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Open Access Journals in Agriculture and Allied Sciences: A Study based on Directory of Open Access Journals (DOAJ)

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ABSTRACT

This paper attempts to do a quantitative analysis of open access journals in the field of agriculture and allied sciences indexed by the Directory of Open Access Journals (DOAJ) which indexes over 17,200 peer-reviewed open access journals covering all branches of knowledge published by 130 countries in 80 languages. The study revealed that out of 17,282 open access journals indexed by the DOAJ (as on 31.12.2021), 458 journals (2.65%) are publishing articles related to agriculture and allied sciences. Brazil and Indonesia are the top countries publishing higher number of OA journals in agriculture and allied sciences with 74 titles each (16.16%) followed United Kingdom with 26 titles (5.68%), Out of 458 journals, 179 journals (39.08%) are published in English language. About 62.28% (285 journals) are published in monolingual followed by bilingual (124 journals; 7.07%), trilingual (44 journals; 9.61%), quadrilingual (3 journals; 0.65%) and each journal in pentalingual and multilingual. Creative Common licensing is followed by 447 (97.60%) journals. While 230 journals (50.22%) permit the authors to hold complete copyright 228 journals (49.78%) restrict the same. Double blind peer review is followed by 243 journals (53.06%) and 'Blind peer review' by 115 journals (25.11%). While 272 journals (59.39%) don't collect article processing charges (APC) from the authors, 186 journals (40.61%) collect APC. Most of the journal publishers i.e. 119 (25.98%) take 9-12 weeks for publication and 3 journals take more than 52 weeks for the same. The study revealed that 164 OA journals (35.81%) provide access to below 100 articles and only one journal provide access to more than 5000 articles.

Keywords: Open Access; Open Access Publishing; Open Access Journals; Agriculture; Agricultural Science; DOAJ.

1. Introduction

The advent of the Internet paved the way for growth of Open access (OA) which refers to unrestricted online access to articles published in scholarly journals and other form of publications, book chapters, monographs, etc. The distribution is mainly achieved through world wide web and allows the users to read, download, copy, distribute, print, search, or link to the full texts of these articles without any subscription or access fee.

Open access journals have the following characteristics: they are scholarly; they utilize quality control mechanisms similar to conventional journals (e.g. editorial oversight and copy editing); they are digital and freely available online; they may allow authors to retain their copyrights, and they use Creative Commons[3] or similar licenses. There is strong evidence that, even in a journal that is widely available in research libraries, OA articles are more immediately recognized and cited by peers than non-OA articles published in the same journal. OA is likely to benefit science by accelerating dissemination and uptake of research findings. Therefore, research scholars, faculty and researchers show more interest to publish in open access journals

nowadays. Moreover, the research scholars, especially from third world countries, prefer open access journals to access research literature as most of the universities in these countries are not affordable to subscribe research journals published by commercial publishers due to the skyrocketing subscription costs.

2. Directory of Open Access Journals (DOAJ)

The DOAJ (Directory of Open Access Journals) was launched in 2003 with the mission to increase the visibility, accessibility, reputation, usage and impact of quality, peer-reviewed, open access scholarly research journals globally, regardless of discipline, geography or language. When it was started, there were 300 open access journals and it has grown today as a leading directory with 17,282 peer-reviewed open access journals (as on 31.12.2021) covering all branches of knowledge including science, technology, medicine, arts and humanities. The DOAJ contains open access journals from over 130 countries and in 80 languages apart from English. There are more than 12,200 open access journals which are not charging article processing charges and about 7 million articles are available in open access. The DOAJ is financially supported by many libraries, publishers and other like-minded organisations. Today, DOAJ is the major directory available on the Internet where stakeholders of higher education and research can use quality peer reviewed open access journals as DOAJ strictly avoid predatory open access journals.

3. Review of Literature

Many studies have been undertaken by researchers to identify the trend of open access journals published in many disciplines but no detailed study has been made to analyse the status of open access journal publications in the discipline of agriculture and allied sciences. Therefore, this study attempts to do a detailed study on the status of global open access journal publications based on the open access journals indexed by the DOAJ.

Agashe A T et al (2010) studied and found that the DOAJ indexed 48 business management e-journals and they have analyzed them based on country, languages, subject headings and accessibility of archives. Chauhan K (2012) evaluated open access e-journals in Library and Information Science available on DOAJ and reported the findings so as to guide students, researchers, scholars about free, full-text, quality-controlled scientific and scholarly journals in Library and information science available on DOAJ.

A study of Aswathy and Gopikuttan (2013) reported about the open access literature productivity of Physics based on the journals indexed by the DOAJ. They found 153 journals were in the category of physics. The study also found that there were 79 journals in general physics which is about 5.63% followed by the subject astronomy in which 20 journals are listed and it was followed by optic and lights with 17 journals (11.11%), nuclear physics, heat and acoustics with 6 journals each.

Loan F.A. (2018) reported about the publishing trends of the open access religious journals available in the DOAJ. The findings showed that 119 religious journals were registered in the DOAJ, published from the 27 countries by 114 publishing agencies in 14 languages. The maximum number of journals (21, 17.65%) were published from Indonesia in English language (79, 66.39%).

Mehraj et al (2019) reported that DOAJ has indexed 168 journals in the field of Computer Science/Electronic Computers by 51 countries of the world and Indonesia topped the list followed by United Kingdom and Romania respectively. The journals in Computer science were published in 7 languages with English language being the most preferred one.

Selvam and Amudha (2020) have reported that the DOAJ indexed 15633 journals and 5474195 articles in all the subjects and found that 176 journals are published in Library and Information Science subject. The study also presented the statistical data of LIS journals based on the elements like License Type, Journals published in different Languages, Country wise contribution and Review systems.

The status of open access Law journals was studied by Dhule (2021) and found that there were 626 Law journals indexed in DOAJ published from 62 countries in 38 different languages and English was the dominant language of publication as 394 journals were in the English language.

Pradhan et al (2021) provided a comprehensive view of social science open access journals indexed in the DOAJ and revealed that 955 social science journals were indexed by the DOAJ and Indonesia was the highest productive country. A quantitative analysis made by Reddy A.N.M. (2021) reported that 287 economic journals were indexed in DOAJ which revealed the growth rate of journals in economics subject plunged to 87.11% since 2013, and 78.75% journals do not levy any APCs.

A bibliometric study undertaken by Rathinasabapathy and Veeranjaneyulu (2021) found that DOAJ indexed 16,460 open access journals as on 10 June 2021 in which 335 are open access veterinary and animal science journals (2.03%). The 335 OA journals were contributed by 63 countries and the United Kingdom was the top country with 41 journals (12.24% followed by Indonesia with 35 journals (10.44%).

The literature revealed that no detailed study has been undertaken so far on the status of open access journals published in the field of agriculture and allied sciences indexed by the DOAJ.

4. Research Design

4.1 Problem Statement

Agriculture is the backbone of the economic system of developing countries in the world and main source of livelihood of majority of the population across the globe. In addition to providing food and raw material, agriculture also provides employment opportunities to a very large percentage of the population. At present, agriculture is not just farming but beyond it includes forestry, fruit cultivation, dairy, poultry, beekeeping, mushroom, processing, marketing and distribution of crop and livestock products, etc. are part of current agriculture. Thus, agriculture is the backbone of the economic system of most of the developing countries and it plays a vital role in their international trade. Keeping the significance of the agriculture and allied sectors in view, researchers conduct research across the globe to solve problems faced by the farming community and also to improve the agricultural income and the research findings are communicated through various channels including journals. Further, open access journals are considered as the best vehicles for transferring the first-hand information to the needy community. Therefore, the present study is a very important step towards studying the scholarly publishing trends in the agriculture and allied sciences.

4.2 Objectives of the Study

The main objective of the present paper is to study the publishing trends of the open access scholarly journals in agriculture and allied sciences indexed by the Directory of Open Access Journals (DOAJ) through various parameters such as

- to explore the open access journals publishing articles in the field of agriculture and allied sciences indexed by the DOAJ
- to examine the growth of open access journals indexed by the DOAJ since its inception
- to ascertain the leading countries publishing open access journals in the field of Agriculture and Allied Sciences
- to explore the language distribution of OA journals in Agriculture and allied sciences
- to discover the licensing models of open access agriculture science journals
- to identify the copyright privileges of the authors who published articles in the open access journals
- to find out the peer-review policy adopted by the OA journals in Agriculture and allied sciences
- to examine the plagiarism policy of the OA journals in Agriculture and allied sciences
- to identify the OA journals in Agriculture and allied sciences which are collecting and not collecting Article Processing Charges (APC)
- to know the time taken from 'submission to publication' by the OA journals in agriculture and allied sciences
- to explore the quantum of articles made available for full access by the OA journals in agriculture and allied sciences

4.3 Scope and Limitation of the Study

The present study has been undertaken using the data with regard to the open access journals in the discipline of agriculture and allied sciences retrieved from the Directory of Open Access Journals (DOAJ) as on 31.12.2021. It does not explore the whole World Wide Web. Therefore, the figures don't represent the actual number of the open access scholarly journals in agriculture and allied sciences, but merely journals indexed in the DOAJ.

4.4 Methodology

The Directory of Open Access Journal (www.doaj.org) was accessed on 31.12.2021 and the complete journal data were downloaded as CSV file. The CSV file contained all details about the 17282 journals indexed by the DOAJ up to 31.12.2021. The DOAJ provides up to six keywords for each title of the journal. So, all the six keywords were sorted alphabetically and titles matching with the keyword related any branch of agriculture and allied sciences were retrieved and a separate CSV file created. A total of 624 records were retrieved and then it was sorted title-wise and ISBN-wise and the duplicates removed. Finally, 458 unique titles were identified which are publishing articles related to agriculture and allied sciences. Then the data were presented in tabular form using the MS-Excel and analysed using the quantitative techniques to reveal findings in accordance with desired objectives of the present study.

5. Data Analysis

5.1 Growth of OA Journals in Agriculture and allied sciences

The study revealed that out of 17,282 journals indexed by the DOAJ, 458 journals are publishing articles related to various aspects of agricultural and allied sciences which is about 2.65% of the total journals. The first journal was indexed during 2003 and 17 journals were added during 2004. During the first decade i.e. from 2003 to 2012, only 74 journals (16.16%) were added whereas during the next nine years i.e. between 2013 and 2021, a total of 384 journals (83.84%) were added. The highest number of journals i.e. 62 (13.54%) were added during the year 2017. The details are illustrated in Figure-1.

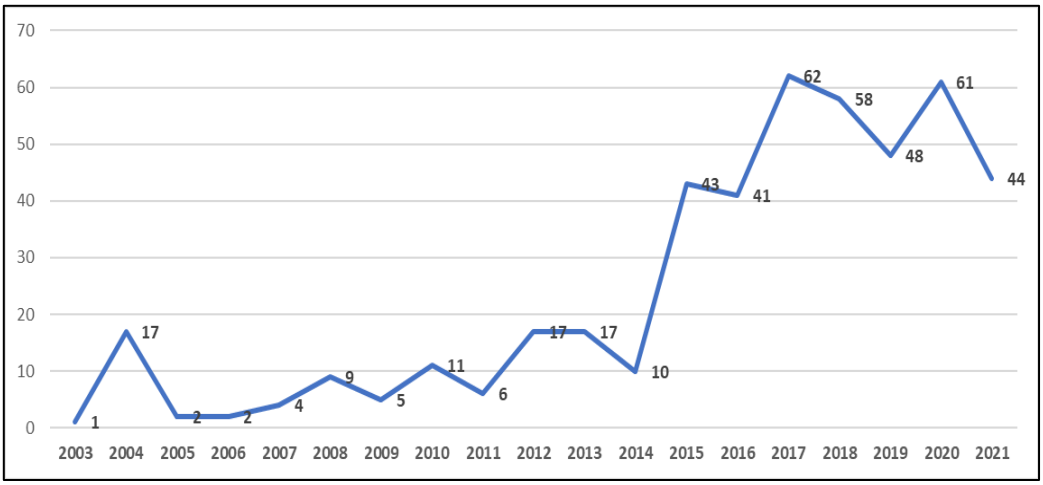

Figure.1: Growth of OA journals in Agriculture and allied sciences

5.2 Leading Countries publishing OA Journals in Agriculture and allied sciences

It has been found that Brazil and Indonesia are the top countries towards publishing more number of OA journals in agriculture and allied sciences with 74 titles each (16.16%) followed United Kingdom with 26 titles (5.68%), Poland with 19 titles (4.15%), Columbia and Islamic Republic of Iran with 15 titles each (3.28%), United States with 13 titles (2.83%), Argentina, Turkey and Ukraine with 12 titles (2.62%) each. The top 10 countries which are publishing high number of OA journals in agriculture and allied sciences are illustrated in Figure-2.

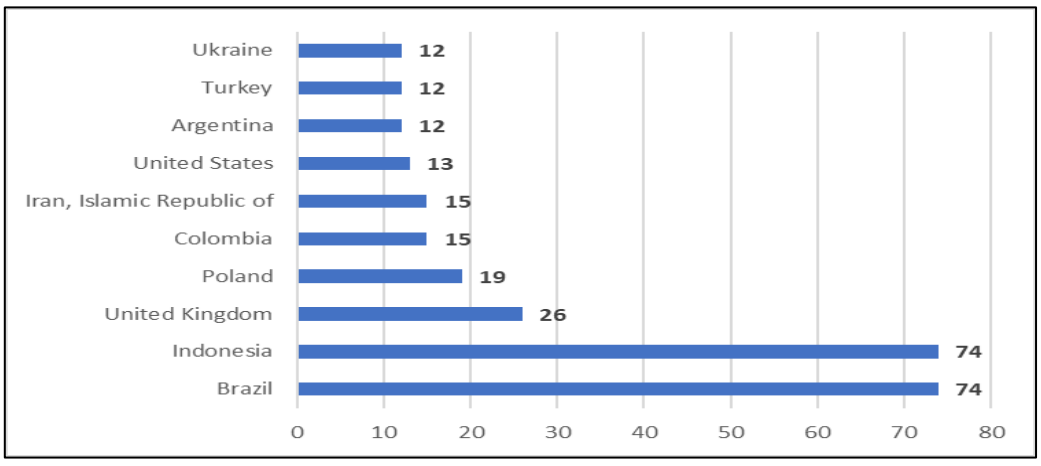

Figure.2: Top 10 countries publishing OA journals in agriculture and allied sciences

5.3 Language distribution of OA Journals in Agriculture and allied sciences

The study found that out of 458 OA journals in agriculture and allied sciences, 179 journals (39.08%) are published in English language. The top 10 languages in which the OA agriculture science journals are published are depicted in Figure-3.

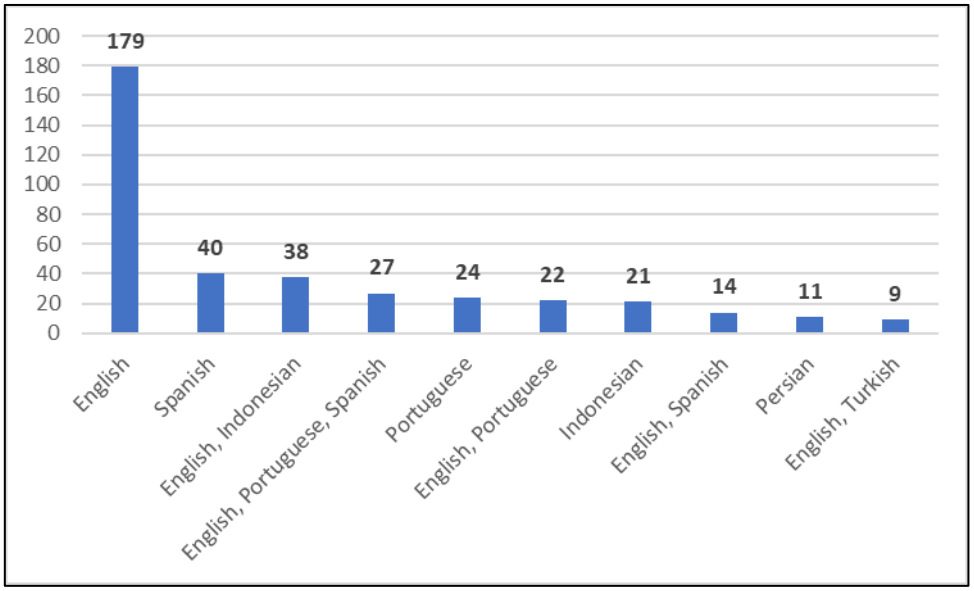

Figure 3: OA Journals in Agriculture - Top 10 Languages

The study revealed that majority of the journals are published in monolingual i.e. 285 journals (62.28%) followed by bilingual with 124 journals (27.07%), trilingual with 44 journals (9.61%) and quadrilingual with 3 journals (0.65%) and each journal in pentalingual (5 languages) and multilingual (7 languages). The findings are furnished in the following Table-1

Table-1 Language distribution of OA Journals

S. No.	Type	No. of Journals	%
1	Monolingual (single language)	285	62.23
2	Bilingual (two languages)	124	27.07
3	Trilingual (three languages)	44	9.61
4	Quadrilingual (four languages)	3	0.65
5	Pentalingual (five languages)	1	0.22
6	Multilingual (many languages)	1	0.22
	Total	458	100.00

5.4 License terms used by OA Journals in Agriculture and allied sciences

The DOAJ allows publishers to supply license information at the journal level and the present study revealed that Creative Common licensing types are widely followed by the publishers as out of 458 journals 447 (97.60%) journals followed creative common licensing types while only 11 journals (2.40%) follow publisher's own license. Among the creative common licensing types, CC BY which license lets others distribute, remix, tweak, and build upon their work, even commercially, as long as they credit the source for the original creation, is used by the majority of the publishers i.e. 178 journals (38.86%). The other types of creative common

licenses viz., CC BY-NC, CC BY-NC-ND, CC BY-NC-SA, CC BY-SA, etc. are also used by many publishers. More details about the licensing types and relevant attributions may be obtained from the web site (https://creativecommonsusa.org/index.php/ufaqs/what-are-the-different-types-of-cc-licenses/). The various types of licenses followed by OA journal publishers in agriculture and allied sciences are illustrated in Figure-4

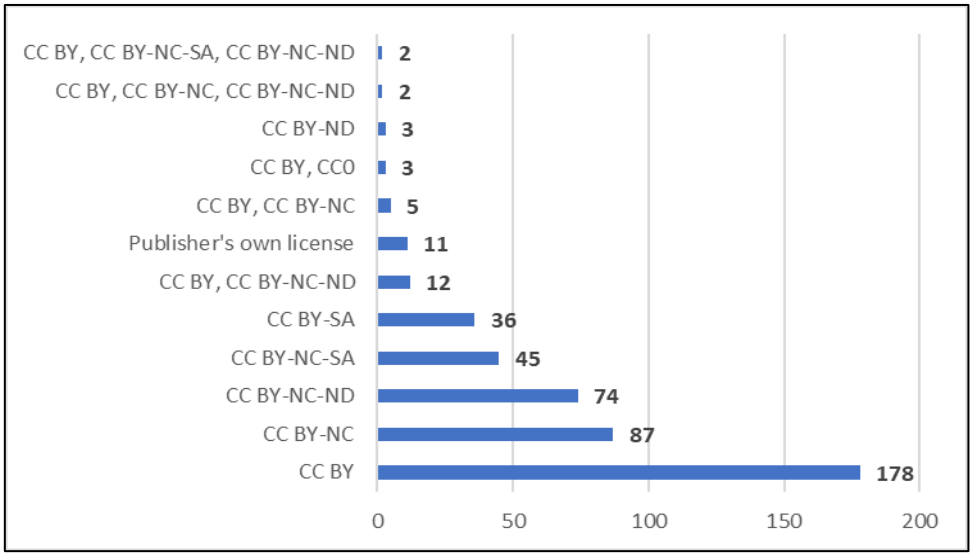

Figure-4 License types used by OA Journal Publishers

5.5 Copyright privileges of Authors

The author of the paper is actually the owner of copyright but due to various practices in the publishing industry, many times the authors need to transfer the copyright to the publishers. While majority of the commercial publishers insist transfer of copyright to the publishers, many of the open access journal publishers permit authors to hold complete copyright of their work without transferring the same to the publishers which promotes the free accessibility of the content. The present study revealed that 230 journals (50.22%) permit the authors to hold complete copyright while 228 journals (49.78%) are not providing the privilege to the authors. The same is depicted in Figure-5

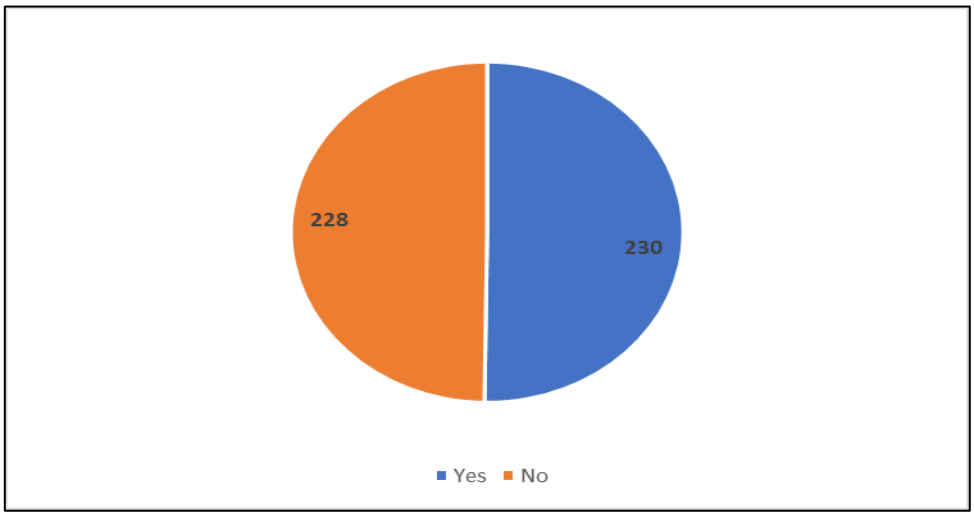

Figure-5. Copyright privileges of authors of OA Journals

5.6 Peer-review policy of OA Journals in Agriculture and allied sciences

Peer review is one of the important quality control measures the scholarly journal publishers adopt to ensure quality of the publication. There are many types of peer review systems followed by the journal publishers. The present study revealed that OA journal publishers in Agriculture and allied sciences preferred 'Double blind peer review' as 243 journals (53.06%) followed this system followed by 'Blind peer review' by 115 journals (25.11%), 'Peer review' by 96 journals (20.96%).

Double blind peer review and open peer review, Editorial review and "Double blind peer review", "Open peer review" and "Post-publication peer review and open peer review" were followed by each one journal. The details are illustrated in Figure-6

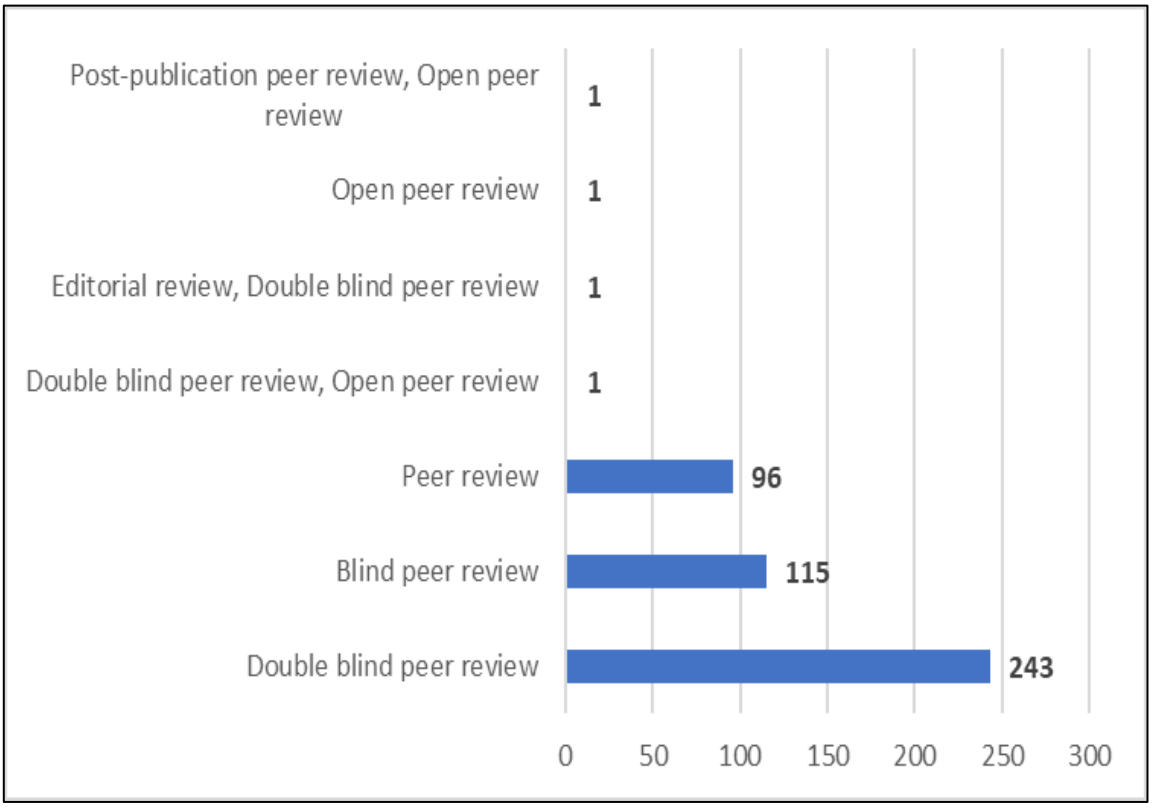

Figure-6. Peer review policy of OA Journals in Agriculture and allied sciences

5.7 Plagiarism policy of OA Journals in Agriculture and allied sciences

Plagiarism is the unethical act of copying someone else's prior ideas, processes, results or words without explicit acknowledgement of the original author and source. Plagiarism becomes a major problem in scholarly publishing. So, nowadays, most of the journal publishers have come out with a clear plagiarism policy and use software tools like Turnitin, Ouriginal, etc. to verify the similarity level. Many journal publishers clearly mention their plagiarism policy in their website itself.

The present study revealed that out of 458 OA journals in agriculture and allied sciences, 257 journals (56.11%) have a clear plagiarism policy while 201 journals (43.89%) have not mentioned their plagiarism policy. The details are illustrated in figure-7.

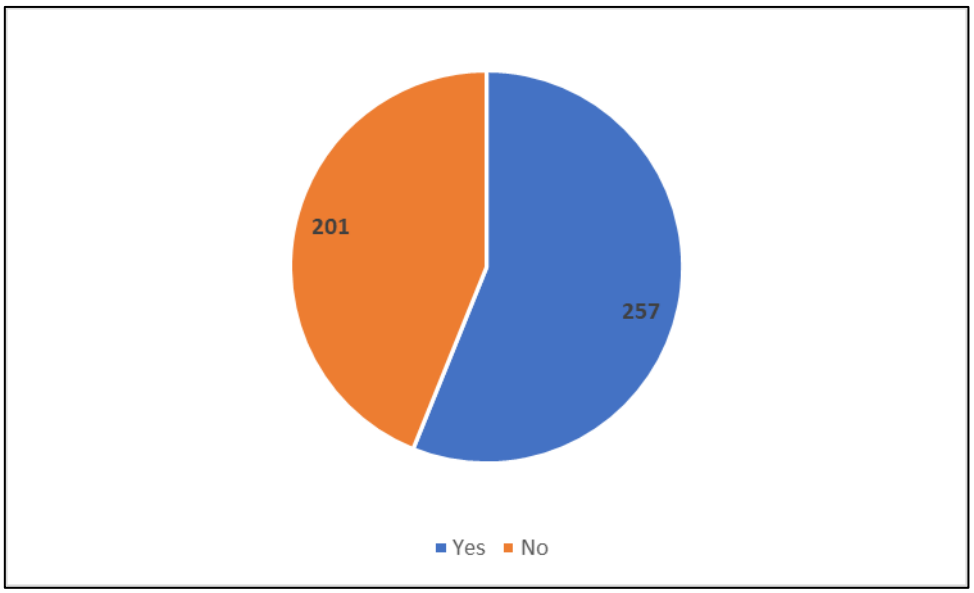

Figure-7 Plagiarism policy of OA Journals in Agriculture and allied sciences

5.8 Article processing charges (APC)

Many of the open access journal publishers used to collect 'Article Processing Charges' (APC) from the authors to meet the publishing expenditure. But, there are many OA journal publishers who don't collect such APC from the authors. The present study revealed that majority of OA journal publishers in agriculture and allied sciences i..e 272 journals (59.39%) don't collect APC from the authors while 186 journals (40.61%) collect APC. The details are illustrated in Figure-8.

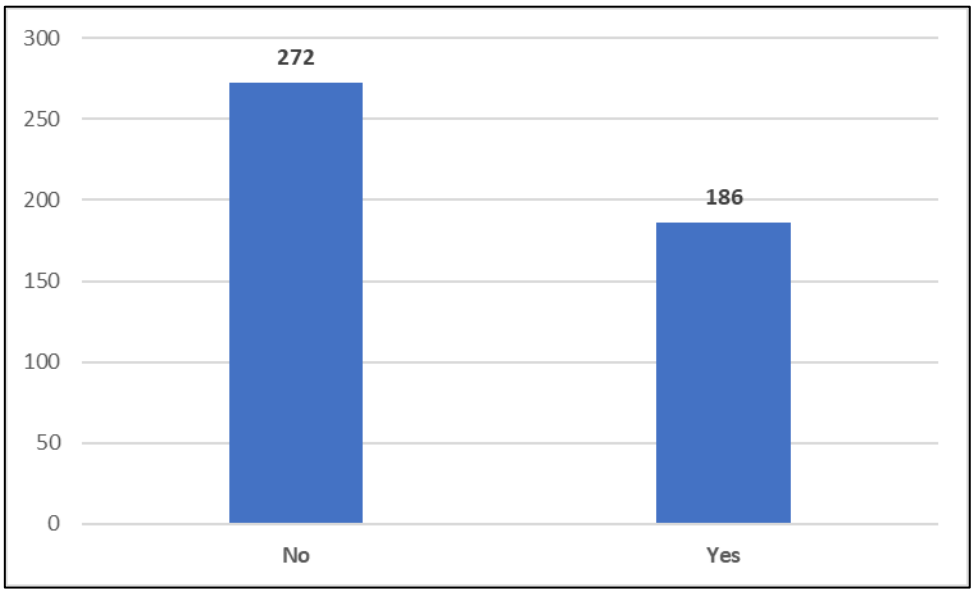

Figure-8 Article Processing Charge (APC) and OA Journals

5.9 Publication time taken by OA Journals in Agriculture and allied sciences

The time from submission to publication of an article is very important as many researchers and academicians prefer journals which will publish early if they publish to meet the requirement for their career advancement or any other specific purpose. Many times, journal publishers don't share this information with the authors. Presently, majority of the publishers provide this time schedule in their websites. The present study revealed that 119 journals (25.98%) take 9-12 weeks followed by 77 journals (16.81%) with 5-8 weeks, 69 journals (15.06%) with 13-16 weeks' time, 53 journals (11.57%) with 21-24 weeks and 49 journals (10.70%) with 17-20 weeks. Only 24 journals (5.24%) take 2-4 weeks. It has been observed that 18 journals (3.93%) take 33-40 weeks, 16 journals (3.49%) take 25-28 weeks while 10 journals (2.18%) take 41-52 weeks. The study also found that 3 journals (0.65%) take more than 52 weeks. The details are illustrated in Figure-9.

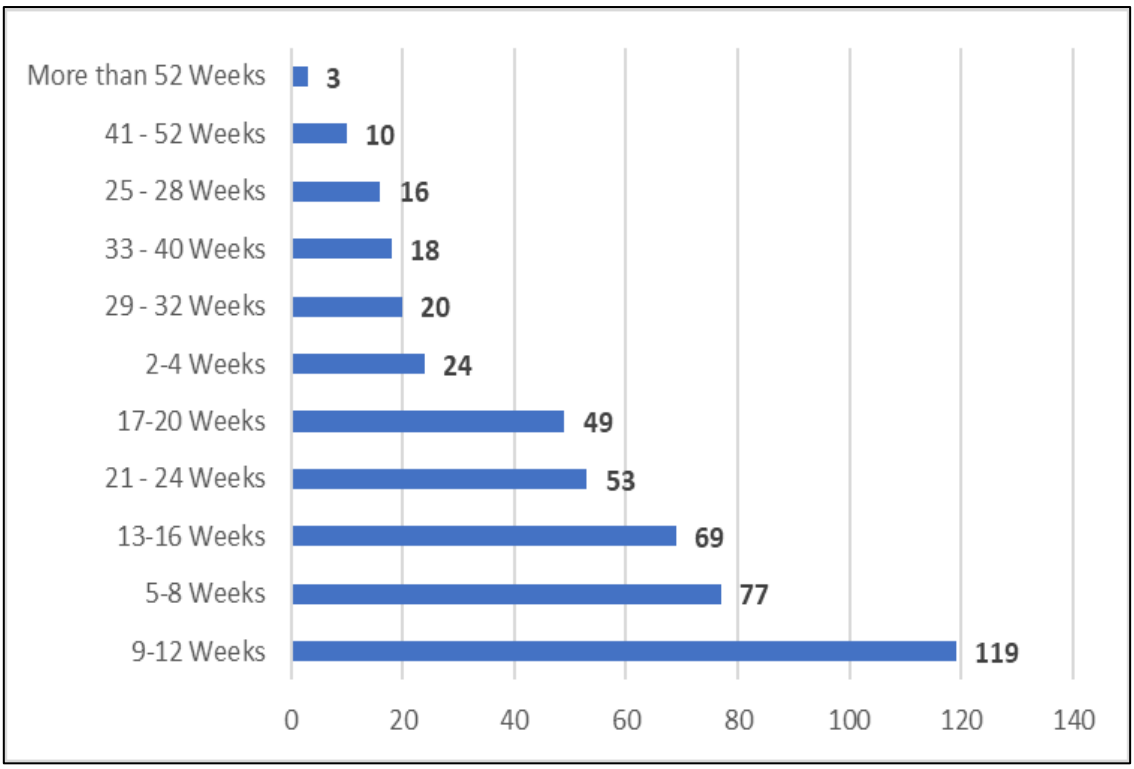

Figure-9 Publication time of OA Journals in Agriculture and allied sciences

5.10 Number of articles

The study revealed that 164 OA journals (35.81%) in agriculture and allied sciences provide access to below 100 articles followed by 97 journals (21.18%) with 100-199 articles. While 37 journals (8.07%) provide access to 200-299 articles, access to 300-399 articles is provided by 43 journals (9.39%). Access to 400-499 articles is provided by 18 journals (3.93%) and access to 500-999 articles is provided by 53 journals ((11.57%). Open access to 1000-1999 articles is provided by 25 journals (5.46%) and 10 journals (2.18%) provide access to 2000-2999 articles. Only 8 journals (1.75%) provide access to 3000-3999 articles and two journals (0.43%) provide access to 4000-4999 articles while only one journal (0.21%) provide access to more than 5000 articles. The details are illustrated in Figure-10.

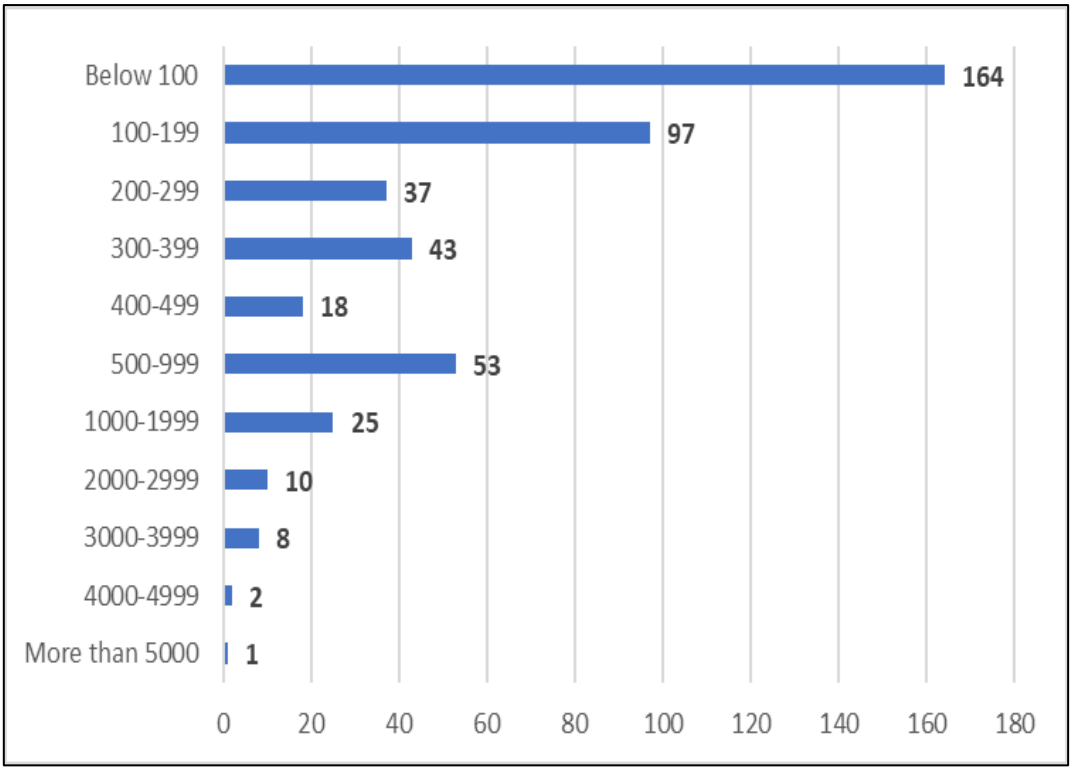

Figure-10 Number of Articles accessible

6. Findings of the Study

- The study revealed that 458 journals are publishing articles related to various aspects of agricultural and allied sciences which is about 2.65% of the total journals indexed by the DOAJ.

- During the first decade i.e. from 2003 to 2012, only 74 journals (16.16%) were added whereas during the next nine years i.e. between 2013 and 2021, a total of 384 journals (83.84%) were added. The highest number of journals i.e. 62 (13.54%) were added during the year 2017.

- Brazil and Indonesia are the top countries towards publishing more number of OA journals in agriculture and allied sciences with 74 titles each (16.16%) followed United Kingdom with 26 titles (5.68%), Poland with 19 titles (4.15%), Columbia and Islamic Republic of Iran with 15 titles each (3.28%), United States with 13 titles (2.83%), Argentina, Turkey and Ukraine with 12 titles (2.62%) each. Many of the OA journals published in India are not indexed by the DOAJ.

- A total of 179 journals (39.08%) are published in English language and majority of the journals are published in monolingual i.e. 285 journals (62.28%) followed by bilingual with 124 journals (27.07%), trilingual with 44 journals (9.61%) and quadrilingual with 3 journals (0.65%) and each journal in pentalingual (5 languages) and multilingual (7 languages).

- Creative Common licensing types are widely followed by the publishers as out of 458 journals 447 (97.60%) journals followed creative common licensing models. Among the creative common licensing types, CC BY which license lets others distribute, remix, tweak, and build upon their work, even commercially, as long as they credit the source for the original creation, is used by the majority of the publishers i.e. 178 journals (38.86%). The other types of creative common licenses viz., CC BY-NC, CC BY-NC-ND, CC BY-NC-SA, CC BY-SA, etc. are also used by many publishers.

- Only 230 journals (50.22%) permit the authors to hold complete copyright while 228 journals (49.78%) are not providing the privilege to the authors.

- The present study revealed that OA journal publishers in Agriculture and allied sciences preferred 'Double blind peer review' as 243 journals (53.06%) followed this system followed by 'Blind peer review' by 115 journals (25.11%), 'Peer review' by 96 journals (20.96%). Double blind peer review and open peer review, Editorial review and "Double blind peer review", "Open peer review" and "Post-publication peer review and open peer review" were followed by each one journal.

- Out of 458 OA journals in agriculture and allied sciences, 257 journals (56.11%) have a clear plagiarism policy while 201 journals (43.89%) have not mentioned their plagiarism policy.

- Majority of OA journal publishers in agriculture and allied sciences i..e 272 journals (59.39%) don't collect APC from the authors while 186 journals (40.61%) collect APC.

- As far as the publication time is concerned, 119 journals (25.98%) take 9-12 weeks followed by 77 journals (16.81%) with 5-8 weeks. 69 journals (15.06%) take 13-16 weeks, 53 journals (11.57%) take 21-24 weeks and 49 journals (10.70%) take 17-20 weeks. Only 24 journals (5.24%) take 2-4 weeks. It has been observed that 18 journals (3.93%) take 33-40 weeks, 16 journals (3.49%) take 25-28 weeks while 10 journals (2.18%) take 41-52 weeks. The study also found that 3 journals (0.65%) take more than 52 weeks.

- Majority of the OA journals viz., 164 OA journals (35.81%) provide access to below 100 articles followed by 97 journals (21.18%) with 100-199 articles. While 37 journals (8.07%) provide access to 200-299 articles, access to 300-399 articles is provided by 43 journals (9.39%). Only 8 journals (1.75%) provide access to 3000-3999 articles and two journals (0.43%) provide access to 4000-4999 articles while only one journal (0.21%) provide access to more than 5000 articles.

7. Conclusion

The Directory of Open Access Journals (DOAJ) indexes quality controlled open access journals in all branches of knowledge including Agriculture and allied sciences. The coverage of 458 journals in this field by DOAJ is really a great source of information for the students, research scholars, faculty, scientists and policy makers in the field of agriculture and allied sciences. Though the DOAJ indexed many of the OA journals in all fields, still many OA journals are not covered by the DOAJ. It is the duty of the library and information professionals

to check for such quality OA journals which are not indexed by DOAJ and initiate steps to include them in the DOAJ so as to ensure effective utilization of such OA journals. It is hoped that the findings of the present study will be highly useful for the students, research scholars, faculty, scientists and policy makers in the field of agriculture and allied sciences. It is also suggested that similar studies may be taken up by the stakeholders for each and every discipline covered by the Directory of Open Access Journals.

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