

A BIBLIOMETRIC STUDY OF THE JOURNAL TITLED 'JOURNAL OF FUNCTIONAL AND ENVIRONMENTAL BOTANY'

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Abstract *Bibliometrics is a branch of science discipline which primarily throws light on the quantitative study of library and information science. In the year 1969, the British Librarian Allan Pritchard first coined the term "Bibliometrics". Bibliometrics may be defined as the 'quantitative analysis' of the bibliographic characteristics of the research outcome of any subject discipline. Dr. S. R. Ranganathan, the father of Indian Library Science, coined the term "Librametry". The meaning of the word "Librametry" is the application of mathematical and statistical techniques in Library and Information Science. Many years later, the specialists in the subject field of 'Library and Information Science' coined the term "Informetrics". They opined that "Informetrics" is the application of mathematical and statistical techniques on 'Information Science'. Bibliometrics is closely associated with 'Scientometrics'. 'Scientometrics' is the analysis of scientific metrics and indicators. 'Bibliometrics' includes the micro-subjects like 'Citation Analysis', 'Authorship Pattern', 'Bibliographic Coupling', 'Co-Citation Indexing', 'Micro-Subject wise Distribution of Articles' and so many others. Therefore, it may be said that 'Bibliometrics' is the terminology which stands for the application of mathematical and statistical techniques to the study of bibliography and its other allied aspects.*

Now, we are living in the "Knowledge Society". Knowledge is a strategic resource which resides in human brain, corporate culture and also in different forms of knowledge medium like print and non-print. Libraries and Information Centres are the store houses of knowledge. Libraries and Information Centres are consisting of books and non-book materials. These are the primary resources of libraries and information centres. These resources have no value until it is utilized. These resources of libraries and information centres should be used by the potential users properly. For the proper utilization of information resources, the bibliometric studies are very much helpful for librarians and information professionals. Information Selection, Information Collection, Information Organization, Information Processing, Information Retrieval, Information Dissemination etc. are the principal house-keeping operations of Libraries and Information Centres. All These functions of libraries and information centres can be easy and quick through the application of proper bibliometric techniques. As we know that Information is the power, so we should have to keep in our mind that Information is the strategic resource for all. Information handling should be done very cautiously. All the Information related activities can be done smoothly through the application and use of different bibliometric tools and techniques. Acquisition and technical processing work of libraries and information centres can also be done successfully through the application of bibliometric techniques. Library and Information Science is gaining its importance and popularity for its interdisciplinary nature and application of sophisticated techniques.

'Journal of Functional and Environmental Botany' is published by Diva Enterprises Private Limited, New Delhi. 'Journal of Functional and Environmental Botany' is a peer-reviewed journal of international reputation that publishes high quality original research papers and reviews. 'Journal of Functional and Environmental Botany' is playing an important role in the dissemination of theoretical and practical knowledge in the fields of 'Environmental Botany', 'Cellular Physiology', 'Bio-Chemistry', 'Molecular Biology', and whole 'Plant Physiology' describing biological mechanisms and processes that relate to the performance of plants to their environment. It is a Bi-annual journal (January – June and July – December). The Journal has both print and on-line versions. The Print ISSN of this journal is 2231–1742; and the Online ISSN of this journal is 2231 - 1750. This paper is a bibliometric study of the 'Journal of Functional and Environmental Botany' and this bibliometric study covers the ten [10] volumes of the journal [i.e. from Vol. 1 (2011) to Vol. 10 (2020)]. The research paper examines the contributions from different point of views. The tabular analysis finds out the volume-wise distribution of contributions, authorship pattern of contributions, gender-wise distribution of contributions, citation-wise distribution of contributions, types of publications cited, distribution of contributions on different micro-subjects of 'Functional and Environmental Botany' clearly and vividly. This paper gives an in-depth description about the journal by the way of bibliometric analysis in a pinpointed manner. The research article would be helpful for the research scholars, students and teachers in the field of Botany, Molecular Biology, Cell Biology, Bio-Chemistry, Plant Physiology, and Environmental Science in general, and especially this research article would be very helpful for the research scholars and teachers in the field of Bibliometrics / Scientometrics / Informetrics etc.

Keywords: *Bibliometrics, Functional Botany, Environmental Botany*

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INTRODUCTION

Bibliometrics is a branch of science which throws light primarily on the quantitative study of library and information science. In the year 1969, the British Librarian Allan Pritchard first coined the term "Bibliometrics". Bibliometrics may be defined as the quantitative analysis of the bibliographic characteristics of the research outcome of any subject discipline. Dr. S. R. Ranganathan, the father of Indian Library Science, coined the term "Librametry". The meaning of the word "Librametry" is the application of mathematical and statistical techniques in Library Science. Afterwards, the specialists of library and information science coined the term "Informetrics". They opined that "Informetrics" is the application of mathematical and statistical techniques on Information Science. Henceforth, we can say that Bibliometrics is the term stands for the application of mathematics and statistics to the study of bibliography.

'Journal of Functional and Environmental Botany' is a peer-reviewed journal of international reputation that publishes high quality original research papers and reviews. 'Journal of Functional and Environmental Botany' is playing an important role in the dissemination of theoretical and practical knowledge in the fields of 'Environmental Botany', 'Cellular Physiology', 'Bio-Chemistry', 'Molecular Biology', and whole 'Plant Physiology' describing biological mechanisms and processes that relate to the performance of plants to their environment. It is a Bi-annual journal (January – June and July – December). The Journal has both print and on-line versions. The Print ISSN of this journal is 2231–1742; and the On-line ISSN of this journal is 2231 - 1750 . This paper is a bibliometric study of the 'Journal of Functional And Environmental Botany' and this bibliometric study covers the ten [10] volumes of the journal [i.e. from Vol. 1 (2011) to Vol. 10 (2020)]. The 'Journal of Functional and Environmental Botany' is playing an important role in the dissemination of theoretical and practical knowledge in the field of Environmental Science and Botany. This paper gives an in-depth description about the journal by the way of bibliometric analysis in a pinpointed manner. The research article would be helpful for the research scholars, students and teachers in the field of Botany, Molecular Biology, Cell Biology, Bio-Chemistry, Plant Physiology, and Environmental Science in general, and especially this research article would be very helpful for the research scholars and teachers in the field of Bibliometrics / Scientometrics / Informetrics etc.

OBJECTIVES OF THE STUDY

The following are the objectives of this paper:

- To make an analysis of the papers published in the ten volumes of the journal [i.e. from Vol. 1 (2011) to Vol.

10 (2020)] in order to collect information on the facts and sub-facts within its purview.

- To know the nature and extent of authorship.
- To know the number of contributions published during the period under study.
- To know the number of contributors according to the Gender (i.e. Gender-wise distribution of contributors).
- To identify the contributions under different micro-subjects of Functional and Environmental Botany (Plant Science).
- To know the number of citations (i.e. various types of citations).
- To make a thorough study of the 'Journal of Functional and Environmental Botany'.
- To identify the journal's nature and extent of contributions.

SCOPE AND COVERAGE OF THE STUDY

This paper is a bibliometric study of the 'Journal of Functional and Environmental Botany' and this bibliometric study covers the ten volumes of the journal [i.e. from Vol. 1 (2011) to Vol. 10 (2020)] and there are twenty issues covered by this study as each volume includes two issues. The paper examines the contributions from different point of views. The tabular analysis find out the volume-wise distribution of contributions, authorship pattern of contributions, gender-wise distribution of contributions, citation-wise distribution of contributions, types of publications cited, distribution of contributions on different micro-subjects of Functional and Environmental Botany (Plant Science) clearly and vividly.

METHODOLOGY OF THE STUDY

Data regarding each contribution in relation to authorship, authors' institutional affiliation etc. were collected, scanned, examined and recorded on the slips in a systematic manner. Data pertaining to contributions on micro-subjects were also organized on the slips. Data about citations in the contributions were recorded on the separate slips. Data about the documents cited, name of the journal or the name of the book, title of the article or the title of the book, page number, volume number and issue number and other required data about the contributions were recorded accordingly. After collection of data in slips, all the slips were arranged systematically. Another matter of fact is that necessary data were also collected from documentary sources, institutional sources and human sources. Data collected in the above manner were duly analysed and tabulated. On the basis of analysis and tabulation, the findings and conclusions were

drawn. Finally, the article is the outcome of this research endeavour.

DATA ANALYSIS

Table 1: Volume-Wise Distribution of Contributions
(Excluding Editorials, Introductory Notes, Reports etc.)

Year	Volume No.	No. of Contributions	Percentage (%)
2011	1	16	12.70
2012	2	16	12.70
2013	3	15	11.90
2014	4	17	13.50
2015	5	20	15.87
2016	6	17	13.50
2017	7	15	11.90
2018	8	04	03.17
2019	9	03	02.38
2020	10	03	02.38
Total	=====	126	100

The Table 1 shows that the maximum numbers of papers are published in this journal in the year 2015, and minimum numbers of papers are published in the years 2019 and 2020. This study covers total 126 numbers of contributions which are published during the year 2011 – 2020.

Table 2: Authorship Pattern of Contributions

Number of Authors	Number of Contributions	Percentage (%)
One Author	11	08.73
Two Authors	36	28.57
More Than Two Authors	79	62.70
Total	126	100

After analysing the Table 2, it can be said that maximum number of research articles are published in this journal by more than two authors. The authors are very much interested to publish their research articles in this journal by more than two. It is also clear from this table that the authors are least interested to publish their research papers singly in this journal. The authors are also interested to publish their research papers jointly in this journal.

Table 3: Volume-Wise Distribution of Contributions According to Authorship Pattern

Volume No. and Year	One Author	Percentage (%)	Two Authors	Percentage (%)	More Than Two Authors	Percentage (%)
1 (2011)	01	9.09	08	22.22	07	8.87
2 (2012)	01	9.09	05	13.88	10	12.66
3 (2013)	03	27.28	04	11.11	08	10.12
4 (2014)	01	9.09	08	22.23	08	10.12
5 (2015)	01	9.09	07	19.44	12	15.19
6 (2016)	01	9.09	01	2.78	15	18.99
7 (2017)	01	9.09	01	2.78	13	16.46
8 (2018)	01	9.09	01	2.78	02	2.53
9 (2019)	00	00	01	2.78	02	2.53
10 (2020)	01	9.09	00	00	02	2.53
Total	11	100	36	100	79	100

From the Table 3 it is clear that maximum numbers of research contributions by more than two authors in this journal are in the year 2016, and maximum numbers of research articles by two authors (jointly) in this journal are in the year 2014. It can also be said from the above table that maximum numbers of research articles by single author in this journal are in the year 2013.

Table 4: Distribution of Contributors According to Gender

Gender	Number of Contributors	Percentage (%)
Male	211	58.78
Female	148	41.22
Total	359	100

The Table 4 shows that there are totally 58.78% contributors of this journal are male and 41.22% contributors are female during the period under study [i.e. 2011 – 2020]. There are total 211 male contributors and 148 female contributors from volume 1 to volume 10 [total ten volumes under this study].

Table 5: Volume-Wise Distribution of Contributors on the Basis of Gender

Volume No. and Year	Male Contributors	Percentage (%)	Female Contributors	Percentage (%)
1 (2011)	33	15.64	25	16.89
2 (2012)	31	14.70	24	16.22
3 (2013)	29	13.75	23	15.54
4 (2014)	30	14.21	21	14.19
5 (2015)	28	13.27	18	12.17
6 (2016)	31	14.70	19	12.84
7 (2017)	20	9.48	12	8.11
8 (2018)	04	1.89	03	2.02
9 (2019)	03	1.42	02	1.35
10 (2020)	02	0.94	01	0.67
Total	211	100	148	100

After analysing the Table 5 it can be said that maximum numbers of male contributors are in the year 2011 (volume 1) and minimum numbers of male contributors are in the year 2020 (volume 10). It can also be said from the above table that maximum numbers of female contributors are in the year 2011 and minimum numbers of female contributors are in the year 2020.

Table 6: Distribution of Contributions According to Citations

Volume No.	Year	No. of Contributions	Number of Citations	Average
1	2011	16	209	13.06
2	2012	16	204	12.75
3	2013	15	176	11.73
4	2014	17	206	12.11
5	2015	20	263	13.15
6	2016	17	218	12.82
7	2017	15	164	10.93
8	2018	04	32	8.00
9	2019	03	29	9.67
10	2020	03	31	10.33
Total	=====	126	1532	=====

From the Table 6 it is clear that the average numbers of citations per contributions are maximum in the year 2015 [i.e. 13.15] and the average number of citations per contributions are minimum in the year 2018 in this journal [i.e. 8]. It is also clear from the above that Maximum numbers of citations are in the year 2015 [i.e. 263], and minimum numbers of citations are in the year 2019 in this journal [i.e. 29].

Table 7: Types of Publications Cited

Types of Publications Cited	No. of Citations	Percentage (%)
Books	344	22.45
Journals/Periodicals	412	26.90
Seminar/Conference Proceedings	129	8.42
Reports; Working Papers; Approach Papers	102	6.66
Thesis/Dissertations	158	10.31
Electronic Resources	318	20.76
Miscellaneous Documents [Government Documents, Daily Newspapers (Printed) etc.]	69	4.50
Total	1532	100

The Table 7 shows that the Journals and Books are mostly cited by the authors. As we are now living in the age of electronic resources, the authors and researchers are also cited the electronic resources very frequently. The other documents like thesis, dissertations, working papers, reports, conference papers etc. are also cited by the authors in this journal.

Table 8: Distribution of Contributions According to Different Micro-Subjects under the Functional and Environmental Botany

Micro-Subjects	Number of Contributions	Percentage (%)
Environmental Botany	16	12.70
Cellular Physiology	14	11.11
Bio-Chemistry	11	8.73
Molecular Biology	12	9.52
Plant Physiology	10	7.94
Environmental Science	12	9.52
Bryophyta	07	5.55
Pteridophyta	09	7.14
Thallophyta	05	3.97
Spermatophyta	08	6.35
Cryptogamia	04	3.17
Gymnospermae	07	5.55
Dicotyledon	05	3.97
Monocotyledon	03	2.38
Ferns	02	1.60
Mosses	01	0.80
Total	126	100

After analysing the Table 8, it can be said that the maximum numbers of contributions published in this journal during this period under study is on 'Environmental Botany'. It can also be said from this table that Cellular Physiology, Molecular Biology, Environmental Science, Bio-Chemistry and Plant Physiology are also attracted by the authors regarding their fields of research. It is also clear from this table that Bryophyta, Pteridophyta, Thallophyta, Spermatophyta, Cryptogamia, Gymnospermae, Dicotyledon, Monocotyledon, Ferns, and Mosses are the micro-subjects come under the broad umbrella of Botany (Plant Science). Many research articles are also published on these micro-subjects.

FINDINGS AND CONCLUSION

After completion of this study, it can be said that there are total 126 numbers of contributions under this study

during the period covered [i.e. 2011 – 2020]. Out of this 126 research articles, there are 79 research articles are contributed by more than two authors, 36 research papers are contributed by two authors and only 11 contributions are contributed by single author. It is clear that maximum number of contributions are in the year 2015 [i.e. 20]. It can be said that maximum numbers of research contributions by more than two authors in this journal are in the year 2016, and maximum numbers of research articles by two authors (jointly) in this journal are in the year 2014. It is also clear that maximum numbers of research articles by single author in this journal are in the year 2013. There are total 211 male contributors and 148 female contributors in the ten volumes which are covered by this study. This study shows that the average numbers of citations per contributions are maximum in the year 2015 [i.e. 13.15] and the average number of citations per contributions are minimum in the year 2018 in this journal [i.e. 8]. It is also clear from the above study that maximum numbers of citations are in the year 2015 [i.e. 263], and minimum numbers of citations are in the year 2019 in this journal [i.e. 29]. It is also an important point to be noted that all the research articles published in this journal are carrying citations properly. It can be said from this research that Journals and Books are mostly cited by the authors of this journal. As we are now living in the digital age, the virtual libraries and virtual information centres are playing an important role regarding information dissemination. The authors are cited the electronic resources very frequently. The other documents like thesis, dissertations, working papers, reports, conference papers etc. are also cited by the authors of this particular journal. After completion of this study, it may be said that 'Environmental Botany' is the main thrust area of this journal. Maximum research papers are published in this journal are on 'Environmental Botany'. It is also clear from this particular study that 'Cellular Physiology', 'Molecular Biology', 'Environmental Science', 'Bio-Chemistry' and 'Plant Physiology' are also very important fields of research now a days. The other micro-subjects under 'Botany' are also attracted by the researchers in the concerned subject discipline. It is also clear from this study that Bryophyta, Pteridophyta, Thallophyta, Spermatophyta, Cryptogamia, Gymnospermae, Dicotyledon, Monocotyledon, Ferns, and Mosses are the micro-subjects come under the broad umbrella of Botany (i.e. Plant Science). The authors are very much interested to publish their research papers in the above-mentioned areas also. This journal is an internationally reputed, prospective, and potential journal and it has already gained its popularity among the scientists, researchers, and scholars. We are hopeful about the futuristic articles of this journal.

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