

Global Citation Scores Based Food Science Research output: A study

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ABSTRACT

Food Science is one of the Science. Human beings are consuming the foods from the nature and cooks and converted in the easily digested in the various cultivated food products. The Food Science research output by Indian scientists was collected using the web of science (WoS) citation database and its limited for the selected year (2000 - 2019) were analyzed. The research study results found that 656 records were published in Food Science research by the Indian authors. The paper briefly discusses research out in different categories such as year wise output, source wise, topmost ranking for journals, author, institution, and Keywords wise. Totally 598 research articles are a significant share among the research documents. Totally 362 journals, 2500 authors were published, and the total number of keywords used in the study research area was 2856 and the Global citations Score 11473. The highest number of publications made by Indian researchers was 68 in the year 2002. Among the top-rated journals, the Elsevier LWT-Food Science and Technology top place with 55 research papers.

Keywords: Food Science, TGCS, WoS

Introduction:

Food Science emphasizes on the composition of foods and the changes the occur when they are subjected to processing. The amount of nutrients present in different foods and the affect of cooking are part of the study is Food Science (Srilakshmi, B, 1997). In other words, the study of Food Chemistry and processing of food materials(Processing) and Preservation of food Products, etc. It is very essential for human life and maintains body and wealth. It also gives a quantum of human life activities in the Physiological systems.

Web of Science:

Web of Science is one of the authentic bibliographical citation database and its provide the scholarly literature indexing and Scientific information with specialized tool providing data on essential areas in all kinds of research (Yao et al., 2014). Furthermore, the Web of Science provides full search fields, namely keywords, country, organization, author, and references (Boyack et al., 2005) which was highly helpful for the present study. Web of Science provides peer-reviewed, impact factor journals, books, conferences proceedings (Sankar, 2020). Recently, different indicators are used to evaluate the impact of a particular area of research or individual research output. The most critical indicators are citations, h index, Total Global Citations Scores (TGCS), and Total Local Citations Scores (TLCS). The hiscite software can be used to get these parameters for assessing the impact of specific research field or individual research output.

Review of Related Literature

Sankar, M (2020) analyzed the research output of horticulture research output by Indian scientists was retrieved from the Web of Science database for the period 2000 to 2019..He reported that 267 research articles are a significant share than other research documents, 202 journals were published 441 records by the contribution of 1192 authors. The total number of keywords used in the study research area was 1717. The highest number of publications made by Indian researchers was 46 in the year 2018. The Horticultural Scientists preferred the publication in the titled on Indian Journal of Agricultural sciences retained top place by publishing 62 research papers.

Sankar, M and Srinivasaragavan (2012) described that agriculture research output for the period from 1970 to 2012. He reported that performance of a continent and country in a particular discipline of scientific research. The study result found that web of science, applied various statically analytical tools part; Specialization Index (SI), Author Productivity, Authorship Pattern, Collaborative Index, Lotka's Law, and Pareto Principle (80 X 20 Rule) also taken up in their research.

OBJECTIVES OF THE STUDY

- To find out the year-wise research output of Food Science scientists of India.
- To identify the source wise distribution in India in the Food Science research output.

- To identify the frequency of topmost journal distribution in Food Science research output.
- To know the frequency of top most authors in Food Science research in India.
- To identify the frequency of institution wise in Indian Food Science research output.
- To identify the mostly occurrence keyword in the Food Science research area.

METHODOLOGY

Web of Science has citations and indexing services available online, which is maintained by Clarivate Analytics formerly Thomson Reuters. The present study involves three steps for collecting and analyzing the data for the selected study period. Firstly, the data for the selected period (2000 to 2019) was collected from Web of Science (WoS) database utilizing the search query for "Food Science." Secondly, the other queries were excluded from the collected data and restricted to Food Science subject related records that to Indian authors. Finally, the collected data were further analyzed by using histcite software version is 12.03.17.

RESULTS AND DISCUSSION

The year-wise research documents and total citation scores at the global level for the Food Science subject are presented in Table 1. For the selected study period, 656 research documents related to Food Science research were published by Indian authors. The average number of publications per annum for Indian scientists was noted as 32.80. The highest and lowest number of research documents was found as 68 and 6 in 2002 and 2004, respectively. More than 15 records found as a yearly research output in India the other remaining period except in the year of 2005.

Table.1 Publication records and their TGCS for Indian Food Science researchers

Sl.No	Year	Records	Percentage
1	2000	42	6.40
2	2001	50	7.62
3	2002	68	10.37
4	2003	52	7.93
5	2004	6	0.91
6	2005	9	1.37

7	2006	15	2.29
8	2007	29	4.42
9	2008	26	3.96
10	2009	17	2.59
11	2010	15	2.29
12	2011	17	2.59
13	2012	22	3.35
14	2013	27	4.12
15	2014	22	3.35
16	2015	33	5.03
17	2016	46	7.01
18	2017	56	8.54
19	2018	58	8.84
20	2019	46	7.01
	Total	656	100

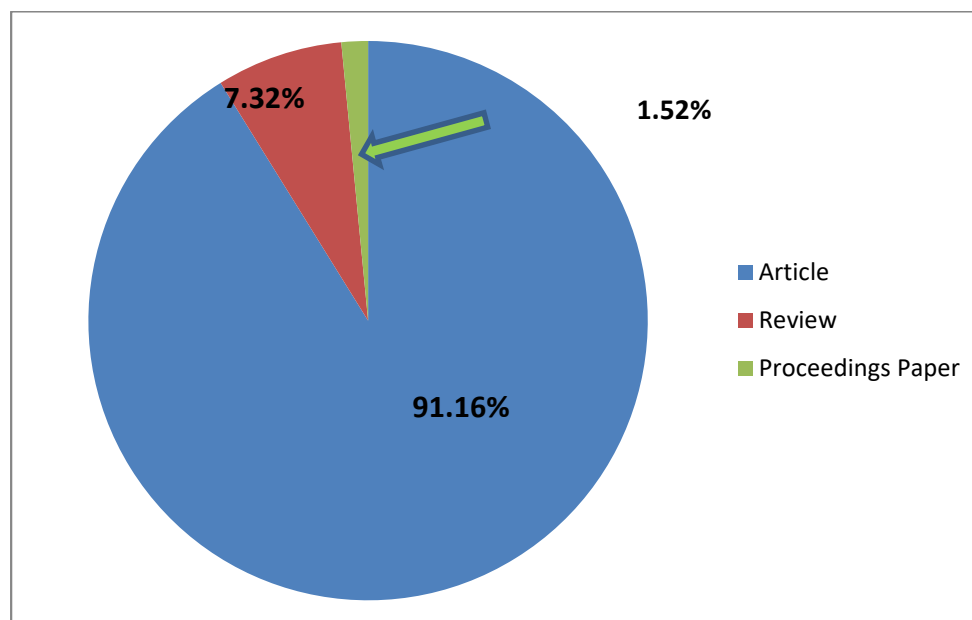


Fig. 1. Research documents published in Food Science by Indian authors (2000 to 2019).

The research documents published in the Food Science field by Indian authors for the study period are shown in Fig. 1. Publications about Food Science research works were in three different categories, such as Journal articles, reviews and proceedings paper. The research articles published in different journals (91.16 %) review articles (7.32 %), Proceedings paper (1.52%).

Table 2. Top 30 journals preferred by Indian authors published Food Science research

Sl.No	Name of the journal	Records	TGCS	NAAS Score 2020
1	LWT-FOOD SCIENCE AND TECHNOLOGY	55	0	9.71
2	FOOD CHEMISTRY	17	1046	11.40
3	CURRENT SCIENCE	14	4	6.76
4	CROP JOURNAL	10	0	9.18
5	JOURNAL OF FOOD SCIENCE & TECHNOLOGY-MYSORE	10	0	8.28
6	LEBENSMITTEL-WISSENSCHAFT UND-TECHNOLOGIE-FOOD SCIENCE AND TECHNOLOGY	10	26	9.71
7	BIORESOURCE TECHNOLOGY	9	294	12.67
8	FOOD SCIENCE AND HUMAN WELLNESS	9	0	-
9	JOURNAL OF ETHNOPHARMACOLOGY	9	428	9.41
10	INTERNATIONAL JOURNAL OF FOOD MICROBIOLOGY	8	414	10.01
11	TRENDS IN FOOD SCIENCE & TECHNOLOGY	7	205	14.52
12	BIOSENSORS & BIOELECTRONICS	6	1669	15.52
13	CRITICAL REVIEWS IN FOOD SCIENCE & NUTRITION	6	0	12.70
14	JOURNAL OF CLINICAL HYPERTENSION	6	0	-
15	BIOTECHNOLOGY ADVANCES	5	1882	18.83
16	FRONTIERS IN PLANT SCIENCE	5	0	10.11
17	METHODS AND FINDINGS IN EXPERIMENTAL AND CLINICAL PHARMACOLOGY	5	19	-
18	NUTRITION REVIEWS	5	110	11.78
19	AGRICULTURAL WATER MANAGEMENT	4	235	9.54
20	AGRICULTURE ECOSYSTEMS & ENVIRONMENT	4	264	9.95
21	CARBOHYDRATE POLYMERS	4	111	12.04
22	CHAOS SOLITONS & FRACTALS	4	66	-
23	COMPREHENSIVE REVIEWS IN FOOD SCIENCE AND	4	0	14.74

	FOOD SAFETY			
24	FIELD CROPS RESEARCH	4	134	9.87
25	FOOD RESEARCH INTERNATIONAL	4	70	9.58
26	FRONTIERS IN MICROBIOLOGY	4	0	10.26
27	INDIAN JOURNAL OF ANIMAL SCIENCES	4	0	6.23
28	JOURNAL OF INFECTION AND PUBLIC HEALTH	4	0	
29	MEAT SCIENCE	4	62	4.22
30	MUTATION RESEARCH-GENETIC TOXICOLOGY AND ENVIRONMENTAL MUTAGENESIS	4	136	8.26

The details of the top 30 journals preferred by Indian researchers to publish their Food Science research works during the study period are presented in table 2. The analyzed results show that the topmost journals are first in LWT-FOOD SCIENCE AND TECHNOLOGY (22 nos.) the second rank for FOOD CHEMISTRY (27 nos.) and third rank for CURRENT SCIENCE(14 nos). The NAAS rating for 2020 of these journals is more than 6.00 and maximum number of published journal titles.

Table 3. Top 30 ranking for the author based their Food Science research output

Sl.No	Author	Records	TGCS
1	Kumar A	14	28
2	Karunasagar I	10	572
3	Kumar S	10	37
4	Kumar P	9	83
5	Singh S	9	6
6	Sharma A	8	84
7	Singh A	7	0
8	Johnson C	6	0
9	Kaur G	6	88
10	Kumar V	6	0
11	Santos JA	6	0
12	Singh B	6	0
13	Singh RRB	6	0
14	Trieu K	6	0
15	Webster J	6	0
16	Banerjee R	5	0
17	Campbell NRC	5	0
18	Kulkarni SK	5	118
19	McLean R	5	0
20	Sharma S	5	75
21	Shukla S	5	0

22	Singh AK	5	0
23	Singh R	5	0
24	Arcand J	4	0
25	Arora S	4	0
26	Bajpai VK	4	0
27	Bongirwar DR	4	46
28	Byrappa K	4	0
29	Chakraborty R	4	0
30	Das M	4	0

The author's wise frequency of Food Science research output published in the study period is presented in Table 3. The number of research papers published during the period, ranking first place with Kumar A (14 articles), second places Karunasagar I (10 nos) and third places backed by Kumar S (16 articles), Kumar S (10 articles), Kumar P(9 articles) and Singh S (9 articles) respectively. In the case of TGCS, Karunasagar I ranked first place with 572 scores. The second place by Kulkarni SK(118) and third places ranked for Kaur G (88) and Sharma A (84 TGCS).

Table.4. Frequency of Institution wise in Food Science research output (Top 30)

Sl.No	Name of the institute	Records	TGCS
1	Central Food Technology research Institute	16	1995
2	Indian Institute of Technologies	10	482
3	Bhaba Atomic Research Centre	9	651
4	Punjab University	8	397
5	Indian Veterinary Research Institute	6	109
6	All India Institute of Medical Sciences	4	95
7	University Madras	4	79
8	Bharathiar University	3	144
9	CSIR	3	414
10	Def Food Research Laboratory	3	89
11	GB Pant Inst Himalayan Environment & Development	3	232
12	Indian Toxicology Research Centre	3	107
13	National Inst Nutrition	3	52
14	National Inst Oceanography	3	154
15	Osmania University	3	331
16	Postgraduate Institute Medical Education & Research	3	22
17	Punjab Agricultural University	3	76
18	University Bombay	3	100
19	University Delhi	3	365
20	University Mysore	3	48

21	Aligarh Muslim University	2	188
22	CNR	2	234
23	Indian School Mines	2	42
24	Int Crops Res Inst Semi Arid Trop	2	98
25	Jadavpur University	2	10
26	Jawaharlal Nehru University	2	119
27	Maharaja Sayajirao University Baroda	2	58
28	National Dairy Research Institute	2	100
29	National Physics Laboratory	2	1164
30	Tamil Nadu Agricultural University	2	26

Based on research output, details of institutions ranked based on their performance in the field of Food Science are given table 4. For the study period, the first place was the Central Food Technology research Institute with 16 articles, and TGCS Score was 1995. The Indian Institute of Technologies has ranking second place with 10 records and TGCS 482. Third place for the Bhabha Atomic Research Centre by 9 published records with 651 numbers for TGCS.

Table. 5. The frequency of overseas collaboration in the field of Food Science research in India (Top 30)

Sl.No	Keywords	Records	TGCS
1	FOOD	78	1189
2	INDIA	65	774
3	EFFECT	38	217
4	REVIEW	38	1
5	SCIENCE	38	0
6	APPLICATIONS	34	1305
7	BASED	31	235
8	INDIAN	31	573
9	USING	28	65
10	POTENTIAL	25	254
11	PRODUCTION	24	1132
12	RESEARCH	24	0
13	QUALITY	22	161
14	ANTIOXIDANT	21	1005
15	DEVELOPMENT	21	428
16	ACTIVITY	19	1016
17	ANALYSIS	19	243
18	AGRICULTURE	17	4
19	APPLICATION	17	1710
20	HEALTH	17	0
21	RICE	17	266
22	PROPERTIES	16	239
23	SYNTHESIS	16	21

24	SYSTEM	16	241
25	CHEMICAL	15	755
26	PLANT	15	762
27	ACID	14	212
28	CASE	14	356
29	FOODS	14	108
30	FUTURE	14	0

From collected data, it is interesting to note that 2856 keywords found in the results of the Food Science research in India. Among the keywords, “FOOD” 78 times occurred, “INDIA” has 65 times, “EFFECT”, “REVIEW” and “SCIENCE” were occurred in 38 times appeared in the data on research output. The highest Global citation score for the keyword search was “APPLICATION” for 1710. “APPLICATIONS” has 1305 and “FOOD” for 1189, and all other keywords appeared more than 100 TGCS only few not credited TGCS in the topmost keywords.

Conclusion

The Food Science research output in India has shown significant publications selected study period, 656 research documents related to Food Science research were published by Indian authors. The average number of publications per annum for Indian scientists was noted as 32.80. The highest and lowest number of research documents was found as 68 and 6 in 2002 and 2004. The research articles published in different journals (91.16 %) review articles (7.32 %), Proceedings paper (1.52%). The analyzed results show that the topmost journals are first in LWT-FOOD SCIENCE AND TECHNOLOGY (22 nos.) the second rank for FOOD CHEMISTRY (27 nos.) and third rank for CURRENT SCIENCE(14 nos). The author ranking most prolific author first place with Kumar A (14 articles), second places Karunasagar I (10 nos) and third places backed by Kumar S (16 articles), Kumar S (10 articles), Kumar P(9 articles) and Singh S (9 articles).An Institutional wise result found that first place was the Central Food Technology research Institute with 16 articles, and TGCS Score was 1995. The Indian Institute of Technologies has ranking second place with 10 records and TGCS 482. Third place for the Bhabha Atomic Research Centre by 9 published records with 651 numbers for TGCS. The highest Global citation score for the keyword search was “APPLICATION” for 1710. “APPLICATIONS” has 1305 and “FOOD” for 1189, and all other keywords appeared more than 100 TGCS only few not credited TGCS in the topmost keywords

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