Airo International Journal
Peer-Reviewed
Multidisciplinary

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

A BIBLIOMETRIC ANALYSIS ON GREEN HUMAN RESOURCE MANAGEMENT AND FERTILISER INDUSTRIES

Shiva Kumari
Research Scholar
Green Human Resource Management
United University, Prayagraj

ABSTRACT

This bibliometric study offers a thorough review of fertilizer industry Green HRM (Green Human Resource Management) practices from 2010 to 2020, emphasizing the industry's growing emphasis on incorporating environmental sustainability into HR operations. Green HRM, sustainability in business practices, environmental sustainability, and employee participation in sustainability are among the key research issues that have been identified. Discussions about these topics have been shown to occur most frequently. The report also shows that certain GHRM practices, like Green Training and Development, Green Recruitment and Selection, and Employee Engagement in Sustainability, are widely used, demonstrating the industry's dedication to coordinating labour strategies with sustainability goals. Practices like Green Compensation and Performance Management also show how the industry is working to include sustainability into performance reviews and incentive schemes. According to the research, fertilizer firms are actively encouraging environmental responsibility through their HR policies, developing a staff that supports both the industry's larger ecological objectives and organisational sustainability goals. The report highlights the increasing awareness of how important GHRM is to attaining environmentally responsible corporate practices and promoting environmental stewardship in the fertilizer industry.

Keywords: *Bibliometric Analysis, Green Human Resource Management (GHRM), Fertilizer Industry, Environmental Sustainability, Green Recruitment, Green Training, Fertilizer Sector.*

Airo International Journal
Peer-Reviewed
Multidisciplinary

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

1. INTRODUCTION

Humanity has benefited from affluence and longevity brought about by economic progress over the past 200 years, but the effects of pollution, waste accumulation, and industrial activities are becoming more and more noticeable. Through international policy initiatives to reduce carbon emissions and fight the damaging effects of catastrophic weather events, climate change poses new problems that are changing the regulatory and competitive landscapes. Society must therefore get ready for and adjust to new situations. More corporate organisations are proactively implementing policies and strategic adjustments, like investing in low-CO2 technologies and renewable energy, to transition to environmental sustainability in response to mounting public and regulatory pressure.

The idea that this topic is limited to environmental sciences is challenged by the multidisciplinary nature needed to lessen organisational environmental footprints, leading to the emergence of new areas of study in social research and management. One subject that is being discussed more and more in the literature to address environmental issues is green human resource management, or GHRM. Although GHRM and sustainable human resource management are sometimes used interchangeably, sustainable HRM is a more comprehensive term that refers to the Triple Bottom Line, which is the simultaneous consideration of profit, planet, and people.

By integrating people into environmental sustainability through practices that cut across all organisational functions, GRM focusses on the ecological aspect of organisational operations. Training and development, performance management and evaluation, incentive programs, hiring and selection, and green teams are all examples of green practices. These practices are primarily guided by the abilities, motivation, and opportunities (AMO) model, which holds that employees' performance is a result of the interplay between their tasks (competencies), motivation, and opportunities to act on environmental sustainability.

In addition to lowering CO2 emissions and energy and natural resource use, GHRM also helps to reduce travel, create a more sustainable workplace, and encourage a sustainable way of life and

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

culture in society. By fostering employees' creativity and adaptability and by drawing and keeping talented workers because of the organization's positive reputation in the community, it also promotes employee growth, wellbeing, health, and contentment.

By mapping the literature using bibliometric analysis, this study seeks to shed light on how GHRM has changed between 2010 and 2020. Bibliometric approaches are able to improve the quality of the reviews by providing a systematic, transparent and repeatable review process and allowing researchers to make their decisions based on the aggregated bibliographic data produced by others. The overarching objectives of the study are to: Identify the themes studied, identify the literature streams, observe and analyse the temporal evolution of the construct and determine the level of the construct's development as a practical tool for the professional community.

2. LITERATURE REVIEW

Austen & Piwowar-Sulej (2024) examined the GHRM framework in the manufacturing industry and identified potential research directions while GHRM is still attracting academic interest. A comprehensive three-step methodology was employed in this study. Using Scopus as the primary database because to its extensive coverage, a focused search approach was employed to locate 117 relevant publications regarding GHRM in the manufacturing sector. Using visualisation tools like VosViewer and MS Excel, a co-words analysis was carried out to map scientific linkages and trends in GHRM, and a performance study was undertaken to assess the impact and use of research components in the field. An exhaustive examination of the GHRM environment was made possible by this methodology, which placed an emphasis on both existing research and emerging trends. The findings demonstrate that while GHRM has garnered more attention in the industrial sector since 2020, there has been a relatively modest number of publications on the topic overall. The research mainly studied four aspects: integration of sustainability in business; impact of environmental management practices on organizational performance; sustainability contribution to sustainable development and competitive advantage; and development of strategic and conceptual models for sustainable management. Staff involvement in GHRM, the link between digital transformation and Big Data and the new challenges they bring, as well as the relationship

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

between the organisational learning of green management and knowledge management are all new research areas that will be available from 2021 to 2023. This research contributes to the field by describing where GHRM stands now and how it has evolved in the industrial sector, drawing attention to both old and new research interests. It offers a detailed review of the implications of sustainability on company activities and its effect on organisational performance and competitive benefits. The study provides implications for manufacturing practitioners as it highlights important points for the improvement and application of the GHRM. Effective application of green management practices relies heavily on organisational learning, employee involvement, and digital transformation.

Xu et al. (2024) conducted bibliometric research to investigate the past, present, and future trends of sustainable agriculture in the digital era, and examined 344 articles from the Web of Science database to forecast future subjects. Agriculture is undergoing a digital transformation as a result of new possibilities for sustainable growth and the digital age's centrality to solving global problems like food insecurity and environmental preservation. It is crucial to grasp this dynamic environment fully. Analysis of citations revealed some significant journals, publications, organisations and countries, and co-authorship analysis confirmed the relationships between authors, institutions and countries. The co-citation analysis identified the following four clusters: geospatial analysis in environmental research, innovations for sustainable agriculture, digital information and agricultural development, and prosperity and difficulties in agricultural sustainability. The concurrent analysis of the terms revealed four main clusters: digitalisation and sustainable agriculture, technology, farmer adoption and digital intelligence, and smart agriculture and biodiversity conservation. This is the first study in its class to apply the bibliometric method to the modern era of the study of sustainable agriculture. It offers valuable information about the development of this topic by pointing to hotspots and future directions of the topic.

Yang et al. (2022) enhanced the system's ecological and financial benefits while lowering the pollution hazards associated with agricultural waste, which contributed to the development of circular agriculture. Livestock dung and agricultural straw waste are frequently misallocated

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

resources. The ecology is under a lot of stress as a result of planting and breeding being separated. More and more, we need a system that can integrate animal and agricultural husbandry to make better use of our resources. To better understand the present state of crop-livestock systems in China and other countries, a bibliometric analysis was performed on 18,628 published English research articles and dissertations on circular agriculture, as well as 3,460 published Chinese works. We combed through the CNKI and ISI Web of Science databases for research articles published between 1981 and 2021 on crop-livestock systems. We aimed to find research hot spots, techniques, thematic trends and popular technical models. Current trends in crop-livestock systems were examined based on considerations of stakeholders, economics, ecology and social benefits. Results showed that compared to traditional farming methods, crop-livestock systems were much better for the environment and society. Some of these benefits included improved soil quality, reduced greenhouse gas emissions, increased net income and increased input/output ratios. The elements that impacted the development of crop-livestock systems were also investigated from the perspective of those with a vested interest in the matter.

Hendarjanti (2022) discussed the idea of green human resource management, with a focus on how an organization's green commitment and green innovation behave. Indonesia is the world's largest producer and exporter of palm oil and the world's largest source of biofuel derived from palm oil. In order to compete globally in the Industrial Era 4.0, oil palm plantations must boost output and productivity in a sustainable and ecologically friendly way. Global economic growth is now impacted by a number of environmental challenges. Environmental factors, production, and the economy are closely related. The country's economic operations, output, and expansion are all at risk due to the pressing issue of global warming. Environmental regulations, both required and optional, are implemented with the implementation of "Good Agricultural Practices" in the palm oil sector in an attempt to ensure the sustainability of the enterprise. Managing human resources in oil palm plantations' operations to lower greenhouse gas emissions is one of them. using employee creativity and environmental dedication to implement the company's environmental strategy and protect the environment. Understanding the framework that describes the

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

relationships between the variables of sustainability business, green innovation, green commitment, and green human resources management (GHRM) is the goal of this essay. The link between factors was analysed in order to obtain this article using library research. focusses on the connections between the sustainability business, green HRM, green innovation, and green commitment variables. This is anticipated to supplement future study on the same topics.

3. RESEARCH METHODOLOGY

This study use bibliometric analysis to investigate important trends and practices in Green Human Resource Management (GHRM) in the irrigation sector. The goal of data analysis is to highlight prevailing research themes by determining the frequency of keywords and GHRM practices.

3.1. Research Design

Green Human Resource Management (GHRM) practices in the fertiliser sector are investigated through the use of a bibliometric analysis approach in this study. There is an emphasis placed on determining the most important research subjects, trends, and practices that are associated with GHRM throughout the industry.

3.2. Data Collection

The data is gathered by doing a review of the current literature, which includes scholarly articles, papers, and research publications that are associated with GHRM in the fertiliser business. In order to discover the most prominent trends in the subject, the research investigates the practices and keywords that are cited in the existing literature.

3.3. Data Collection Tool

The method of data collection that was utilised in this investigation was a systematic evaluation of academic research publications. This review offered a comprehensive understanding of the frequency of particular keywords and practices that are associated with GHRM in the fertiliser

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

industry. Through the use of this strategy, it is possible to recognise patterns and themes that repeatedly appear.

3.4. Data Analysis

The study of the data includes looking at the frequency of keywords and GHRM practices in order to gain an understanding of the most important trends that are occurring within the fertiliser business. The most frequently discussed issues, such as Green Human Resource Management (HRM), sustainability, and employee engagement, are highlighted in this report. Additionally, the GHRM practices that fertiliser businesses have followed, such as recruitment, training, performance management, and remuneration, are also highlighted. In order to demonstrate the prevalence of these themes in the existing research as well as their significance, the findings from the data analysis are presented in the form of tables and graphical representations.

4. DATA ANALYSIS AND INTERPRETATION

The following table, table 1, provides an overview of the frequency with which major study topics and keywords are mentioned in studies that are associated with Green Human Resource Management (GHRM) in the fertilizer business. These keywords offer insights into the areas of attention within the study literature, highlighting the trends and emphasis focused on various aspects of GHRM and its application to sustainability practices in the sector. These keywords also illustrate the areas of focus that have been identified.

Table 1. Green HRM Studies in the Fertilizer Sector

Keyword	Frequency
Green Human Resource Management	30
Sustainability in Fertilizer	28
Environmental Sustainability	20
Green Training and Development	15
Employee Engagement in Sustainability	12

Airo International Journal
Peer-Reviewed
Multidisciplinary

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

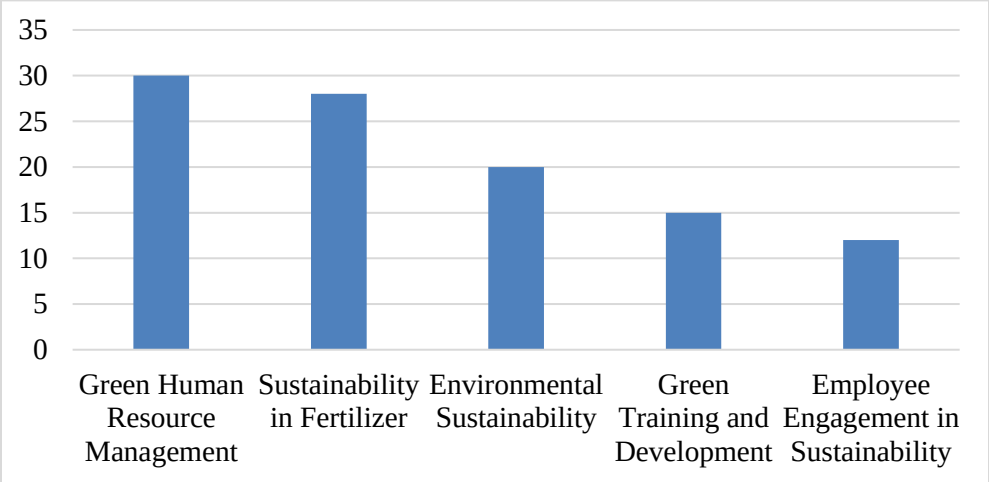

Figure 1: Graphical representation of Green HRM Studies in the Fertilizer Sector

The following table illustrates the fact that "Green Human Resource Management" is the most commonly cited topic in research on the fertilizers business. With thirty mentions, this topic emphasizes the incorporation of environmental sustainability into HR practices. Following closely behind is the topic of "Sustainability in Fertilizer" (28 mentions), which reflects the agricultural sector's emphasis on minimising its impact on the environment. "Environmental Sustainability" is mentioned twenty times, indicating that there is a wider interest in ecological factors. On the other hand, "Green Training and Development" is mentioned fifteen times, highlighting the need of teaching staff on sustainable methods. Finally, "Employee Engagement in Sustainability" (12 mentions) brings attention to the increased acknowledgement of the role that employees play in driving sustainability activities within the industry.

The frequency of various Green Human Resource Management (GHRM) practices that are adopted by fertilizers firms is presented in the table 2 that contains the following information. The importance of developing environmental responsibility through HR policies and actions within the sector is highlighted by these practices, which show the various techniques that organisations employ to integrate sustainability into their human resource functions.

Airo International Journal
Peer-Reviewed
Multidisciplinary

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

Table 2. Green HRM Techniques Used by Fertilizer Businesses

Green HRM Practice	Frequency
Green Recruitment and Selection	20
Green Training and Development	18
Employee Engagement in Sustainability	15
Performance Management and Sustainability	13
Green Compensation and Rewards	10

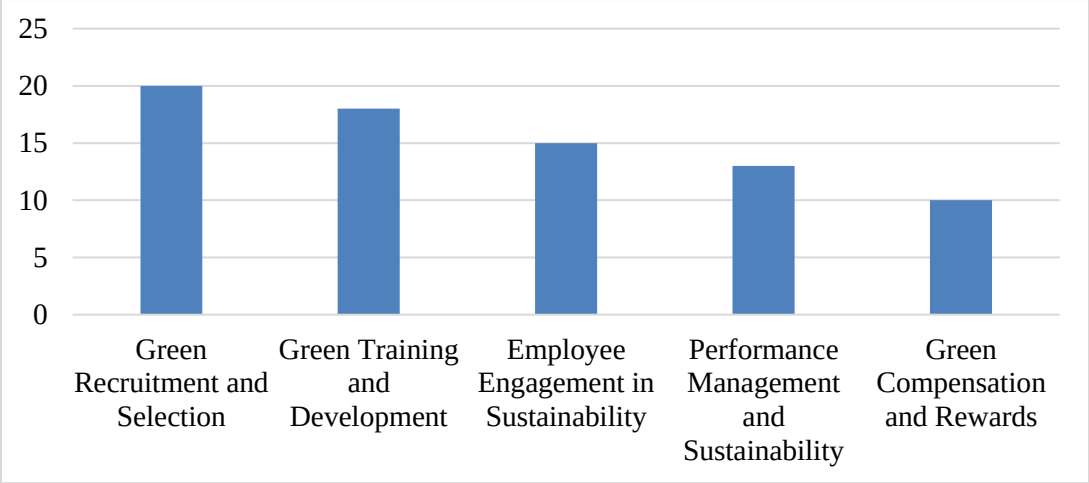

Figure 2: Graphical representation of Green HRM Techniques Used by Fertilizer Businesses

The following table demonstrates that "Green Recruitment and Selection" is the Green Human Resource Management technique that is most regularly employed in the fertiliser industry. This activity has been mentioned twenty times, which highlights the sector's emphasis on employing personnel who fit with sustainability objectives. A significant commitment to providing staff with the required skills to effectively adopt sustainable practices is indicated by the fact that "Green Training and Development" is mentioned 18 times, which is a close second. The phrase "Employee Engagement in Sustainability" (15 instances) gives the impression that businesses are aware of the significance of actively involving employees in sustainability activities, which also helps to cultivate a feeling of ownership and keeps employees motivated. The article "Performance

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

Management and Sustainability" (13 references) demonstrates that fertiliser businesses are incorporating sustainability into performance evaluation systems. This helps to ensure that individual performance and organisational environmental goals are aligned. As a last point of discussion, "Green Compensation and Rewards" (10 mentions) suggests that some businesses are incentivising environmentally conscious behaviours by tying awards and compensation to sustainability successes. This further emphasises the significance of sustainability in the workplace.

5. CONCLUSION

There is a substantial focus on incorporating environmental sustainability into HR operations, according to the bibliometric analysis of Green Human Resource Management (GHRM) practices in the fertiliser business. The most often addressed subjects include the role of employee participation in sustainability initiatives, sustainability in the fertiliser industry, and Green HRM itself. Additionally, the research shows that fertiliser firms prioritise "Green Recruitment and Selection" and "Green Training and Development," indicating a dedication to coordinating with sustainability objectives for their personnel. Furthermore, initiatives like "Performance Management and Sustainability" and "Employee Engagement in Sustainability" highlight the industry's attempts to make sure that sustainability is included into performance evaluation and employee participation programs. Overall, the results point to a rising understanding of the significance of environmental responsibility in organisational processes and the fertiliser industry's gradual adoption of Green HRM practices.

REFERENCES

1. *Abiola, W. A., Diogo, R. V. C., Tovihoudji, P. G., Mien, A. K., & Schalla, A. (2023). Research trends on biochar-based smart fertilizers as an option for the sustainable agricultural land management: Bibliometric analysis and review. Frontiers in Soil Science, 3, 1136327.*

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

2. *Austen, A., & Piwowar-Sulej, K. (2024). Green Human Resource Management in the manufacturing sector: a bibliometric literature review. Engineering Management in Production and Services, 16(4).*
3. *Ba, Y., & Cao, L. (2023). Assessing the impact of green human resource management practices on environmental performance in China: role of higher education. Environmental Science and Pollution Research, 30(41), 94386-94400.*
4. *Corsi, S., Ruggeri, G., Zamboni, A., Bhakti, P., Espen, L., Ferrante, A., ... & Scarafoni, A. (2022). A bibliometric analysis of the scientific literature on biostimulants. Agronomy, 12(6), 1257.*
5. *Faheem, A., Nawaz, Z., Ahmed, M., Haddad, H., & Al-Ramahi, N. M. (2023). Past Trends and Future Directions in Green Human Resource Management and Green Innovation: A Bibliometric Analysis. Sustainability, 16(1), 133.*
6. *Gao, Z., Zhao, L., Geng, H., Li, M., Chen, D., & Zhang, Y. (2024). Bibliometric and literature review of the development of mineral fertilizers. Environmental Science and Pollution Research, 31(1), 27-42.*
7. *Hendarjanti, H. (2022). Building sustainability business industry palm oil 4.0 through A green human resources management, green innovation and approach green commitment. Business and Entrepreneurial Review, 22(1), 19-34.*
8. *Huertas-Valdivia, I., Ferrari, A. M., Settembre-Blundo, D., & García-Muiña, F. E. (2020). Social life-cycle assessment: A review by bibliometric analysis. Sustainability, 12(15), 6211.*
9. *Li, X., & Li, Z. (2024). Global Trends and Current Advances in Slow/Controlled-Release Fertilizers: A Bibliometric Analysis from 1990 to 2023. Agriculture, 14(9), 1502.*
10. *Okolie, C. C., Danso-Abbeam, G., Groupson-Paul, O., & Ogundeji, A. A. (2022). Climate-smart agriculture amidst climate change to enhance agricultural production: a bibliometric analysis. Land, 12(1), 50.*
11. *Rejeb, A., Rejeb, K., Abdollahi, A., Al-Turjman, F., & Treiblmaier, H. (2022). The Interplay between the Internet of Things and agriculture: A bibliometric analysis and research agenda. Internet of Things, 19, 100580.*

ISSN: 2320-3714
Volume:2 Issue:3
June 2026
Impact Factor:11.9
Subject: Management

12. *Singh, M. K. (2023). Research on Sustainable Agriculture Among QUAD Countries: A Bibliometrics Study. Journal of Agriculture and Sustainability, 16.*
13. *Xu, J., Li, Y., Zhang, M., & Zhang, S. (2024). Sustainable agriculture in the digital era: past, present, and future trends by bibliometric analysis. Heliyon, 10(14).*
14. *Yang, G., Li, J., Liu, Z., Zhang, Y., Xu, X., Zhang, H., & Xu, Y. (2022). Research trends in crop–livestock systems: a bibliometric review. International Journal of Environmental Research and Public Health, 19(14), 8563.*
15. *Ziabina, Y., & Pimonenko, T. (2020). The Green Deal Policy for renewable energy: a bibliometric analysis. Virtual Economics, 3(4), 147-168.*

Author's Declaration

I as an author of the above research paper/article, here by, declare that the content of this paper is prepared by me and if any person having copyright issue or patent or anything otherwise related to the content, I shall always be legally responsible for any issue. For the reason of invisibility of my research paper on the website /amendments /updates, I have resubmitted my paper for publication on the same date. If any data or information given by me is not correct, I shall always be legally responsible. With my whole responsibility legally and formally have intimated the publisher (Publisher) that my paper has been checked by my guide (if any) or expert to make it sure that paper is technically right and there is no unaccepted plagiarism and hentriacontane is genuinely mine. If any issue arises related to Plagiarism/ Guide Name/ Educational Qualification /Designation /Address of my university/ college/institution/ Structure or Formatting/ Resubmission /Submission /Copyright /Patent /Submission for any higher degree or Job/Primary Data/Secondary Data Issues. I will be solely/entirely responsible for any legal issues. I have been informed that the most of the data from the website is invisible or shuffled or vanished from the database due to some technical fault or hacking and therefore the process of resubmission is there for the scholars/students who finds trouble in getting their paper on the website. At the time of resubmission of my paper I take all the legal and formal responsibilities, If I hide or do not submit the copy of my original documents (Andhra/Driving License/Any Identity Proof and Photo) in spite of demand from the publisher then my paper maybe rejected or removed from the website anytime and may not be consider for verification. I accept the fact that as the content of this paper and the resubmission legal responsibilities and reasons are only mine then the Publisher (Airo International Journal/Airo National Research Journal) is never responsible. I also declare that if publisher finds Any complication or error or anything hidden or implemented otherwise, my paper maybe removed from the website or the watermark of remark/actuality maybe mentioned on my paper. Even if anything is found illegal publisher may also take legal action against me.

Shiva Kumari

******