

Scientrometric Analysis of Carica Papaya (Papaya) Research: A Case Study



Library Science

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ABSTRACT

The scientrometric analysis gained momentum in the recent years due to proliferation in science literature scientrometric is the measurement that helps in identifying the progress of a particular science subject, this paper highlights the growth pattern of literature on papaya over a period of four years 2009 - 2012 to testify the current developments in the subject and to focus on its structure. Studies like this will be helpful to understand the complex nature of the research in a particular subject and to provide adequate facilities and guidance in which direction the future research has to be carried out.

INTRODUCTION

This study aims to focus on growth pattern as well as overall trend in literature output on papaya during 2009-2012. Secondary data collection from a set of retrieved bibliographic records from the literature output in the field of papaya from the sources of Medline was studied. This paper also highlights the need of more research in papaya related research.

THE PAPAYA

The papaya has been long in the world ever since the recorded history of mankind. The papaya was thought to have originated from Mexico or Central America. Since the time of the rise of the Spanish conquest, the papaya has been introduced to Europe. Seeds were brought by ships into the other areas of the world, including India, and the other parts of Southeast Asia. Since the time of the introduction of the papaya to the common world, it has then gained a lot names: "pawpaw" from Europe, "Fruta Bomba" in Cuba, "Papaye" in France and "Papalee" in Tamil Nadu. Papaya (*Carica papaya*) is a tropical fruit having commercial importance because of its high nutritive and medicinal value.

OBJECTIVES

- To identify the authorship pattern of the literature
- To study the structures such as journal articles, abstracts, reviews and letters and other types of the literature
- To identify the journals and their countries of origin where the literature on papaya has been published
- To study the language wise distribution of the literature

RESEARCH METHODOLOGY

The MEDLARS database for 2009 -2012 was analyses for this study. About 232 records on papaya were downloaded form MEDLARS for the study. Though the database comprises about 10 fields, the following fields were downloaded for each record on papaya literature: title, author, published pages, address of the author, and date of publication, publishing language, and type of publications, year of publication, published countries and country of publication.

DATA ANALYSIS AND INTERPRETATIONS

Table-1 TYPE OF AUTHORSHIP

S.No	Author	2009	2010	2011	2012	Total
1.	Single	4	1	3	3	11
2.	Double	5	7	7	3	22
3.	Three	8	12	12	9	41
4.	Four	7	8	13	13	41
5.	Five	10	8	7	7	32
6.	Six	5	8	7	13	33
7.	Seven	4	8	2	5	19
8.	Eight	0	2	5	3	10

9.	Nine	3	1	1	1	6
10.	Ten	2	1	0	0	3
11.	More than Ten	3	5	2	4	14
Total		51	61	59	61	232

Table-1 shows the nature and quantum of authorship. Articles contributed by three and four authors formed 41 records followed by Six and Five authors forming 33 and 32 records followed by two authors group and seven Single authors group each forming a quantum of 22 and 19 records respectively. Contributions by Monet then ten, single and eight authors as group of contributed by 14, 11 and 10 records and nine ten authors group contribute 6 and 3 records.

Table - 2
AUTHORS E-MAIL IDENTIFICATION

S.No	Year	E-mail id		Total
		Available	Not available	
1.	2009	22	29	51
2.	2010	25	36	61
3.	2011	28	31	59
4.	2012	24	37	61
Total		99	133	232

Of the 232 records, there are 99 authors given e-mail identifications, the remaining 133 authors address only given.

Table - 3
FREQUENCY DISTRIBUTION OF CONTRIBUTION COUNTRIES OF AFFILIATION AUTHORS

Author Address (country)	Total
United-States	61
India	24
Brazil	20
China	13
Belgium	10
Italy	10
Taiwan	9
Australia	8
Japan	8
England	7
Nigeria	7
Canada	6
Malaysia	6
France	5
German	5
Iran	5
Spain	5

Cuba	4
Israel	4
Mexico	3
Kenya	2
Korea	2
Pakistan	2
Portugal	2
Scotland	2
Philippines	1
Thailand	1
Total	232

United States ranked first with 61 publications followed by India with 24 records. Brazil and China had an output of 20 and 13 records while Belgium and Italy had an equal 10 records each. Japan had 9 records. Australia, Japan and England, Nigeria and Canada, Malaysia had an equal output of 8 and 7 and 6 records. France, German, Italy and Spain had an equal for 5 records. Cuba and Israel contributed on each 4 records. Mexico had 3 records only. Kenya, Korea, Pakistan, Portugal and Scotland had an equal output of 2 records. Philippines and Thailand have contributed equally each one record. The United States and India have proved their medical literature output supremacy though the subject of study Papaya is more skin to tropical and subtropical countries.

Table - 4
FORMS OF PAPAYA LITERATURE

S.No	PT	2009	2010	2011	2012	Total
1.	Journal Article	47	54	50	61	212
2.	Reviews	3	2	5	0	10
3.	Abstracts	0	2	2	0	4
4.	Reports	1	2	1	0	4
5.	Letter	0	1	0	0	1
6.	News	0	0	1	0	1
	Total	51	61	59	61	232

Of the 232 records 212 were in the form of Journal articles followed by 10 reviews item. Next follow that the Abstracts, reports and Letters, News each item numbering 4 and 1. Of the four years 2010 and 2012 formed the mode among contributions.

Table - 5
FREQUENCY DISTRIBUTION - LANGUAGE WISE

S.No	Language	2009	2010	2011	2012	Total
1.	English	51	58	56	61	226
2.	Chinese	0	0	1	0	1
3.	Italy	0	1	0	0	1
4.	Porthkis	0	2	1	0	3
5.	Spanish	0	0	1	0	1
	Total	51	61	59	61	232

Of the 232 records, the language of communication of a major portion numbering 226 records were found to be in English, ranking first among the world renowned 8 global languages. Contributions in Portikis language numbered 2 in 3 records surprised the investigator and Chinese, Italy and Spanish contribute in each 1 record. Some of the developing countries have to open their eyes to this pathetic position of not finding papaya literature not only their native language but also not representing the international sources.

Table - 6
QUANTUM OF LITERATURE OUTPUT - PRINTED PAGEWISE

S.No	Year	Records	Pages
1.	2009	51	443
2.	2010	61	441
3.	2011	59	445
4.	2012	61	479
Total		232	1808

Based on the total number of articles, the concerned total numbers of pages have been taken into account to work out the average number of pages per article. It was 479 pages per article in 2012, and it became 445 in 2011. The years 200 and 2010 maintained an average with 443 and 441 numbers of pages respectively.

Table - 7
FREQUENCY DISTRIBUTION OF JOURNALS

S.No	Name of the Journals	Total
	Journal of agricultural and food chemistry	16
	Journal of ethnopharmacology	10
	Archives of virology	8
	Biological chemistry	6
	Phytochemistry	6
	Molecular genetics and genomics	4
	Plant cell reports	4
	Plant physiology	4
	Plant physiology and biochemistry	4
	Asian journal of andrology	3
	Biochimica et biophysica acta	3
	Communications in agricultural and applied biological sciences	3
	Genome / National Research Council Canada	3
	Journal of medicinal food	3
	Neotropical entomology	3
	Parasitology	3
	Structural biology and crystallization communications	3
	The New Zealand medical journal	3
	Transgenic research	3
	Veterinary parasitology	3
	Virus genes	3
	Annals of the New York Academy of Sciences	2
	BioFactors (Oxford, England)	2
	Biotechnology letters	2
	Food and chemical toxicology	2
	Genetica	2
	International journal of biological macromolecules	2
	International journal of food sciences and nutrition	2
	Journal of food protection	2
	Journal of insect science	2
	Journal of the Food Hygienic Society of Japan	2
	Methods in molecular biology	2

Phytotherapy research	2
Planta	2
The FEBS journal	2
genes	1
Acta crystallographica	1
Acta genetica Sinica	1
Advances in virus research	1
Analytical biochemistry	1
Annals of botany	1
Annual review of phytopathology	1
Archivos latinoamericanos de nutricion	1
Asia Pacific journal of clinical nutrition	1
Biochemical and biophysical research communications	1
Biochemical genetics	1
Biochemistry	1
BioDrugs	1
Bioorganic & medicinal chemistry	1
Biotechnology advances	1
Biotechnology and bioengineering	1
Biotechnology annual review	1
BMC bioinformatics	1
BMC genomics	1
Brazilian journal of biology	1
Canadian journal of microbiology	1
Cell research	1
Cellular and molecular life sciences	1
Chembiochem : a European journal of chemical biology	1
Collegium antropologicum	1
Colloids and surfaces. B, Biointerfaces	1
Current opinion in genetics & development	1
Cytogenetic and genome research	1
Dermatology online journal	1
Ecological applications Journal of economic entomology	1
Environmental biosafety research	1
Environmental entomology	1
Ethiopian medical journal	1
European journal of clinical nutrition	1
Experimental & applied acarology	1
FEMS yeast research	1
Food additives and contaminants	1
Forum of nutrition	1
Free radical biology & medicine	1
Genetics and molecular research	1
Genome biology	1
Genome research	1
Genomics	1
Hereditas	1
Hypertension research	1
Indian journal of experimental biology	1
Indian journal of pharmaceutical sciences	1
Inflammation & allergy drug targets	1
Inflammo pharmacology	1
International journal of cancer	1
International journal of dermatology	1
International journal of phytotherapy and phytopharmacology	1
Journal of AOAC International	1

Journal of applied toxicology Journal of environmental sciences (China)	1
Journal of biotechnology	1
Journal of chromatography	1
Journal of computational biology	1
Journal of economic entomology	1
Journal of environmental radioactivity	1
Journal of ethno pharmacology	1
Journal of ethnobiology and ethnomedicine	1
Journal of experimental botany	1
Journal of fluorescence	1
Journal of food science	1
Journal of gastroenterology and hepatology	1
Journal of hazardous materials	1
Journal of helminthology	1
Journal of medicinal chemistry	1
Journal of molecular biology	1
Journal of virological methods	1
La Clinica terapeutica	1
Letters in applied microbiology	1
Medical education	1
Memorias do Instituto Oswaldo Cruz	1
Minerva ginecologica	1
Molecular biotechnology	1
Molecular plant pathology	1
Molecular plant-microbe interactions Journal of economic entomology	1
Mycological research	1
Nature	1
Nature biotechnology	1
Neuroscience	1
Nigerian journal of physiological sciences	1
Nucleic acids research	1
Oecologia	1
Pakistan journal of biological sciences: PJBs	1
Pakistan journal of biological sciencesHereditas	1
Pakistan journal of pharmaceutical sciences	1
Parasitology research	1
Physiologia plantarum	1
Phytochemical analysis	1
Plant foods for human nutrition (Dordrecht, Netherlands)	1
Rejuvenation research	1
Reproduction in domestic animals	1
Reproductive toxicology (Elmsford, N.Y.)	1
Science (New York, N.Y.)	1
Seminars in cell & developmental biology	1
The Korean journal of physiology & pharmacology	1
The Plant journal for cell and molecular biology	1
The Science of the total environment	1
The West Indian medical journal	1
Theoretical and applied genetics	1
Tropical animal health and production	1
Vaccine	1
Virology	1
Wiener klinische Wochenschrift	1
Total	232

Contributors in 141 standard journals as covered by MEDLARS published a total of 232 records. A happy note is that an Indian Journal found its way amidst the list of journals having published articles on papaya. But the pleasure is short lived if one notice that the article published in Indian Journals were mostly foreign.

CONCLUSION

Study also found that according to major health database MED-LARS, over a period of four years only 232 records on papaya were published worldwide. This warrants more development or research in this field.

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