

Worldwide Research Analysis in Citrus: A Scientometric Study

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Abstract

The Study analysis the research activities on citrus, based on the total publications output. The data is retrieved from CAB Direct Online Database for 67 years (1951–2017). Types of documents, language, rank lists of journals, most productive authors, ranking on countries based on their publications output are presented.

Keywords: Citrus, Scientometric, CAB Direct, Agricultural Crop, Calculate Mean Absolute Deviation, M.A.D.

1. Introduction

Citrus fruits have been an economically essential yield for a large number of years. Moreover, Citrus basic oils are important in the scent, nourishment, and drink businesses, and have likewise delighted in use as fragrant healing and therapeutic operators.

2. Objective of the Study

To analyse the research activities on citrus based on the total publication output, its growth rate, types of publications, top journals publishing papers on citrus research, most productive authors and ranking of countries based on publication output on citrus crop research.

3. Review of Literature

Scientometric researches have carried out earlier through one of a kind author on the exclusive individual journal publications and literature on particular difficulty areas. The following studies associated with the objectives of this study were reviewed.

Imran Khan (2016) an examination on perform a scientometric analysis of DESIDOC Journal of Library and Information Technology (DJLIT) to find out the quality, popularity and impact of the international journal published by DESIDOC.

Priya A Suradkar and Khaparde Vaishali S (2012) analyzed based on 5 volumes, 30 issues of the Journal of Documentation during 2007-2011. The present study is based on overall 5521 citations appended to 532 articles. The mean of relative growth and Doblin Time for the first five year was 0.278 and 1.813, the productivity authors was measured in terms of the number of times a particular author was during 2007 to 2011. The value group co-efficient for citation (gc) was 0.42, The calculated chi-square value (896.5). The average rate of citation per articles (C/A) was 10.37.

Sangeeta Paliwal (2015) the present endeavours to analyses 177 research papers in five volumes 56 to 60, (2009 - 2013) in Annals of library and Information studies. The study gives status of Library and information science research & importance of library science in India. Also gives account of Annals of library and Information studies, objectives & methodology in this study. Analyses papers into year wise distribution, length of articles, use of tables, graphs diagrams. Finds authorship pattern and calculates collaboration coefficients. Also finds out profile contributors, location of papers, subject wise distribution & State wise distribution.

Rajendran Lakshmanan (2018) an examination of The Study investigation the exploration exercises on Leptospirosis diseases, in light of the aggregate distribution yield. The information is recovered from the CAB Direct

Online Database for a long time (1955– 2017). Types of documents, language, rank lists of journals, most productive authors, a ranking of countries based on their publication output are presented.

Munazza Jabeen Liu, Yun Muhammad Rafiq Misbah Jabeen and Muhammed Asam Tahir (2015) seen that the research productivity and scholarly communication of library and information science professionals during 2003–2012 by using Web of Science databases from 40 library and information science core journals. Data was interpreted by using two open-source software Vantage point (powerful text-mining tool for discovering meaningful result from raw data) and Cite Space II to visualize the library and information science growth and trends. Underlying results indicated that mainstream of authors (12,847, 69.9%) published their article as a single author from 2003–2009, this trend has declined and collaborative number of publications trend has inclined during the last 3 years. The University of Illinois at Urbana-Champaign produced 95 (0.52%) of the total publications and stands at the leading position. The maximum number of publications was carried out by universities rather than non-academic institutions. This article identified that Asian countries, such as China, Taiwan, India, and Iran, are still in its infancy stage. The present study could be considered as a useful tool for effective allocation of research funds in the research community and academic world of library and information science to enhance the research process.

Rajendran Lakshmanan (2018) have demonstrated this paper, attempts to analyze quantitatively the growth and development of Potato (*Solanum tuberosum*) vegetable crop research in India in publication output as reflected in CAB Direct Online Database. During the period 1939-2017 a total of 1,27,234 papers were published by the scientists of global respectively on Potato Crop analysis. India is the top country in Agricultural research with its contribution of 7,258 papers which is nearly (7.66%) of the global research output of Agricultural research followed by the specific country are in USA with 7,056 papers (7.45%). The most preferred journals where the American Potato Journal with 1,784 papers (1.88%) followed by the Potato Research with 1,764 papers (1.86%). The study revealed that out of the world, India has the highest range the

production of Potato. It covers India is a top level in the field of agricultural research as a part of the Indian country are ranked higher position of Uttar Pradesh in a northern region.

4. Materials and Methods

The study is based on the publication data on Citrus research, retrieved from the CAB Direct Online database for 65 years (1951-2017). Coverage includes leading bibliographic database CAB abstracts and global health, and databases from internet resources and abstract journals. CAB Direct provides access to:

- Over 11.5 million bibliographic records
- Over 350,000 full text articles hosted by CABI and
- Many other authoritative reviews, news articles and reports

CAB Direct has a clean, simple design and a Google like search functionality to enable the users to find what is needed quickly and easily. The Advanced Search facility of CAB Direct Online database was used for this study. The keyword 'Citrus' has been used in article title field and the search was performed.

5. Results and Analysis

5.1 Calculate Mean Absolute Deviation (M.A.D) of Research Output

It is observed from the study that the number of papers has been increased gradually i.e. 10 to 1,062 papers were published in 1966-1975 and also continuously increased in the year 1996 - 2008 ; because of the research out has been changed in this study. A study of the citrus research output is a calculate mean absolute deviation (M.A.D) of overall analyzing the research and development in the field [2]. Table-1 shows that the citrus research output, it is clear that the period has 1951 (1) has less publication in that period, particularly that year was started in research outgrowth in an area, but slowly increasing trend value of that particular period on 1966-1975. Where \sum is a total number of publications: data value obtained from mean

divided by number of values. The M.A.D value for the period 1951-2017 is worked out to 9.11.

Table1. Mean Absolute Deviation of Overall Research Output

Year	No. Of Articles (Σ)	Data Value – Mean
1951	1	1001
1952	2	1000
1955	1	1001
1956	1	1001
1957	3	999
1958	5	997
1959	1	1001
1960	3	999
1961	6	996
1962	2	1000
1963	1	1001
1964	11	991
1965	2	1000
1966	10	992
1967	11	991
1968	23	979
1969	60	942
1970	166	836
1971	311	691
1972	831	171
1973	883	119
1974	1103	101
1975	1062	60
1976	989	13
1977	1048	46
1978	1102	100
1979	1130	128
1980	1010	8
1981	845	157
1982	978	24
1983	1075	73
1984	924	78
1985	945	57
1986	937	65
1987	947	55
1988	1260	258
1989	1069	67
1990	1134	132
1991	1007	5
1992	986	16
1993	935	67
1994	1094	92
1995	1060	58
1996	982	20
1997	1069	67
1998	1145	143
1999	1289	287
2000	1477	475
2001	1422	420
2002	1566	564
2003	1591	589
2004	1637	635

2005	1690	688
2006	1748	746
2007	1957	955
2008	2070	1068
2009	1890	888
2010	2155	1153
2011	2341	1339
2012	2406	1404
2013	2422	1420
2014	2343	1341
2015	2514	1512
2016	2284	1282
2017	2158	1156
	65130	592.6

$$1/65(1001+1000+1001+1001+999+997+1001+999+996+1000+1001+991+1000+992+991+979+942+836+691+171+119+101+60+13+46+100+128+8+157+24+73+78+57+65+55+258+67+132+5+16+67+92+58+20+67+143+287+475+420+564+589+635+688+746+955+1068+888+1153+1339+1404+1420+1341+1512+1282+1156))$$

The Mean Absolute Deviation (MAD) of a set of data is the average distance between each data value and the mean. While we could work through each of these steps on the calculator’s home screen, let’s instead, try to utilize the calculator’s features to minimize our work. We will look at two different approaches to find the population MAD.

$$M.A.D = \frac{\Sigma \text{data value} - \text{mean}}{\text{Number of Values}}$$

$$M.A.D = \frac{592.6}{65} = 9.11$$

5.2. Rank-wise Indian States Distribution of Publications

The study reveals that USA is the top country in Agricultural research, with its contribution of 6,186 papers which is nearly (9.49%) of the global research output of Agricultural research followed by the specific country are in India, with 3,859 papers (5.92%) ranks second position, with 3,300 papers (5.06%) in is a third position [4]. It covers India is a top level in the field of Agricultural research, Maharashtra (0.81%), Northern States are ranked first place in India and it covers 70% of agricultural lands in India so that mainly concentrate on agriculture orientation. The top 10

Country based on number of publications is furnished in Table -2.

Table – 2. Ranking Country in India of Citrus Analysis

Name of the States	No. of Publications	Percentage	Rank
USA	6186	9.49	1
India	3859	5.92	2
China	3300	5.06	3
Africa	2963	4.54	4
Brazil	2955	4.53	5
Florida	2947	4.52	6
Italy	2196	3.37	7
Japan	1921	2.94	8
Spain	1728	2.65	9
California	1328	2.03	10

5.3. Preferred Journals

The most popular journals by the scientists concerned with the Citrus analysis were: Acta Horticulture with 1,691 papers (2.59%) followed by the South China Fruits with 1,640 papers (2.51%). The study revealed that out of high five most popular journals by the citrus researchers, three journals viz., Proceedings of the Florida State Horticulture Society 956 papers (1.46%) and Journal of Agricultural and Food Chemistry 837 papers (1.28%), Subtrophicheskie Kul'tury 596 papers (0.91%) and ranking which clearly indicates that the contribution of India in citrus analysis is major role [1] it indicates the ranking second position followed by USA. The highest 10 most popular journals are listed in Table- 3 with the amount of papers revealed.

Table – 3. Preferred Journals by Citrus Crop Analysis

Sl.No.	Journal Name	No. Of Papers	Percentage
1.	Acta Horticulture	1691	2.59
2.	South China Fruits	1640	2.51
3.	Proceedings of the Florida State Horticulture Society	956	1.46
4.	Journal of Agricultural and Food Chemistry	837	1.28

5.	Subtrophicheskie Kul'tury	596	0.91
6.	Hort Science	587	0.90
7.	Plant Disease	537	0.82
8.	Scientia Horticultural	501	0.76
9.	Journal of the Japanese Society for Horticultural Science	442	0.67
10.	Journal of Economic Entomology	437	0.67

5.4. Leading format of Publication

The study reveals that the main source of publications coated by CAB Direct Online database for Citrus Crop analysis is journal articles with 59,710 papers (91.67%) followed by conference papers with 7,588 papers (11.65%). Miscellaneous third position with 1,810 (2.77%), Book Chapter and Annual report are within the fourth and fifth places with 501 (0.76%) and 264 (0.40%) various [6]. The highest 10 varieties of publications are furnished in Table -4.

Table – 4. Leading format of Publication

Sl.No.	Kinds of Document	No. Of Papers	Percentage
1.	Journal article	59710	91.67
2.	Conference paper	7588	11.65
3.	Miscellaneous	1810	2.77
4.	Book Chapter	1112	1.70
5.	Annual report	501	0.76
6.	Abstract Only	264	0.40
7.	Bulletin article	190	0.29
8.	Thesis	36	0.05
9.	Correspondence	21	0.03
10.	Patent	17	0.02

5.5. Most Productive Authors

The study reveals that Navarro L is that the most ranking authors of Citrus analysis who revealed 441 papers (0.67%) followed by Moreno P with 368 papers (0.56%). It's observed that out of the

highest five authors who contributed a lot of papers in Citrus Crop analysis, there are world ranking author contributed a paper level of 220 to 441 viz., Pena L, and Deng X.X, 315 papers (0.48%), are equally published articles and Sabater Munoz B 278 Papers (0.42%). Table – 5 lists the highest 10 ranking authors within the field of Citrus Crop analysis.

Table –5. Most Productive Authors in Citrus Analysis

Sl.No.	Name of Author	No. Of Papers	Percentage
1.	Navarro L	441	0.67
2.	Moreno P	368	0.56
3.	Pena L	315	0.48
4.	Deng X X	295	0.45
5.	Sabater Munoz B	278	0.42
6.	Deng Xiu Xin	248	0.38
7.	Duran vila N	248	0.38
8.	Grace J V da	234	0.35
9.	Machado M.A	225	0.34
10.	Goren R	220	0.33

5.6. Language Distribution

It is observed that English is the most predominant language used by the researchers for communication in the Citrus Crop analysis [5] with 47,541 papers (72.99%) followed by Chinese with 5,190 (7.96) and Portuguese with 2,898 (4.44%). The top 10 predominant languages are furnished in Table -6.

Table –6. Language Distribution of Citrus Analysis

Sl.No.	Language	No. of Papers	Percentage
1.	English	47541	72.99
2.	Chinese	5190	7.96
3.	Portuguese	2898	4.44
4.	Spanish	2884	4.42
5.	Japanese	1806	2.77
6.	Italian	1626	2.496
7.	Russian	1170	1.79
8.	French	1083	1.66
9.	Afrikaans	378	0.58
10.	German	321	0.49

6. Findings

These are the findings of the Scientometric study and it is hoped this finding is likely to be helpful for the stakeholders of Citrus analysis knowledge managers in these areas:

- Indian contribution to global Agricultural research based on CAB Direct Online database revealed that India has published 3,859 papers in various fields of citrus analysis.
- Navarro L is that the most ranking authors of Citrus analysis who revealed 441 papers (0.67%) followed by Moreno P with 368 papers (0.56%).
- Most preferred journals are: Acta Horticulture with 1,691 papers (2.59%) followed by the South China Fruits with 1,640 papers (2.51%).
- Journal article viz., with 59,710 papers (91.67%) followed by conference papers with 7,588 papers (11.65%). Miscellaneous third position with 1810 (2.77%), Book Chapter and Annual report are within the fourth and fifth places with 501 (0.76%) and 264 (0.40%) of various ranking which clearly indicates that the contribution of India in citrus crop analysis is major role.
- USA is the top country in citrus research with its contribution of 6,186 papers which is nearly (9.49%) of the global research output of Agricultural research followed by the specific country are in India with 3,859 papers (5.92%) ranks second position and China is a third position with 3,300 papers (5.06%).

7. Conclusion

All through Sixty five years, of time length overall responsibility in conveyances is basically extended in the field of Citrus study. An examination of the citrus trim asks about yield is a count of Mean Absolute Deviation (M.A.D) of as a rule separating the inventive work in the field. Where Σ is an aggregate number of research output: information value acquired from mean partitioned by number of regards. The citrus inquire about yield, obviously

the period has 1951-1969 has less yield of research in that period, anyway bit by bit growing example estimation of that explicit period on 1966-1975 and furthermore consistently expanded in the year 1996-2008. The USA is the best country in citrus survey, with its dedication 6,186 papers of the overall research yield of Agricultural research out of this the specific country are in India with 3,859 papers (5.92%). An Indian researcher ought to be the citrus investigate field so the dedication of India in this examination locale could be in a general sense extended.

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