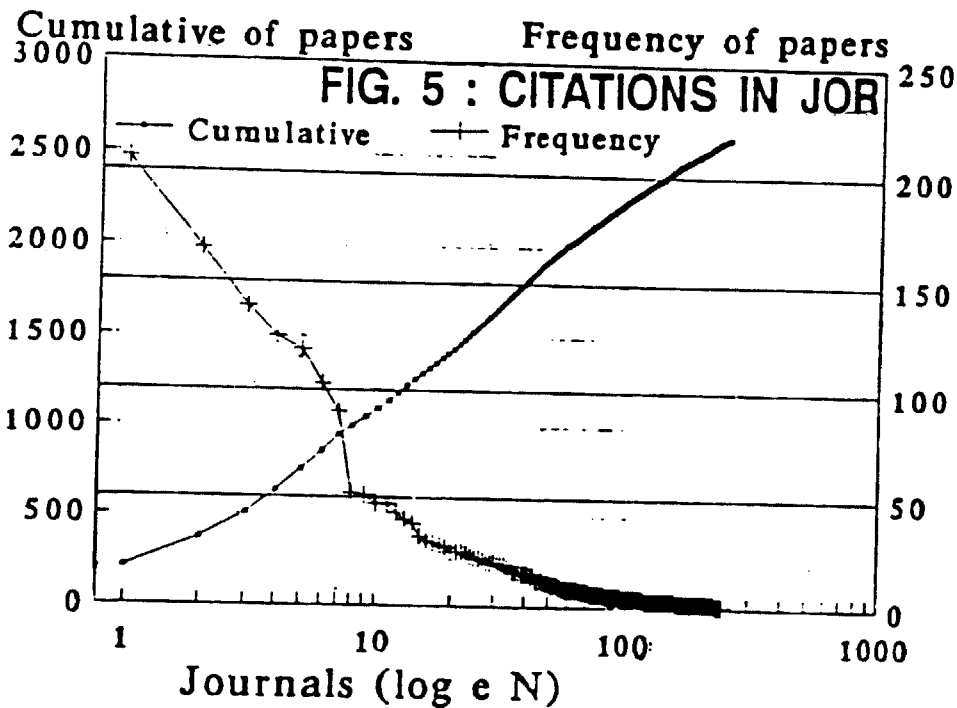


Fig. 5 : Citations in JOR

Table 8 provides further information on the journals cited in JOR like, year of starting of the journal, issues per year, circulation, impact factor and immediacy index wherever available, coverage in indexing and abstracting periodicals, and country of the publication. These data may be of help to serial librarians concerned with oilseeds literature acquisition and dissemination of oilseed information through CAS and SDI services [36-38].

Of the 56 frequently cited journals figuring in Table 8, 31 (55.35%) are Indian journals. Journals from USA rank next with a tally of 13(23.21%).

Impact factor and immediacy indices of Indian journals are very low. According to Sen and Lakshmi [39] about 500 Indian periodicals are being covered by international secondary services. JOR is also being covered by secondary services like,

Field Crop Abstracts, INIS Atomindex, Irrigation & Drainage Abstracts, Seed Abstracts, Soils & Fertilisers, Sorghum and Millets Abstracts, Soybean Abstract, Tropical Oil and Seeds Abstracts, and Indian Science Abstracts. Qualitywise also, Indian periodicals are faring quite well, compared to several developing and other countries. It is felt that more Indian periodicals deserve coverage by SCI, and the continuous reduction in the coverage of Indian periodicals is a matter of concern, since the poor coverage of Indian periodicals brings down their impact factor which, in turn, may bring down the coverage of Indian periodicals by international indexing and abstracting services, causing thereby a shadowing of Indian literature from international visibility. It has been suggested to relax criteria for inclusion in (SCI) for journals from second and third world countries to make SCI database really universal.

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Table 8 (Contd.)

Sr.no.	Year of starting	Issues per year	Circulation	SCI JCR 1992		Coverage in I & A services	Country
				IF	II		
40.	1967	04	500	—	—	13	INDIA
41.	1929	12	—	2.095	0.231	40	GERMANY
42.	1950	06	1,400	0.821	0.428	51	AUSTRALIA
43.	1948	—	—	—	—	—	USA
44.	1949	IRR	—	1.810	—	18	USA
45.	1958	04	600	—	—	09	INDIA
46.	1905	03	—	6.733	1.128	44	USA
47.	1969	04	1,500	—	—	03	INDIA
48.	1976	02	—	—	—	—	INDIA
49.	1935	12	2,000	—	—	16	INDIA
50.	1973	03	1,200	—	—	21	INDIA
51.	1973	02	—	—	—	—	SWITZER- LAND
52.	1969	04	—	—	—	06	INDIA
53.	1951	04	1,200	—	—	—	INDIA
54.	1975	12	—	—	—	16	INDIA
55.	1962	02	500	—	—	—	INDIA
56.	1964	06	2,500	0.059	0.000	18	INDIA
						28	INDIA

IF = Impact Factor, II = Immediacy Index, I & A = Indexing & Abstracting
 * Determined following the method devised by B. K. Sen et al [42]
 Serial nos. of this Table correspond to the serial nos of Table 7

Bradfordian Distribution of Cited Articles

Bradford law states that if a large collection of papers is ranked in order of descending productivity of journals (sources) relevant to a given topic, three zones can be marked off such that each zone pro-

duces one third of the total relevant papers [40].

The total number of cited articles found in the study is 2911. Each zone should account for roughly one-third of this number, i. e. 970. Table 9 depicts the number of articles in each zone with corre-

Table 9

Bradford distribution (three zones) of cited articles in Journal of Oilseeds Research

Zone	No. of journals	No. of cited articles
First	7	947
Second	42	993
Third	489	971
Total	538	2911

sponding number of periodicals. According to Bradford law the number of periodicals following successively in the three zones should be in the ratio $1 : \alpha : \alpha^2$. In this case it is 7:42: 489 i.e. 1 : 6: 81. The number of periodicals in the third zone far outnumbers the expected value, i. e. 252. Hence, it cannot be said that the distribution follows Bradford's law.

Key words

Keywords relating to oilseeds figuring in the titles of the full length papers and short communications have been arranged in the descending order of the frequencies (Table 10). This clearly pictures the scenario of oilseed research in India. For the last one decade, as can be seen, groundnut (i.e.

Table 10

Keywords related to Oilseeds having frequency >,5

Keywords	Frequency
Groundnut	33
Arachis hypogaea	20
Indian mustard	16
Brassica juncea	14
Mustard	13
Linseed	12
Sunflower	12
Castor	11
Safflower	11
Soybean	11
Sesame	10
Brassica campestris	9
Sesamum Indicum	6
Niger	5
Oilseeds	5

groundnut and Arachis hypogaea), tops the list with a tally of 53. Mustard (i.e. Indian mustard, Brassica juncea, mustard, and Brassica campestris) very closely follows groundnut with a tally of 52. Sesame (i.e. Sesamum and Sesamum Indicum), ranks third. Other oilseeds in the descending order of rank are linseed, sunflower, castor, safflower, soybean and niger.

Time Lag

The main criticism of the scientific journal stems from the evergrowing timelag between the submission of the manuscript and its publication in the

journal. [41].

The time lag in the case of JOR has been fluctuating for both full length papers and short communications (Fig 6.) Higher time lag was found during 1990. In this journal, by and large, the time lag between the receipt of the paper and its final publication is found to be about one year.

In order to further reduce the time lag, JOR may be made quarterly. By doing so JOR can attract high quality research papers of those authors who rush to publish in other monthly and quarterly journals, so as to get their papers published quickly.

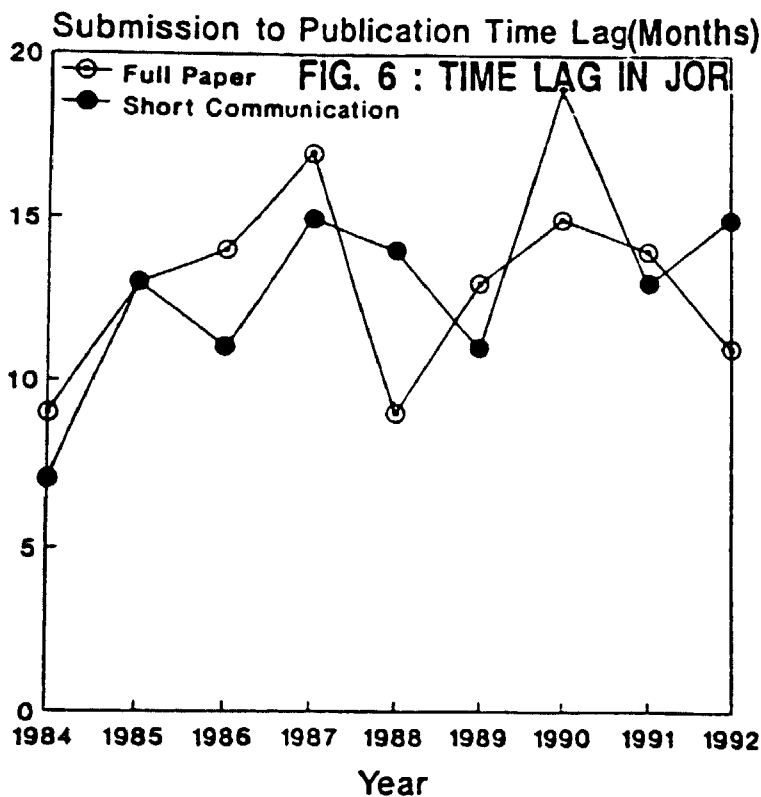


Fig. 6 : Time Lag in JOR

CONCLUSION

Compared to international standards, the quality of Indian journals is poor, and agricultural journals poorer. JOR is also no exception to the rule, though its impact factor (.041) is comparatively higher than the impact factors of other Indian agricultural journals [42]. The reasons for their poor quality among others are:

- (i) lack of rigorous refereeing;
- (ii) lack of international representation in the editorial board;
- (iii) lack of foreign contributions;
- (iv) lack of good papers. Good papers by Indians are normally published in high standard foreign journals;
- (v) poor circulation and lack of foreign subscription. This reduces the visibility of the paper in the international arena substantially;
- (vi) lack of dedicated workers to run the journal;
- (vii) inadequate financial resource;
- (viii) lack of timeliness in publication; and
- (ix) poor quality paper, printing & binding etc, for example, 98 articles published in vol. 7 and 8 of JOR have not been cited even once in the journals covered by Science Citation Index, thereby, international visibility of the journal is practically zero. JOR also suffers from many of these short-coming. Journals on oilseed research are not very many in the world. JOR has ample scope to be developed into an internationally important journal. It has to broaden its outlook and put in little more efforts to remove some of the maladies.

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