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RESEARCH

Interests	Agriculture · Soil and water engineering · Water saving irrigation · Climate change · Agric Education
Areas	Soil Science · Plant Science · Water Science and Technology · Renewable Energy, Sustainability and the Environment · Waste Management and Disposal · Ocean Engineering

RESEARCH SUMMARY

69	947	19	33	1.67	12%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 69 publications listed below, 2013–2026. Field-weighted impact is the mean over the 50 works scored for it; 1.00 is the world average for works of the same field, type and year. 6 of the 50 papers scored for it are among the world's most cited tenth for their field, type and year.

PUBLICATIONS

Journal articles 65

1. Kwame Agyei Frimpong, **Ransford Opoku Darko**, Selorm Akaba, Isaac Boateng, Agnes Naa Abeley Abbey (2026). Assessing the influence of farmers' socio-economic orientation on the adoption of recommended soil fertility management practices. *International Journal of Agricultural Research Innovation and Technology*. https://doi.org/10.3329/ijarit.v15i2.87914
2. Faruk Kwansah Nyame, Livingstone Kobina Sam Amoah, Joshua Danso Owusu-Sekyere, **Ransford Opoku Darko**, Francis Kumi, Clement Nyamekye (2026). Effect of irrigation frequency on cocoa (Theobroma cacao L.) bean quality in Ghana's major production zone. *International Journal of Agricultural Research Innovation and Technology*. https://doi.org/10.3329/ijarit.v15i2.87895
3. Kwame Agyei Frimpong, Agnes Naa Abeley Abbey, Edward Akwasi Ampofo, Fatimah Von Abubakari, Ebenezer Manso, Flavio Odoi-Yorke, **Ransford Opoku Darko** (2026). Evaluating the socio-economic impacts of biochar initiatives on sustainable livelihoods among smallholder farmers. *Discover Agriculture*. https://doi.org/10.1007/s44279-026-00633-0
4. Flavio Odoi-Yorke, James Anthony Oppon, Emmanuel Bamfo-Agyei, Aaron Tony Turkson, Eric Awere, Seth Agbeve Mahu, Felix Koney Okpoti, **Ransford Opoku Darko** (2026). Green building in Sub-Saharan Africa: Exploring research trends, insights, and future directions (2005–2025). *Sustainable Futures*. https://doi.org/10.1016/j.sftr.2026.102118
5. Kwame Agyei Frimpong, **Ransford Opoku Darko**, Selorm Akaba, Isaac Boateng, Agnes Naa Abeley Abbey (2026). How Socio-Economic Factors Shape Soil Fertility Management in Ghana's Smallholder Farms. *Growing Africa*. https://doi.org/10.55693/ga51.eyfw6809
6. Agnes Naa Abeley Abbey, Kwame Agyei Frimpong, Edward Akwasi Ampofo, Kofi Atiah, Emmanuel Hanyabui, Flavio Odoi-Yorke, **Ransford Opoku Darko** (2026). Integrating biochar, NPK and green mucuna for sustainable soil fertility and yield optimization in sweet potato production. *Agroforestry Systems*. https://doi.org/10.1007/s10457-026-01434-6
7. Frank Ackah, Elijah Eduful, Emmanuel Afutu, Josiah Tachie-Menson, **Ransford Darko** (2026). Water stress and its synergistic effects on pest and disease dynamics in smallholder irrigated agriculture: Evidence from central region of Ghana. *Poljoprivredna tehnika*. https://doi.org/10.5937/poljteh2601074k

8. Agnes Naa Abeley Abbey, Kwame Agyei Frimpong, Flavio Odoi-Yorke, Edward Akwasi Ampofo, **Ransford Opoku Darko** (2025). A review of biochar's sustainability in climate-smart agriculture: Recent advances, emerging trends, and future directions. *European Journal of Agronomy*. https://doi.org/10.1016/j.eja.2025.127690

9. **R. O. Darko**, F. Odoi-Yorke, A. A. Abbey, E. B. Agyekum, L. K. Sam-Amoah (2025). A review of current trends and evolution of irrigation water management practices on greenhouse gas emissions. *International Journal of Energy and Water Resources*. https://doi.org/10.1007/s42108-025-00448-7

10. Flavio Odoi-Yorke, John Eshun Davis, Richard Nyarkoh, Agnes Abeley Abbey, Ephraim Bonah Agyekum, Francis Padi Lamptey, Gifty Serwaa Otoo, Sandra Ama Kaburi, **Ransford Opoku Darko**, Lawrence Atepor (2025). A review of research trends, innovations, and future directions in phase change materials for energy storage in solar drying systems: A bibliometric approach. *Journal of Energy Storage*. https://doi.org/10.1016/j.est.2025.116233

11. **Ransford Opoku Darko**, Paul Peprah Nsonowah, Joshua Danso Owusu-Sekyere, Mark Nyameche (2025). Assessment of wastewater quality for irrigation use in the Central Region of Ghana. *Discover Environment*. https://doi.org/10.1007/s44274-025-00271-1

12. Kwame Agyei Frimpong, Sampson Owusu, **Ransford Opoku Darko**, Emmanuel Hanyabui, Agnes Naa Abeley Abbey, Daniel Ako Tetteh (2025). Effect of biochar application rates on soil properties and growth of Amaranthus caudatus. *Discover Agriculture*. https://doi.org/10.1007/s44279-025-00172-0

13. Josiah Wilson Tachie-Menson, Catherine Owusu, Frederick Kwame Yeboah, Flavio Odoi-Yorke, Agnes Abeley Abbey, Frank Kwekucher Ackah, **Ransford Opoku Darko** (2025). Environmental impact of pesticide runoff in irrigated agriculture: evidence from Gomoa West field, Ghana. *Discover Environment*. https://doi.org/10.1007/s44274-025-00268-w

14. **Ransford O. Darko**, Prince C. Wadie, Emmanuel Afutu, Nana A. Kissi, Frank K. Ackah, Emmanuel Hanyabui (2025). Impact of deficit irrigation on sweet pepper (Capsicum annuum var. Simbard) performance: Assessing growth, yield, and water use efficiency under a four-day interval irrigation. *Egyptian Journal of Agricultural Research*. https://doi.org/10.21608/ejar.2025.360782.1642

15. Wisdom Eyram Kwame Agbesi, Livingstone Kobina Sam-Amoah, **Ransford Opoku Darko**, Francis Kumi, George Boafo (2025). Numerical Models for Predicting Water Flow Characteristics and Optimising a Subsurface Self-Regulating, Low-Energy, Clay-Based Irrigation (SLECI) System in Sandy Loam Soil. *Water*. https://doi.org/10.3390/w17142058

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18. **Ransford Opoku Darko**, Flavio Odoi-Yorke, Agnes Abeley Abbey, Emmanuel Afutu, Joshua Danso Owusu-Sekyere, Livingstone Kobina Sam-Amoah, Lawerence Acheampong (2024). A Review of Climate Change Impacts on Irrigation Water Demand and Supply - A Detailed Analysis of Trends, Evolution, and Future Research Directions. *Water Resources Management*. https://doi.org/10.1007/s11269-024-03964-z

19. Flavio Odoi-Yorke, Sandra Ama Kaburi, Rita Elsie Sanful, Gifty Serwaa Otoo, Francis Padi Lamptey, Agnes Abeley Abbey, Ephraim Bonah Agyekum, **Ransford Opoku Darko** (2024). A review of recent trends, advancements, and future directions in near-infrared spectroscopy applications in biofuel production and analysis. *Infrared Physics & Technology*. https://doi.org/10.1016/j.infrared.2024.105692

20. **Darko Opoku**, von Abubakar, Sam-Amoah Kobina, Owusu-Sekyere Danso, Mark Nyameche (2024). Assessing the effectiveness of participatory irrigation management approaches to improve water use efficiency and equity in Ghana. *Poljoprivredna tehnika*. https://doi.org/10.5937/poljteh2402007o

21. Gilbert Osei, Joshua Owusu-Sekyere, Livingstone Sam-Amoah, Francis Kumi, Harald Hansmann, Vincent Agyemang, **Ransford Darko**, Kezia Mensah, Delwyn Okhumai (2024). Bell pepper (Capsicum annuum)

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23. **Darko Opoku**, Richmond Adjei, Owusu-Sekyere Danso, Sam-Amoah Kobina (2024). Effects of deficit irrigation and manure application on growth, yield and water use efficiency of onion (Allium cepa L.). *Poljoprivredna tehnika*. https://doi.org/10.5937/poljteh2404054r

24. Flavio Odoi-Yorke, Agnes Abeley Abbey, Anthony Kaku, Stephen Afonaa-Mensah, Ephraim Bonah Agyekum, Charles Benjamin Essuman, John Eshun Davis, **Ransford Opoku Darko**, Lawrence Atepor (2024). Evaluating the economic viability of decentralised solar PV-based green hydrogen for cooking in Ghana. *Solar Compass*. https://doi.org/10.1016/j.solcom.2024.100078

25. Emmanuel Baffour Gyau, Daniel Adu, **Ransford Opoku Darko**, Michael Opoku Adomako (2024). Green Energy Dynamics: Exploring the Nexus Between Renewable Energy Utilization and Environmental Quality in the Middle East and North Africa. *International Journal of Environmental Research*. https://doi.org/10.1007/s41742-024-00634-1

26. Ephraim Bonah Agyekum, Flavio Odoi-Yorke, Wulfran Fendzi Mbasso, **Ransford Opoku Darko**, Oluwatayomi Rereloluwa Adegboye, Agnes Abeley Abbey (2024). Towards a comprehensive understanding of atmospheric water harvesting technologies – a systematic and bibliometric review. *Energy Reports*. https://doi.org/10.1016/j.egyr.2024.09.059

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30. Evans Asenso, **Ransford Opoku Darko** (2023). Rapid Evaluation of Mandarin Crop Water Stress Index using CWSI Infrared Camera. *Sensors & Transducers*. https://sensorsportal.com/HTML/DIGEST/may_2023/Vol_260/P_3287.pdf

31. Kingsley Anfom, Xu Xioyang, Daniel Adu, **Ransford O. Darko** (2023). The state of energy in sub-Saharan Africa and the urgency for small hydropower development. *Energy Reports*. https://doi.org/10.1016/j.egyr.2023.10.011

32. Kelvin Edom Alordzinu, Sadick Amoakohene Appiah, Alaa AL Aasmi, **Ransford Opoku Darko**, Jiuhao Li, Yubin Lan, Daniel Adjibolosoo, Chenguo Lian, Hao Wang, Songyang Qiao, Juan Liao (2022). Evaluating the Influence of Deficit Irrigation on Fruit Yield and Quality Indices of Tomatoes Grown in Sandy Loam and Silty Loam Soils. *Water*. https://doi.org/10.3390/w14111753

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Aasmi, Evans Asenso, Fuseini Issaka, Ebenezer Acheampong Afful, Hao Wang, Songyang Qiao (2022). Real-Time Assessment of Mandarin Crop Water Stress Index. *Sensors*. https://doi.org/10.3390/s22114018

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37. Guanghui Chang, Du Jianguo, Daniel Adu, Kofi Baah Boamah, Pu Tianfeng, **Ransford Darko** (2021). Energy Production and its Emission Generation Impact on the Environment. *Current Science*. https://doi.org/10.18520/cs/v121/i2/316-322
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42. Daniel Adu, Du Jianguo, **Ransford O. Darko**, Kofi Baah Boamah, Emmanuel A.-Boateng (2020). Investigating the state of renewable energy and concept of pump as turbine for energy generation development. *Energy Reports*. https://doi.org/10.1016/j.egyr.2020.08.025
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50. Desmond Appiah, **Ransford O Darko** (2018). Performance characteristics of pump-as-turbine for energy generation. *Indian Journal of Engineering*. https://www.academia.edu/download/104746189/A28.pdf
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African development community. *Energy Procedia*. https://www.sciencedirect.com/science/article/pii/S1876610217354486

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Book chapters 2

1. L. K. Sam-Amoah, **R. O. Darko**, J. D. Owusu-Sekyere (2024). Calibration and Validation of Aquacrop for Hot Pepper (Legon 18) Irrigation. *Research Advances and Challenges in Agricultural Sciences Vol. 1*. https://doi.org/10.9734/bpi/racas/v1/6631b

2. Daniel Adu, **Ransford O. Darko**, Boamah Kofi Baah, Agnes Abbey (2023). The State of Renewable Energy in China and Way Forward in New Scenario Policies. *IntechOpen eBooks*. https://doi.org/10.5772/intechopen.106492

Reports 1

1. **Ransford Opoku Darko** (2026). Trends, Advances, and Future Directions in Water Hyacinth-Based Biogas Production: A Bibliometric Review (1994–2024). *Energy Nexus*. https://www.sciencedirect.com/science/article/pii/S2772427126002408

Theses 1

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