

# Research Output on Paddy (*Oryza Sativa*): A Scientometric Study

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(Received 2 June 2018; Revised 21 June 2018; Accepted 9 July 2018; Available online 27 July 2018)

**Abstract** - This paper attempts to analyse quantitatively the growth and development of Paddy (*Oryza Sativa*) Cereal Crop research in India in terms of publication output as reflected in CAB Direct Online Database. During the period 1951-2017 a total of 1,80,675 papers were published by the scientists of India respectively on Paddy Crop analysis. India is the top country in Agricultural research with its contribution of 29,038 papers which is nearly (15.9%) of the global research output of Agricultural research followed by the specific country are in China with 17,266 papers (9.4%). The most preferred journals where the International Rice Research Newsletter with 3693 papers (6.5%) followed by the Chinese Journal of Rice Science with 2069 papers (3.6%). The study revealed that out of the world India has the highest range the production of paddy. 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 Tamil Nadu in southern states.

**Keywords:** Paddy Crop, Scientometric, CAB Direct, Agricultural Crop, Growth Rate, Doubling time

## I. INTRODUCTION

Paddy, also called rice paddy, small, level, flooded field used to cultivate rice in southern and eastern Asia. We-rice cultivation is the most prevalent method of farming in the Far East, where it utilizes a small fraction of the total land yet feeds the majority of the rural population [2]. Rice (*Oryza Sativa*) is an aquatic grass belongs to the family Poaceae. It is native to Tropical and Sub-tropical South-eastern Asia and to Africa. Rice was domesticated as early as 3500 BC, and by about 2,000 years ago it was grown in almost all of the [10] present-day cultivation areas, predominantly deltas, floodplains and coastal plains, and some terraced valley slopes.

## II. OBJECTIVE OF THE STUDY

The main objective of this study is to research, the analysis output in Paddy (*Oryza Sativa*) Cereal Crop analysis, as reflected in its publication output throughout 1951-2017 in CAB Direct Online database. In exacting, the study focuses on the subsequent objectives

1. To examine the growth rate and doubling time of overall research output of Paddy Crop analysis supported CAB Direct Online database for the period 1951-2017.
2. To examine the share of Indian contribution and identify the top ranking country within the field of Paddy Crop analysis.

3. To study the highest 10 journals publishing more research papers on Paddy Crop analysis.
4. To identify the types of publications.
5. To identify the highest 10 authors within the field of Paddy Crop analysis.
6. To identify the language distribution of Paddy Crop analysis.

## III. METHODOLOGY

The Study is based on the publication data in the field of Paddy Crop analysis, retrieved from the CAB Direct Online database for 66 years (1951-2017). The process used in the key word, selection was as follows 'Paddy' in the article title and published between 1951-2017.

## IV. RESULTS AND DISCUSSION

### A. Growth of Publications

The Paddy Crop data collected through the CAB Direct Online database has been analyzed and presented. For the presentation of data, different kinds of statistical tools such as tables and diagrams are used.

### B. Year of Publication on Paddy Crop Literature

The study showed that during the period 1951-2017, a complete of 1,80,675 publications were revealed by the Paddy Crop analysis. A study of the growth rate of Paddy Crop analysis output is an important factor in analyzing the research and development in the field [1].

Table I shows that the growth rate or research output in the diseases of the Paddy Crop. It is clear that the growth rate has been started at 1951-1965 (7) increasing cumulative output trends for 1986-1990 (15402). The mean growth rate for the period 1951 and 1990 is worked out to 1.12 and 11.26 for the period mean R(a) and mean D(a).

Perpetually the publication of research output in Paddy has increased from 0.01 years in 1951-1965 to 13.11 in 2016-2017. It is evident from the above discussion that the per cent growth rate of publication has shown in the table I.

Growth Rate:

$$\text{growth rate} = (\text{Present} / \text{Past})^{1/n} - 1 (\text{or})$$

The percent change from one period to another is calculated from the formula:

$$PR = \frac{(V_{Present} - V_{Past})}{V_{Past}} \times 100$$

Where,

PR = Percent Rate

V<sub>Present</sub> = Present or Future Value

V<sub>Past</sub> = Past or Present Value

For a constant growth rate, the doubling time calculation formula is as following:

$$T_d = \log(2)/\log(1 + r)$$

Where:

T<sub>d</sub> = doubling time

r = a constant growth rate

TABLE I GROWTH RATE AND DOUBLING TIME OF OVERALL RESEARCH OUTPUT

S. No.	Year	No. of Output	Cumulative No. of Output	W1	W2	R(a)	Mean R(a)	Doubling Time Dt(a)	Mean D(a)
1.	1951-1965	7 (0.01%)	7	0	0.03	0.03	1.12	10.24	11.26
2.	1966-1970	323 (0.17%)	330	0.03	0.07	0.04		0.48	
3.	1971-1975	6211 (3.43%)	6541	0.07	0.60	0.53		0.17	
4.	1976-1980	9937 (5.49%)	16478	0.60	0.88	0.28		0.14	
5.	1981-1985	11875 (6.57%)	28353	0.88	0.98	0.10		0.12	
6.	1986-1990	15402 (8.52%)	43755	0.98	1.12	0.14		0.11	
7.	1991-1995	15434 (8.54%)	59189	1.12	1.15	0.03	0.19	0.11	0.5
8.	1996-2000	18188 (10.06%)	77377	1.15	1.18	0.03		0.10	
9.	2001-2005	21306 (11.79%)	98683	1.18	1.18	0		0.10	
10.	2006-2010	27875 (15.42%)	126558	1.18	1.22	0.04		0.10	
11.	2011-2015	30429 (16.84%)	156987	1.22	1.31	0.09		0.09	
12.	2016-2017	23688 (13.11%)	180675	1.31					
		180675							

C. Rank-Wise Indian States Distribution of Publications

The study reveals that India is the top country in Agricultural research with its contribution of 56,543 papers which is nearly (31.04%) of the global research output of Agricultural research followed by the specific country are in India with 29,038 papers (15.9%), China ranks second position with 17,266 papers (9.4%) and Japan is a third position with 10,357 papers (5.6%).

It covers India is a top level in the field of Agricultural research [3], Tamil Nadu, Southern 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 II.

D. Preferred Journals

The most popular journals by the scientists concerned with the Paddy Crop analysis were [4]: International Rice Research Newsletter with 3693 papers (6.5%) followed by

the Chinese Journal of Rice Science with 2069 papers (3.6%).

TABLE II RANKING COUNTRY IN INDIA OF PADDY ANALYSIS

Name of the States	No. of Publications	Percentage	Rank
India	29038	15.9	1
China	17266	9.4	2
Japan	10357	5.6	3
Africa	4980	2.7	4
USA	4931	2.7	5
Philippines	4887	2.6	6
Brazil	3602	1.9	7
Korea	3104	1.7	8
Bangladesh	3033	1.6	9
Thailand	2797	1.5	10

The study revealed that out of high five most popular journals by the Paddy Crop researchers, three journals viz.,

Japanese Journal of Crop Science 1558 papers (2.7%) and Acta Agronomica Sinica 1335 papers (2.3%), Oryza 1244 papers (2.2%) and particularly India has published a journal Madras Agricultural Journal is a sixth place 1241 papers (2.1%) of ranking which clearly indicates that the contribution of India in Paddy Crop analysis is major role it indicates the ranking first position followed by China. The highest 10 most popular journals are listed in Table III with the amount of papers revealed.

TABLE III PREFERRED JOURNALS BY PADDY CROP ANALYSIS

S. No.	Journal Name	No. of Papers	Percentage
1.	International Rice Research Newsletter	3693	6.5
2.	Chinese Journal of Rice Science	2069	3.6
3.	Japanese Journal of Crop Science	1558	2.7
4.	Acta Agronomica Sinica	1335	2.3
5.	Oryza	1244	2.2
6.	Madras Agricultural Journal	1241	2.1
7.	Indian Journal of Agricultural Sciences	1185	2.0
8.	International Rice Research Notes	1173	2.0
9.	Environment and Ecology	1144	2.0
10.	Indian Journal of Agronomy	1131	2.0

*E. Leading Format of Publication*

The study reveals that the main source of publications coated by CAB Direct Online database for Paddy Crop analysis is journal articles with 1,62,772 papers (89.3%) followed by conference papers with 13,317 papers (7.3%). Miscellaneous third position with 5,605 (3%), Book Chapter and Bulletin Article are within the fourth and fifth places with 4106 (2.2%) and 1,240 (0.6%) various [5]. The highest 10 varieties of publications are furnished in Table IV.

TABLE IV LEADING FORMAT OF PUBLICATION

S. No.	Kinds of Document	No. of Papers	Percentage
1.	Journal article	162772	89.3
2.	Conference paper	13317	7.3
3.	Miscellaneous	5605	3.0
4.	Book chapter	4106	2.2
5.	Bulletin article	1240	0.6
6.	Abstract only	623	0.3
7.	Annual report	630	0.3
8.	Thesis	185	0.1
9.	Standard	7	0.0
10.	Patent	3	0.0

*F. Most Productive Authors*

The study reveals that Kumar, A is that the most ranking authors of Paddy Crop analysis who revealed 646 papers (1.14%) followed by Khush, G.S with 610 papers (1.07%). It's observed that out of the highest five authors who contributed a lot of papers in Paddy Crop analysis, there are world ranking author contributed a paper level of 471 to 646 viz., UK CAB International, 606 papers (1.07%), Kumar, S, 599 papers (1.05%), and Li, Y 550 Papers (0.97%). Table V lists the highest 10 ranking authors within the field of Paddy Crop analysis.

TABLE V MOST PRODUCTIVE AUTHORS IN PADDY CROP ANALYSIS

S. No.	Name of Author	No. of Papers	Percentage
1.	Kumar, A	646	1.14
2.	Khush, G.S	610	1.07
3.	Kumar, S	606	1.07
4.	Hardy, B	599	1.05
5.	Li, Y	550	0.97
6.	Singh, S	546	0.96
7.	Singh, R	509	0.90
8.	Wang, Y	487	0.86
9.	Singh, A.K	483	0.85
10.	Wang, L	471	0.83

*G. Language Distribution*

It is observed that English is the most predominant language used by the researchers [6] for communication in the Paddy Crop analysis with 13,344 papers (26.06%) followed by Hindi with 20 (0.03) and French with 17 (0.03%). The top 5 predominant languages are furnished in Table VI.

TABLE VI LANGUAGE DISTRIBUTION OF PADDY ANALYSIS

S. No.	Language	No. of Papers	Percentage
1.	English	13344	26.06
2.	Hindi	20	0.03
3.	French	17	0.03
4.	Russian	6	0.01
5.	German	5	0.01

**V. FINDINGS**

These are the findings of the Scientometric study and it is hoped this finding is likely to be helpful for the stakeholders of Paddy Crop analysis knowledge managers in these areas<sup>7</sup>

1. Indian contribution to global Agricultural research based on CAB Direct Online database [8] revealed that India has published 29,038 papers in various fields of Paddy Crop analysis.

2. Kumar, A is that the most ranking authors of Paddy Crop analysis who revealed 646 papers (1.14%) followed by Khush, G.S with 610 papers (1.07%).
3. Most preferred journals are: International Rice Research Newsletter with 3693 papers (6.5%) followed by the Chinese Journal of Rice Science with 2069 papers (3.6%).
4. Journal article viz., with 1,62,772 papers (89.3%) followed by conference papers with 13,317 papers (7.3%). Miscellaneous third position with 5,605 (3%), Book Chapter and Bulletin Article are within the fourth and fifth places with 4106 (2.2%) and 1,240 (0.6%) of ranking which clearly indicates that the contribution of India in Paddy Crop analysis is major role.
5. India is the top country in Agricultural research with its contribution of 56,543 papers which is nearly (31.04%) of the global research output of Agricultural research followed by the specific country are in India with 29,038 papers (15.9%), China ranks second position with 17,266 papers (9.4%) and Japan is a third position with 10,357 papers (5.6%).

## VI. CONCLUSION

During sixty six years of time span global contribution in terms of publications is significantly increased in the field of Paddy (*Oryza Sativa*) research [7]. Growth rate and Double time analysis [9] also show that the higher growth trend in this particular predominantly this output. The India is the top country in Agricultural research with its contribution of 56,543 papers which is nearly (31.04%) of the global research output of Agricultural research followed by the specific country are in India with 29,038 papers

(15.9%). An Indian researcher needs to be the Paddy crop field so the contribution of India in this research area could possibly be significantly increased.

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