

# Mapping the Routes of Open Access: A Bibliometric Analysis of Indian Contributions to Organic Agriculture (2019–2024)

**Dr. Prayash Tamang**

Assistant Librarian, Rabindra Bharati University, Kolkata, India

Email: prayashlis@gmail.com

**Dr. Pubalika Bhattacharya Maitra**

Assistant Professor, University of Calcutta, Kolkata, India

Email: pbmcu24@gmail.com

## Abstract

**Purpose:** This study investigates the landscape of Open Access (OA) publishing within the domain of organic farming research between 2019 and 2024. It specifically examines the availability of OA journals, the various publishing routes (Gold, Diamond, Green, and Hybrid) utilized by researchers, and evaluates India's specific contribution to global OA knowledge creation and dissemination.

**Design/Methodology/Approach:** A targeted selection of core journals was identified using the keywords “organic agriculture” and “organic farming” within the journal titles. The publication models were categorized by analysing the homepages of key representatives: Organic Agriculture (Springer/Hybrid), Organic Farming (Gold), and Landbauforschung: Journal of Sustainable and Organic Agricultural Systems (Diamond). Data regarding geographical contributions, with a primary focus on India, were manually extracted and analyzed using MS Excel to determine publication volume and preferred OA pathways.

**Findings:** The results reveal a significant disparity in India's engagement with OA routes. While India ranks third globally in the Hybrid model, there is a notable absence of Indian contributions to the Diamond and Gold routes. Contributions to the Green route remain meager. These findings suggest that the lack of engagement—even in APC-free journals like Landbauforschung—may stem from a lack of awareness among researchers or a specific reluctance to utilize OA journals.

**Practical Implications:** The study highlights a need for increased advocacy for Diamond and Green OA pathways within the Indian agricultural research community. Furthermore, it demonstrates that the domain of organic agriculture is a fertile ground for further exploration via comprehensive scientometric studies.

**Originality/Value:** By mapping the intersection of organic agricultural research and OA trends, this study provides a unique geographical analysis of scholarly communication. It emphasizes the critical role that specialized libraries and institutional repositories play in fostering a more inclusive research ecosystem.

**Research Limitations:** This study is confined strictly to journals containing specific “organic” nomenclature in their titles and does not account for organic

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*farming research published in broader agronomy or environmental science journals.*

**Keywords:** Open Access, Organic Agriculture, Scholarly Communication, Green Route, Gold Route, Diamond OA, India, Scientometrics.

## 1. Introduction

Open Access (OA) refers to free and unbridled access to scholarly information. It aims to provide users with information unencumbered by the motive of financial gain or profits. "Open access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions" (Suber, 2012).

Any kind of digital material can be OA, from texts and data to software, audio, video, and multi-media. While most of these are related to text with images, data, and executable code, OA can also apply to non-scholarly content, like music, and novels. Two milestone approaches at the international level are Budapest Open Access Initiative (BOAI), 2001 and The Berlin Declaration Open Access to Knowledge in the Sciences and Humanities, 2003. The escalation price of scholarly content and shrinking library budget has also influenced libraries and information centres (LIC) to indulge in the open access movement to disseminate more scholarly content to the users free of cost. (Biswas, Brar, & Bhabal, 2022)

There are two roads to OA: the "golden" road -publish your article in an OA journal and the "green road-publish your article in a non-OA journal but self-archive it in an OA archive Harnad, S. et.al (2008). Open Access comes in two major forms—Gold and Green. Gold comes in several flavors. Direct Gold OA refers to journals that provide all their articles free to readers at the time of publication. Some subscription journals make their articles open access after some period which is referred to as Delayed OA. Other subscription journals provide the alternative for authors to pay a fee to make their article freely available. This is referred to as Hybrid OA. Green OA refers to self-archiving of a version of the article, often not the final published version, on the author's personal Web site or in an institutional or subject repository (Lewis, D. W. 2012).

According to International Federation of Organic Agriculture Movements (IFOAM) organic agriculture is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation, and science to benefit the shared environment and promote fair relationships and good quality of life for all involved.

Government of India has taken the initiative to support organic agriculture through the programme of National Mission on Natural Farming on 25<sup>th</sup> November 2024, keeping in view of Indian traditional knowledge system.

## 2. Literature Review

Guttikonda, A., & Gutam, S. (2009) stated that Open access can increase the visibility and impact of Indian agricultural research journals. Organic EPrints is an open, on-line archive for research in organic food and farming with more than 10,000 publications - and growing rapidly. All use of the archive is free of charge. There are 15,000 registered users of Organic

EPrints, and the archive has more than 175,000 visits each month (Rasmussen, 2011). The archive contains scientific and popular articles, reports, presentations, project descriptions, books and other research publications. For each publication there is a short summary along with information about authors and contacts, publishing details, peer review status, subject area and research affiliation. In most cases, the full articles are freely available for download.

Varanasi, V.K. (2012) stated the benefits of open access publishing for disseminating research in organic chemistry but does not address pathways to open access in organic agriculture specifically. The paper mainly discusses the benefits of open access publishing, particularly for the journal "Organic Chemistry: Current Research" published by OMICS Publishing Group.

Neubacher, S. (2014) in the paper entitled "A Changing Landscape" discusses the diverse publishing landscape for open access, including government mandates, different publishing models, and the emergence of "predatory" publishers, but does not specifically address open access in organic farming.

Severin, A., Egger, M., Eve, M.P., & Hürlimann, D. (2018) in their research showed that over the last three decades, scholarly publishing has experienced a shift from "closed" access to OA as the proportion of scholarly literature that is openly accessible has increased continuously. The shift towards OA is uneven across disciplines in two respects: first, the growth of OA has been uneven across disciplines, which manifests itself in varying OA prevalence levels. Second, disciplines use different OA publishing channels to make research outputs OA.

Williams et al. (2019) found that the agricultural libraries play a crucial role in promoting open access to organic farming research and publications. Studies have shown that agricultural researchers generally support open access publishing and data sharing, but face challenges such as lack of trust, time, and financial resources.

### **3. Objectives of the study**

- i) To identify and categorize the different models of Open Access (OA) publishing utilised within organic farming research.
- ii) To examine the interdisciplinary and multidisciplinary nature of organic agriculture by assessing how research themes intersect across various scientific and environmental domains.
- iii) To measure and evaluate India's specific contribution to the open-access knowledge base, comparing its publication volume and preferred OA routes against global trends.
- iv) To highlight the critical importance of specialized and academic libraries in promoting, curating, and sustaining open-access literature and institutional repositories.

### **4. Scope and Coverage**

The study has chosen four different routes to open access publishing journals. They are diamond path, gold path, green path and hybrid path. The study is limited to journal publications. The title of the journals containing terms, organic farming or organic agriculture, is chosen as core journals, for the study for the period of 2019-2024.

For diamond path, the journal selected for the study is *Landbauforschung: Journal of Sustainable and Organic Agricultural Systems*. The time span chosen is from 2019 to 2024 because from 1951 to 2007 (Volume 1 - 57) the name of the journal was Landbauforschung - Völkenrode: FAL agricultural research and from 2008 to 2018 (Volume 58 - 68) the name of the journal was Landbauforschung - Applied agricultural and forestry research.

For gold path the *Organic Farming journal* was selected. To find out the number of publications (i.e, no. of research articles) and countries contributing to with special reference to India, last six years (2019-2024) data has been collected.

For Hybrid path *Organic Agriculture Journal* of Springer's Link is selected and data collected from the year 2019 to 2024.

For Green path, Organic EPrint repository has been selected, and data collected to show important contributing journals, countries and by different languages with special reference to India from 2019 to 2024.

## 5. Methodology

The study employs a systematic bibliometric approach to evaluate the landscape of Open Access (OA) publishing in organic agriculture. The methodology is divided into the following phases:

A title-based selection strategy was used to identify “core journals” in the field. Journals were included if the terms “Organic Agriculture” or “Organic Farming” appeared explicitly in their titles. This ensured a high degree of thematic relevance to the core subject area. The publication models and “routes” of the selected journals were verified by visiting their official homepages. To this study for Hybrid Route, Organic Agriculture (Springer Nature), for Gold Route, Organic Farming and for Diamond Route, Landbauforschung: Journal of Sustainable and Organic Agricultural Systems were selected.

Data regarding the volume of articles and geographical distribution with a specific focus on India were collected manually. Information on the number of articles published and the contributing countries for Gold, Diamond, and Hybrid routes was extracted directly from the journals' web archives.

To assess the Green OA pathway, the Organic EPrints repository—the world's largest electronic archive for organic research—was utilized. Metadata and archived collections were analyzed and sorted to isolate Indian contributions. All collected data were compiled and tabulated using Microsoft Excel. Descriptive statistics were applied to determine the ranking of contributing nations and the preferred publication routes of Indian researchers.

## 6. Different Paths to Open Access in Organic Agricultural Research Publications

**a) Diamond Route:** Landbauforschung – Journal of Sustainable and Organic Agriculture (ISSN 2700-8711) is a peer-reviewed interdisciplinary Diamond Open Access journal with a focus on new developments towards sustainable agriculture. The journal is indexed in the Science Citation Index (Clarivate, Impact Factor 2022: 2.3), Scopus (Elsevier, CiteScore 2022: 2.8),

Directory of Open Access Journals (DOAJ), and CAB Direct. All articles are published under a Creative Commons 4.0 Attributed license.

**Table 1. English OA Research Articles in Landbauforschung (2019–2024)**

Sl. No.	Name of the Countries	Number of Items Published
01	Germany	37
02	UK	08
03	France	06
04	Italy	05
05	Spain	04
06	Hungary	03
07	Greece	03
08	Switzerland	03
09	Austria	03
10	Belgium, Mexico, Sweden	02
11	Others	15
<b>Total</b>		<b>89</b>

From table no. 1, it is found that Germany is the country that has contributed most for the open access publication through diamond path. The total numbers of article contributed by Germany were 37. Interesting to note that, India has not yet contributed to this journal. The reason may be the lack of awareness level in academicians and researchers. This journal does not charge any Article Processing Charge, so libraries in India can promote the Journal to Indian researchers.

**b) Gold Route:** Organic Farming (OF) is an international peer-reviewed gold open-access journal dedicated to advancing research on organic agriculture and sustainable food systems. It operates under a Gold Open Access publishing model, ensuring that all published articles are freely and permanently accessible to readers worldwide. Article Processing Charge (APC) is required for the publication. All articles are published under a Creative Commons Attribution 4.0 International (CC BY 4.0) license, ensuring open access and unrestricted reuse with proper attribution.

**Table 2: English OA Research Articles in Organic Farming (2019–2024)**

Sl. No.	Name of the Countries	No. of Articles Published
01	Indonesia	39
02	Germany	12
03	Kazakhstan	10
04	Azerbaijan	7
05	USA	6
06	Nigeria	6
07	Peru	6
08	Vietnam	6
09	India	5
10	Philippines	4
<b>Total</b>		<b>81</b>

Table no. 2 showed that Indonesia is the most contributing country in organic farming research. India ranks at 9<sup>th</sup> position in contribution to open access journal through the gold path.

**c) Hybrid Route:** Organic Agriculture in an International multidisciplinary peer reviewed journal operating under Hybrid mode of publication. It undertakes traditional publication method as well as open access mode. In traditional mode, individuals, institutions need to subscribe to the journal for the access. In case for open access to the published article, it is the author who pays an Article Processing Charge. Articles are published open access under a CC BY-NC-ND (Creative Commons Attribution Non-Commercial No Derivatives 4.0 International license) or CC BY (Creative Commons Attribution 4.0 International license).

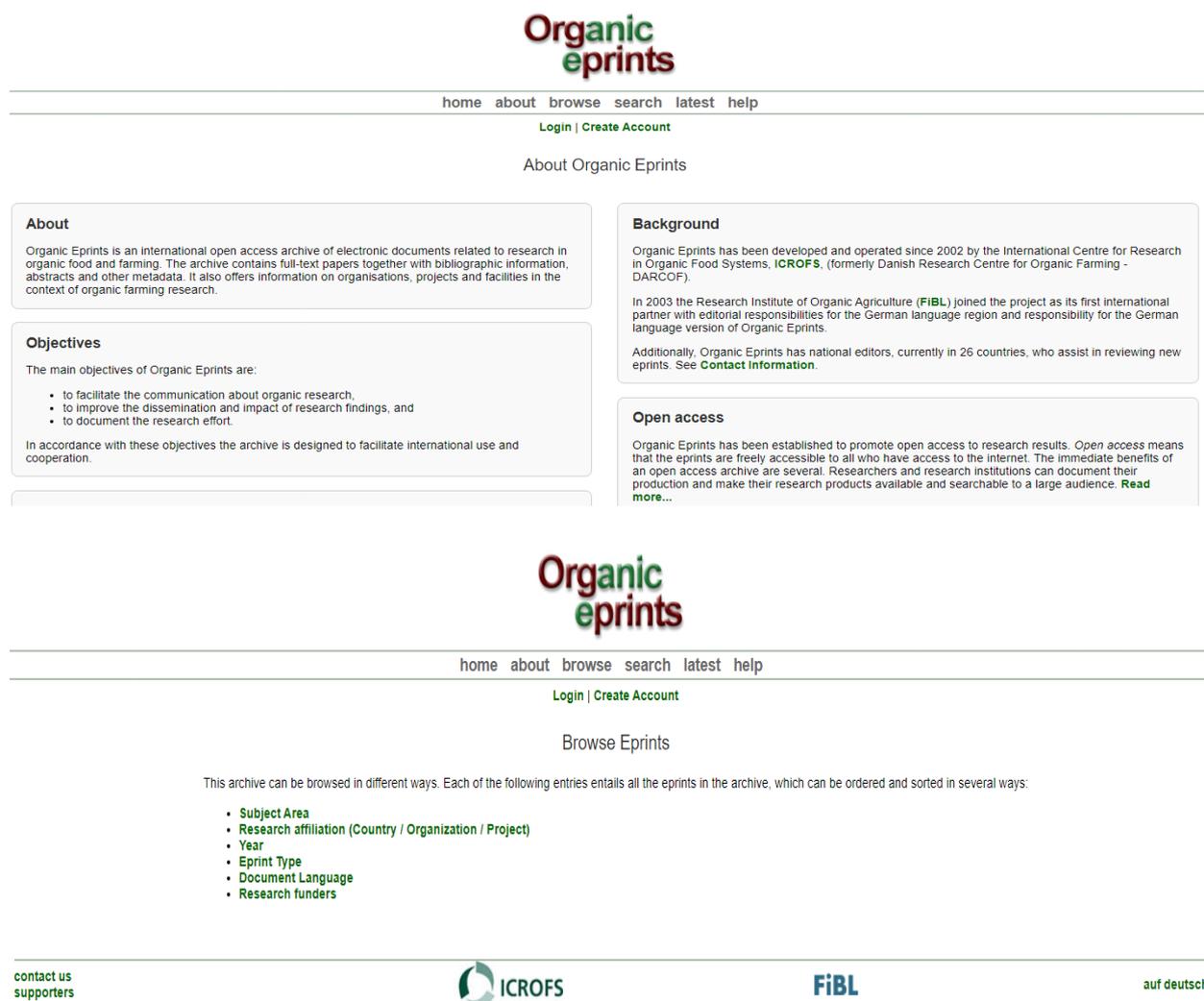
There are 184 number of Articles published in the Organic Agriculture Journal during 2019 to 2024. Out of these 184 titles, 109 no. of articles are Not Open Access, 75 are Open Access.

**Table 3: English OA Research Articles in Organic Agriculture (2019–2024)**

Sl. No.	Name of the Countries	Number of Items Published
1	Germany	47
2.	India	36
3	USA	31
4	Brazil	24
5	Italy	22
6	France	12
7	Sweden and Morocco	11
8	Switzerland and Indonesia	10
9	Spain	08
10	Japan	07
<b>Total</b>		<b>184</b>

Table no. 3 showed that there were 184 articles published in hybrid model. In this model also, Germany produced maximum number of research articles and India contributed 36 numbers of articles only.

**d) Green Route:** Organic EPrints is an international open access archive of electronic documents related to research in organic food and farming. The archive contains full-text papers together with bibliographic information, abstracts and other metadata. It also offers information on organizations, projects and facilities in the context of organic farming research and part of the international Open Access movement.



**Figure 1: Screenshot of Archive Site of Organic EPrint**

If a researcher has transferred all copyrights to a publisher after the acceptance of a peer reviewed paper, as it is commonly done, the author cannot give open access to the accepted version (post print) or the published copy-edited version (reprint or offprint) in the archive without infringing copyrights. Some publishers do however permit open access to either post prints or reprints, and some permit giving access to colleagues at one's own institution.

**Table 4: Type of Publication Archived in Organic EPrints in English Language from 2029 to 2024**

Sl. No.	Types of publication	No. of Research Articles
01	Journal Paper	1246
02	Newspaper or magazine article	80
03	Working Paper	34
04	Conference paper, poster	1102
05	Proceedings	30
06	Report	466
07	Report Chapter	8
08	Book	64
09	Book Chapter	68

10	Thesis	81
<b>Total</b>		1246

Table 4 depicts that in terms of category; journal articles are the largest category of resources which is contributed to the EPrint Repository.

**Table 5: Top Ten Most Contributing Journals Archived in the EPrint Archive in English Language**

Sl. No	Journals	No of Articles
01	Journal of Sustainability	46
02	Agronomy	31
03	Journal of Organic Agriculture	26
04	Science of the Total Environment	20
05	Foods	20
06	Frontiers in Sustainable Food System	17
07	Agronomy for Sustainable Development	16
08	European Journal of Agronomy	15
10	Agriculture Ecosystem and Environment	14

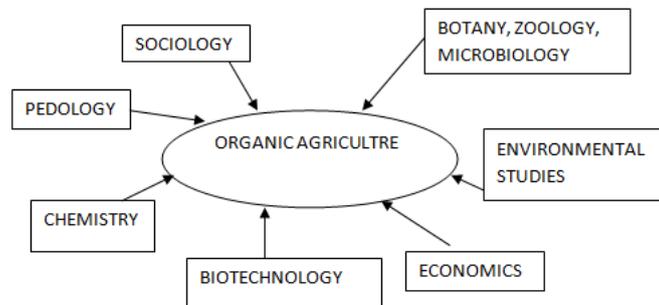
In table 6, it was found that the maximum number of research articles published in the *Journal of Sustainability* archived in the EPrint i.e., 46 and 26 research articles from the *Journal of Organic Agriculture* of Springer publication.

**Table 6: Country wise Research Articles Archived from Journals in Organic EPrints in English Language from 2019-2024**

Sl.No.	Countries	No of Articles
01	Switzerland	524
02	France	264
03	Denmark	183
04	Germany	182
05	Italy	87
06	UK	66
07	Norway	60
08	USA	24
09	Austria	41
10	India	23

Table 6 showed that Switzerland had contributed the most, then the second most by Germany. India ranks at 10<sup>th</sup> position in submitting articles to the repository for the study period of 2019-2024.

**e) Multidisciplinary Nature of Organic Agriculture:** By assessing how research themes intersect across various scientific and environmental domains to examine interdisciplinary and multidisciplinary nature of organic agriculture can be depicted through the figure 2.



**Figure 2: Interdisciplinary and Multidisciplinary Nature of Organic Agriculture**

The organic agriculture intersects with major disciplines such as Biological Sciences, Environmental Science, and Economics. Though not shown in the figure it touches other disciplinary aspects such as sustainable development, agronomy and agro-forestry.

**f) Role of Library:** Keeping in view of the growing importance of open access scholarly communication in the field of organic agriculture; it is important that agricultural libraries as well as academic and public libraries can promote and support open access movement and literature. This allows libraries to seek an alternative to escalating prices of journals of some reputed publishers. Responsibility of libraries includes making researchers, academicians and society aware. This can be done by promoting and advocating open access literature through websites, blogs, social medias and orientation programs in the library. Creating institutional repository of the institution, where the faculties and researchers can deposit their pre-print or post print version of their research article can also prove to be efficient.

## 7. Conclusion

Data from Tables 1 through 3 reveals a significant disparity in India's Open Access (OA) participation, ranging from a dominant 2nd-place global ranking in the Hybrid route and a strong 9th-place showing in the Gold route to a total absence of contribution via the Diamond route. While India maintains a steady 10th-place position in the Green route, the lack of engagement with Diamond OA is particularly striking given that this model eliminates financial barriers by requiring no Article Processing Charges (APCs). This gap likely stems from a combination of limited researcher awareness and the stringent quality benchmarks associated with Diamond publications, representing a massive, untapped opportunity for the Indian research community. Consequently, academic libraries must move beyond traditional roles to actively advocate for and support Diamond OA, ensuring researchers in fields like organic agriculture possess the resources and literacy to meet international standards and maximize their global impact.

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