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Bibliometric Analysis of Research Trends and Growth in Farm Media and Agricultural Journalism

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HIGHLIGHTS

- Farm media research grew steadily from 2005 to 2024, with accelerated growth after 2018 due to digitalization and sustainability concerns.
- The United States leads in output, Sweden in citation impact, with rising contributions from Nigeria and India.
- Key themes include digital media, ICT-enabled extension, environmental communication, and technology-driven agricultural knowledge exchange.

ARTICLE INFO

Keywords: Farm media, Agricultural journalism, Sustainability, Mass media, Bibliometric analysis, Agricultural communication.

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ABSTRACT

Farm media encompasses multiple forms of mediation, representational, infrastructural, and elemental that shape the modern agriculture-food system. Although its relevance to sustainable agriculture and rural development is widely acknowledged, a comprehensive synthesis of scholarly contributions to farm media has remained limited. To fill this gap, a bibliometric analysis was carried out on publications from 2005 to 2024, using data from the Web of Science Core Collection and the Dimensions AI database. Data were cleaned and analysed using Biblioshiny and VOSviewer for science mapping. The study examined annual publication trends, citation patterns, journal productivity, keyword co-occurrence, and geographical distributions. Results indicate a sustained rise in publications, reflecting growing interest at the intersection of media, agriculture, and sustainability. The United States leads in output, while Sweden shows high citation impact, and contributions from Nigeria and European countries demonstrate expanding global participation. Keyword mapping identifies dominant and emerging themes in digital agriculture communication and sustainability-focused media practices. In India, where mass media play a crucial role in agricultural extension and rural livelihoods, the limited presence of high-impact studies highlights a significant research and visibility gap. The findings underscore the need for inclusive, collaborative, and context-specific research to strengthen agricultural communication systems globally.

INTRODUCTION

The intersection of agriculture and media, often called farm media, is an emerging field that examines how various communication channels shape farming practices, rural development, and knowledge exchange. In recent years, the concept of farm media has gained prominence. Recent scholarship highlights that modern farmers access information through a diverse mix of media, ranging

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from traditional channels like radio and print to digital platforms, and social networks (Mittal & Mehar, 2016; Kish & Peters, 2023). Furthermore, digitalisation has transformed this landscape: mobile phones, internet platforms, and social media now enable two-way communication between extension agents and farmers (Aker, 2011). For example, smartphones provide direct market price feeds and weather alerts, while social networking platforms (e.g. WhatsApp, Facebook) facilitate peer-to-peer knowledge sharing among rural producers. These trends reflect global developments in agricultural innovation, where the adoption of technology and concerns about sustainability drive new communication needs (World Bank, 2011; Armenta-Medina et al., 2020; Khan et al., 2020).

Amid global pressures such as climate change, food security, and sustainability, the demand for effective agricultural journalism and communication has intensified (Khan et al., 2020; Kish & Peters, 2023). However, the circulation of agricultural knowledge remains uneven across media platforms. Evidence from India indicates that although agriculture underpins rural livelihoods, mainstream newspapers allocate limited coverage to agricultural issues, often prioritising national political and economic topics over farm-level concerns (Kumar et al., 2026). This imbalance raises critical questions about how far mass media truly serve the informational needs of farming communities.

Despite its importance, the scholarly landscape of agricultural communication has historically been fragmented across disciplines. Studies have explored media relations in agricultural extension (Ruth et al., 2005), climate change coverage in farm publications (Asplund et al., 2013), and the adoption of ICT in farming (Armenta-Medina et al., 2020). Collectively, this literature underscores the crucial role of media in disseminating agricultural knowledge and highlights the growing importance of new media forms (Khan et al., 2020). Nevertheless, a comprehensive understanding of how these diverse research strands converge under the concept of farm media remains limited.

To address this gap, the present study adopts a bibliometric analysis approach, which provides a systematic method for mapping research trends, identifying influential works, and visualising thematic networks (Donthu et al., 2021; Roy et al., 2024; Barman et al., 2026). Similar approaches in related domains (such as ICT in agriculture, digital platforms for rural knowledge transfer, workplace bullying, family farming, and precision farming) have revealed growth patterns and knowledge structures (Armenta-Medina et al., 2020; Dhillon, 2026; Suman et al., 2025; Vishwakarma et al., 2025). By applying this approach, the study synthesises two decades of scholarship (2005–2024) and situates farm media within broader communication and development discourse. The study aims to compile relevant publications, trace the evolution of scholarly output, and identify key authors, journals, countries, and thematic trends in agricultural media research. It integrates perspectives from agricultural journalism, farm media, and agricultural media reporting.

METHODOLOGY

This study employed a rigorous bibliometric methodology, retrieving data from two major academic databases, the Web of Science Core Collection and Dimensions AI database, both of which are known for their comprehensive coverage of peer-reviewed literature. Publications were limited to the period 2005–2024 and to English-language journal articles to ensure consistency and comparability. The search was conducted across titles, abstracts, and keywords using the Boolean string ("agricultural journalism" OR "farm journalism" OR "agricultural reporting" OR "farm media" OR "extension journalism" OR "agricultural media" OR "farm reporting"). This search initially yielded 126 records. Non-qualifying document types such as conference papers, book chapters, reviews, and editorials were excluded. The remaining records were then refined through a PRISMA-inspired screening process (Figure 1), which involved the removal of duplicates and irrelevant items. After the screening and eligibility assessment, a final sample of 22 articles was retained that directly addressed the interface between mass media and agricultural extension. Although the final dataset is modest in size, it reflects the emerging and niche character of research linking mass media with agricultural extension, where only a limited number of studies explicitly address this intersection. Therefore, the dataset is considered adequate for exploratory bibliometric mapping and trend identification. The bibliographic data of these selected records were exported in tab-delimited and BibTeX formats and analyzed using two complementary tools: VOSviewer and the Biblioshiny interface of the Bibliometrix package in R. These tools facilitated the construction and visualization of bibliometric networks, as well as the generation of statistical summaries, trend analyses, and science mapping outputs. These included author collaboration patterns, keyword co-occurrence structures, citation relationships, annual publication trends, growth rates, and the identification of leading authors, journals, countries, and highly cited works. All data processing and visualization procedures followed established bibliometric protocols to ensure accuracy and robustness. The combined use of both tools enhanced the validity of the findings by integrating network-based clustering with temporal and descriptive analytical perspectives.

RESULTS

Table 1 below summarizes the key features of the bibliometric dataset from 2005 to 2024. The final collection includes 22 journal articles from 17 different journals (as shown in Figure 1). This focused data set reflects a highly specialized research field. The annual growth rate was 5.95%, indicating sustained interest. On average, each article was cited 5.5 times, showing moderate scholarly influence. The

Table 1. Main Information of the Bibliometric Dataset

Main information	Timespan	2005:2024
	Sources (journals)	17
	Documents	22
	Annual growth rate %	5.95
	Document average age	4.95
	Average citations per doc	5.5
Authors	Authors	61
	Authors of single-authored docs	6
	Author's keywords (de)	104
Authors collaboration	Co-authors per doc	2.82
	International co-authorships %	13.64
Document types	Article	22

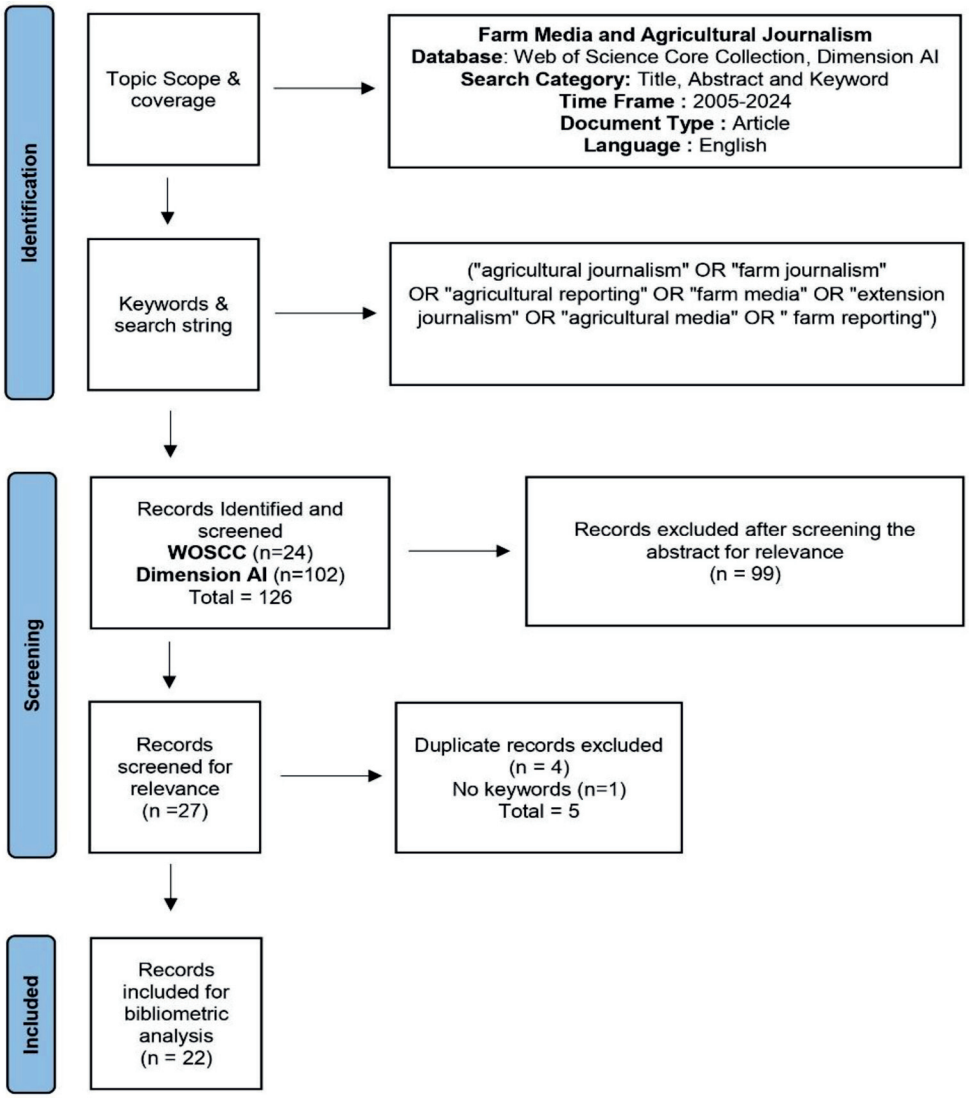

Figure 1. PRISMA 2020 Framework

average document age was around 5 years, indicating most output is relatively recent. These numbers suggest a niche but active research area. In total, 61 authors contributed to the 22 articles, demonstrating broad participation across the field. Most papers were co-authored: the average of 2.82 authors per paper suggests collaboration, though 6 articles were authored by a single person. International collaborations, in which authors have different country affiliations, were reported in about 13.6% of papers, suggesting some cross-border research but still limited global teamwork.

Publication Trend

The annual publication trend (Figure 2) shows a steady rise since 2018, following a period of sporadic output. Between 2005 and 2014, only occasional papers appeared (notably one in 2005, 2012, 2013). This sparse early activity suggests limited academic attention at a time when the field was in its infancy. Starting in 2018, we observe a clearer growth trajectory, with 1–3 papers per year, peaking in 2023 with eight articles, and a slight drop to 3 articles in 2024. The observed upward trend indicates increasing scholarly interest. The surge in the late 2010s and early 2020s may be driven by global challenges: climate change, digital transformation, and sustainable development agendas have brought agricultural media into focus. The COVID-19 pandemic may also have highlighted the importance of resilient information channels in rural communities. Overall, the transition from scattered early contributions to a more robust research phase suggests that farm media is becoming an established topic. If current trends continue, we can expect further growth, especially as younger scholars adopt bibliometric tools to navigate this interdisciplinary area.

Top Cited Works

A citation analysis reveals the foundational and influential studies in farm media research (Table 2). The most cited article is Asplund, Hjerpe, and Wibeck (2013), which has garnered 47 citations. This paper examines climate change framing in Swedish farming magazines, exemplifying how the media shape environmental communication in agriculture. Next are Amu and Agwu (2012) (12 citations), who surveyed Nigerian agricultural journalists on climate change reporting, and Ruth et al. (2005) (10 citations), who explored media relations training for agricultural scientists. These early works underscore the field's strong focus on climate and media relations in its roots.

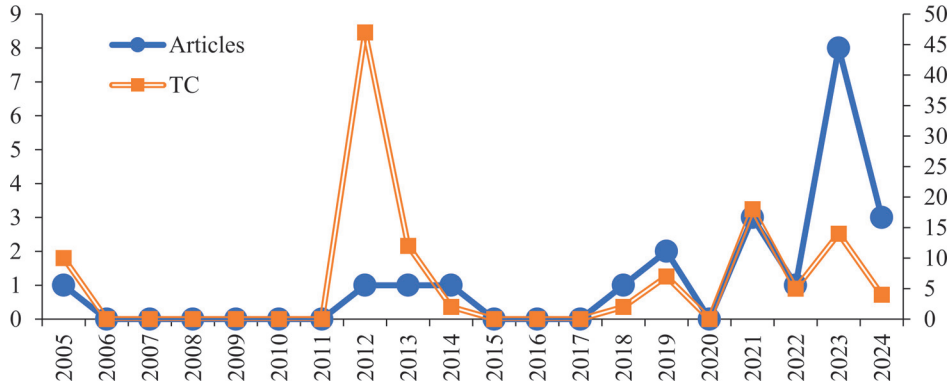

Figure 2. Annual Publication Trend and Total Citation per Year

More recent high-impact studies include Fischer and Hess (2021) (9 citations), which investigated farmers' perspectives in the Swedish GMO debate, and Carolan (2023) (5 citations), analysing the *affective politics* of farming media in *New Media & Society*. Notably, Kish and Peters' (2023) conceptual introduction to farm media is among the most highly cited works. These newer publications reflect an expanding thematic range from technological issues, such as ICT adoption in fish farming (Oke et al., 2021), to the sociocultural dimensions of rural television (Fountaine, 2020) highlighting the growing diversity in topics and methods.

This citation distribution indicates that seminal topics (climate communication, media training) have a lasting influence, while emerging issues (digital media, sustainability, rural journalism) are gaining traction. The presence of several *New Media & Society* articles among the most cited suggests that farm media research is increasingly recognised in mainstream communication journals.

Most Prolific Journals

The 22 articles appeared in a mix of communication and agricultural journals, reflecting the field's interdisciplinary nature. In Table 3, New Media & Society published five of the 22 papers, making it the most prolific outlet for farm media research. This prominence highlights how agricultural topics are increasingly being incorporated into broader media and technology discussions. Other

Table 2. Most Cited Articles on Farm Media and Agricultural Journalism

Article	DOI	Total Citations
Asplund, T., Hjerpe, M. & Wibeck, V. (2013) Framings and coverage of climate change in Swedish specialized farming magazines. Climatic Change 117, 197–209.	https://doi.org/10.1007/S10584-012-0535-0	47
Amu, C.J., & Agwu, A.E. (2012). Attitude and Knowledge of Print Media Journalists towards Reporting of Climate Change News in Nigeria. The Journal of Agricultural Extension, 16, 52-67.	https://doi.org/10.4314/JAE.V16I2.5	12
Ruth, A., Lundy, L., Telg, R., & Irani, T. (2005). Trying to Relate: Media Relations Training Needs of Agricultural Scientists. Science Communication, 27(1), 127-145.	https://doi.org/10.1177/1075547005278347	10
Fischer, K., & Hess, S. (2021). The Swedish Media Debate on GMO Between 1994 and 2018: What Attention was Given to Farmers' Perspectives? Environmental Communication, 16(1), 43–62.	https://doi.org/10.1080/17524032.2021.1960406	9
Oke, F. O., Olorunsogo, G. O., Akerele, D. (2021). Impact of Information Communication Technology (ICT) and mass media usage on technical efficiency of fish farming in Ogun State, Nigeria. J. Agribus. Rural Dev., 2(60), 143–15.	https://doi.org/10.17306/J.JARD.2021.01378	8
Fountaine, S. (2019). Themes of connection and progress in rural television: New Zealand's Country Calendar 1990–2015. Media International Australia, 174(1), 109-124.	https://doi.org/10.1177/1329878X19873930	7
Artner-Nehls, A., Uthes, S., Zscheischler, J., & Feindt, P. H. (2022). How the Agricultural Press Addresses the Slurry–Water Nexus: A Text Mining Analysis. Sustainability, 14(16), 10002.	https://doi.org/10.3390/SU141610002	5
Carolan, M. (2023). The perilous promise of productivity: Affective politics of farming media and its consequences for the future of agriculture. New Media & Society, 25(8), 1913-1934.	https://doi.org/10.1177/14614448231174521	5
Kish, Z., & Peters, B. (2023). Farm media: An introduction. New Media & Society, 25(8), 1827-1841.	https://doi.org/10.1177/14614448231174522	2
Obweger, A., Mitter, H. & Schmid, E. (2024) Framing the CAP reform 2013 in Austria's agricultural media. Agric Hum Values 41, 1393–1415.	https://doi.org/10.1007/s10460-024-10554-7	2

active journals included the Asian Journal of Agricultural Extension, Economics & Sociology (with two articles), and specialised titles such as Agriculture and Human Values, Climatic Change, and Environmental Communication (each hosting 1–2 articles). The diversity of journals, ranging from sociological to agricultural economics outlets, demonstrates how agricultural media issues transcend traditional disciplinary boundaries.

In terms of authorship, no single author dominates the field. Table 4 shows the top contributors; the only author with more than one publication is Peters B (2 articles). All other identified authors (Adeeb H, Adnan H, Agwu A, Akerele D, etc.) have published one work each. This pattern suggests a decentralised and emerging scholarly community. The widespread authorship indicates that many researchers are entering the field; however, a small core of authors has established a significant presence. The average of 2.82 co-authors per paper and an international collaboration rate of 13.64% also indicate collaborative networks that are still maturing. As the domain grows, new clusters of co-authors may form, and prolific researchers will emerge.

Table 3. Most Prolific Journals Based on Publication Count

Journal	No. of Articles
New Media & Society	5
Asian Journal of Agricultural Extension, Economics & Sociology	2
Agriculture and Human Values	1
Climatic Change	1
Environmental Communication	1

Table 4. Most Prolific Authors Based on Publication Count

Authors	Articles
Peters B	2
Adeeb H	1
Adnan H	1
Agwu A	1
Akerele D	1

Most Prolific Countries

Figure 3 illustrates the country affiliations of all contributing authors (Table 5). The United States leads in output with seven publications, indicating strong institutional capacity and interest in agricultural communication. In contrast, Sweden stands out in terms of impact rather than count, accounting for 47 citations, all from Asplund et al. (2013). This single highly cited paper amplifies Sweden's influence in the citation metric. Nigeria has three publications (22 citations), reflecting the growing research in developing regions that focuses on local extension and climate issues. Other contributing countries (India, Malaysia, Ghana, etc.) each had 1–2 publications, showing an increasingly global reach.

The international collaboration rate is modest (13.64%), but the data suggest a shift toward more global engagement. While early research was regionally concentrated, increasing contributions from Asia and Africa suggest that agricultural media is of worldwide relevance. However, regional disparities persist: Western countries (the USA, Sweden, and Germany) currently generate the most

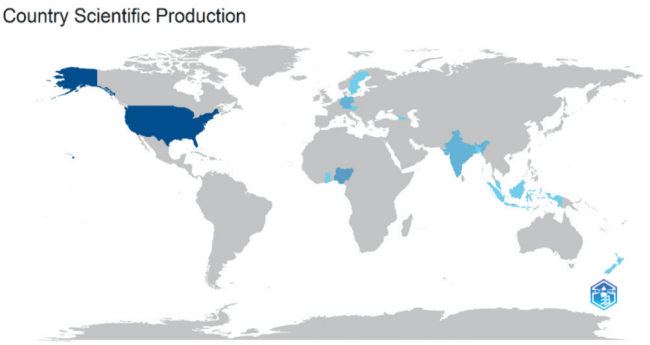

Figure 3. World Map Top Contributing Countries

Table 5. Top Contributing Countries (authors' affiliations)

Country	No of publication	Total Citation
USA	7	23
Nigeria	3	22
India	2	1
Germany	2	14
Sweden	1	47
Austria	1	2
Bangladesh	1	0
Indonesia	1	1
Malaysia	1	2
Georgia	1	0
Ghana	1	2
New Zealand	1	7

output and citations, likely due to their resource advantages. As the field matures, broader collaboration could arise, enriching the scholarship with diverse perspectives.

Keyword and Thematic Analysis

A co-occurrence analysis of author keywords was conducted to identify core themes. Across the 22 articles, 96 unique keywords were identified. Figure 4 (a word cloud) highlights the most frequent terms. Figure 5 illustrates that the top keyword is "farm media" (4 occurrences), followed by "agriculture" (3) and "environmental media" (3). These high-frequency terms underscore the central focus on agricultural communication and environmental issues. Other recurring keywords (each with 2 occurrences) include "agricultural media," "content analysis," "development communication," "Nigerian newspapers," "discourse," and "precision agriculture." This mix suggests that methodological approaches (e.g., content analysis) and diverse contexts (e.g., media in Nigeria) are present.

Notably, terms like "digital media," "information communication technology (ICT)," "extension journalism," and "environmental communication" also appear frequently. It indicates that digitalisation and sustainability are prominent research directions. The presence of ICT and digital media terms aligns with broader trends in which mobile and online platforms are transforming the agricultural sector. In summary, the keyword map suggests that farm media research is grounded in agricultural extension and environmental discourse, while also integrating perspectives on technology and development.

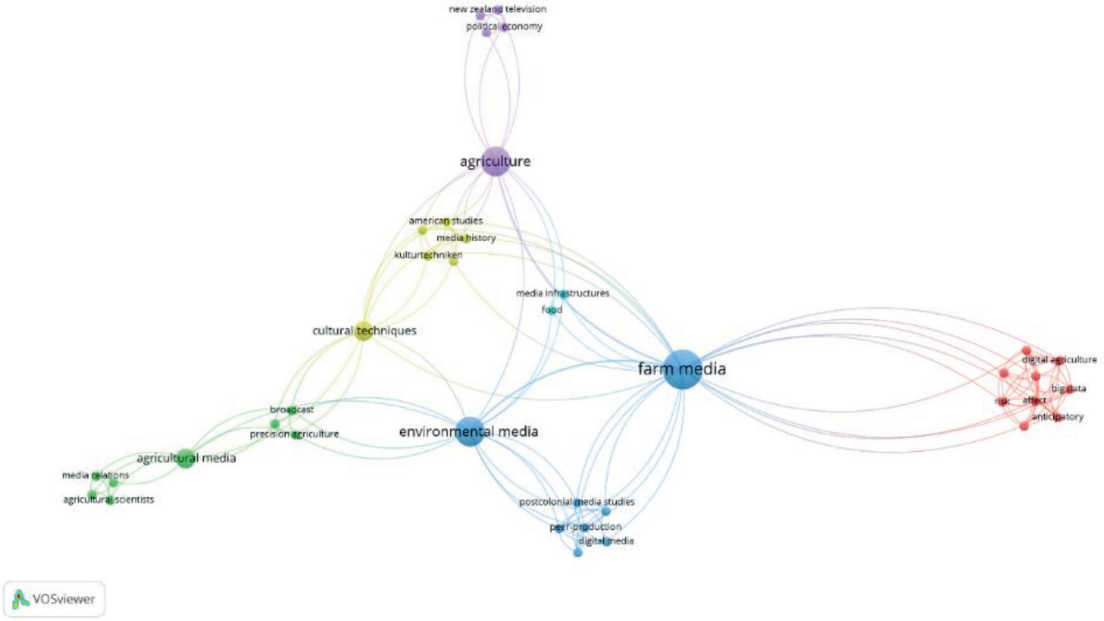

Figure 4. Word Cloud of Top Keywords

Figure 5. Co-Occurrence Analysis of Author Keywords

DISCUSSION

The bibliometric findings suggest that farm media and agricultural journalism are emerging as an interdisciplinary research field that has experienced steady growth between 2005 and 2024, with an annual publication increase of 5.95%. Although the overall number of publications remains relatively modest, the upward trend indicates growing scholarly recognition of the important role media plays in agricultural knowledge exchange and rural development communication (Donthu et al., 2021). The noticeable increase in publications after 2018 coincides with expanding global attention to digital agriculture, climate change adaptation, and sustainable food systems. Earlier research between 2005 and 2014 primarily addressed foundational communication needs, such as improving scientists' engagement with the media and strengthening the role of agricultural journalism in enhancing public understanding of farming-related issues (Ruth et al., 2005). More recent studies emphasize how digital communication technologies including mobile platforms, social media, and data-driven information systems are transforming the dissemination of agricultural knowledge and reshaping communication among farmers, extension services, and research institutions (Klerkx et al., 2019). From an analytical perspective, this shift indicates that farm media is no longer confined to traditional journalism but has become part of a broader "media ecology," where multiple communication platforms from broadcast media to networked and algorithmic technologies shape knowledge flows within agricultural systems (Carolan, 2023).

Authorship patterns indicate that the field is still in an early stage of intellectual consolidation. Contributions come from diverse disciplinary backgrounds, including communication studies, rural sociology, agricultural economics, and information science. The average of 2.82 authors per article and the presence of 13.6% international co-authorship suggest moderate collaboration. However, the absence of a dominant research leader, along with the presence of single-authored publications, indicates that farm media research is

largely driven by individual scholarly initiatives rather than coordinated research networks. Geographically, the United States emerges as the most productive contributor, reflecting its established institutional infrastructure in agricultural extension, land-grant universities, and communication research. Sweden shows notable citation impact due to the highly cited study by Asplund et al. (2013), demonstrating how influential publications can shape national research visibility. The dataset also reveals participation from developing countries, particularly Nigeria and India, where studies often focus on climate change communication, rural media systems, and agricultural extension services. Nigeria's publications and citations indicate growing engagement with local agricultural communication challenges. However, India's comparatively lower citation visibility despite its extensive agricultural sector and reliance on media for extension communication suggests structural disparities in global research visibility, possibly influenced by differences in research infrastructure, funding, and publication access.

Journal distribution further highlights the interdisciplinary nature of farm media research. *New Media & Society*, with five articles, leads in publication output, demonstrating the integration of agricultural topics into broader digital media scholarship. Research also appears in journals related to rural studies, environmental communication, and agricultural sociology, reflecting multiple disciplinary entry points. This distribution shows how agricultural communication is increasingly connected with broader debates on sustainability, technological innovation, and socio-ecological transformation (Carolan, 2023). Keyword co-occurrence analysis further supports these developments. Core terms such as "farm media" and "environmental media" anchor the literature within an agro-environmental communication framework, while the prominence of "digital media" and "ICT" signals a transition toward technology-driven communication platforms. These trends reflect broader transformations in agricultural extension systems, where ICT-enabled tools including mobile applications, online advisory services, and social media networks facilitate more interactive knowledge exchange between farmers, researchers, and policymakers (Klerkx et al., 2019). Overall, the findings suggest that farm media and agricultural journalism are evolving as important components of sustainable development communication, integrating traditional communication approaches with emerging digital technologies to support innovation and knowledge transfer in agricultural systems.

CONCLUSION

This bibliometric study reviews two decades of research on farm media and agricultural journalism, demonstrating a steadily expanding and increasingly diverse field. Publications from 2005 to 2024 show consistent growth, with a significant rise after 2018 driven by digitalisation, climate change, and food security challenges. The field has progressed from scattered early contributions to a recognised interdisciplinary domain, reflected in leading journals such as *New Media & Society* and themes including climate communication, ICT adoption, and media influence in agriculture. Research is increasingly global. While the United States leads in output, Sweden's influence is notable due to a highly cited study, and growing contributions from Nigeria and India highlight widening international relevance despite citation disparities. Mass media are increasingly recognised as critical tools in agricultural extension and rural knowledge dissemination. Overall, farm media research is emerging as a dynamic field shaping farmer awareness, innovation adoption, and public discourse on agriculture.

DECLARATIONS

Ethics approval and consent to participate: This study uses a bibliometric design based on publications indexed in the Web of Science and Dimensions AI databases, accessed through MANUU, Hyderabad. Documents were selected using predefined inclusion and exclusion criteria. As only secondary bibliographic data were used, ethical approval and informed consent were not required.

Conflict of interest: The authors confirm that there are no commercial or financial relationships that could be interpreted as a potential conflict of interest.

Author contributions: The author conducted the literature search, analysis, and interpretation, and prepared, revised, and finalized the manuscript.

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