Wilson Agyei Agyare

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RESEARCH

Interests	Soil and Water Engineering and Conservation · Irrigation · Agricultural land use planning · Crop and Soil Modelling · Climate Change · Soil and Water Engineering · Land Use · Soil erosion
Areas	Global and Planetary Change · Soil Science · Ecology, Evolution, Behavior and Systematics · Forestry · Water Science and Technology · Ecology

RESEARCH SUMMARY

88	1,265	18	36	1.42	14%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 88 publications listed below, 2002–2026. Field-weighted impact is the mean over the 43 works scored for it; 1.00 is the world average for works of the same field, type and year. 6 of the 43 papers scored for it are among the world's most cited tenth for their field, type and year.

POSITIONS

Associate Professor 2008–present
Agricultural and Biosystems Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Senior Research Scientist 1996–2008
Savannah Agricultural Research Institue, Council for Scientific and Industrial Research, Accra, Ghana

EDUCATION AND QUALIFICATIONS

PhD 2000–2004
Zentrum for Entwinglungsforchung (Centre for Development Research),, University of Bonn, Bonn, Germany

MSc. 1994–1996
Eremology, Ghent University, Ghent, Belgium

BSc. Agricultural Engineering 1987–1991
Agricultural and Biosystems Engineering, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

PUBLICATIONS

Journal articles 78

1. Ruddy Afriyie, Enoch Bessah, Emmanuel M. N. A. N. Attoh, Ishmeal Amoah, Andrews Afrifa, Willem A. Landman, **Wilson A. Agyare**, Sampson K. Agodzo (2026). Climate information services and farm-level decision-making in the Pra River Basin of Ghana. *Discover Environment*. https://doi.org/10.1007/s44274-026-00655-x
2. KA Budu, **WA Agyare**, E Bessah, EA Asante, Francis Kumi (2026). Influence of tillage and mulching practices on growth, yield, and grain quality of Cowpea (Vigna Unguiculata L.). *Crop Design*. https://

www.sciencedirect.com/science/article/pii/S2772899426000352

3. Seidu Yussif, Nicholas Kyei-Baffour, **Wilson Agyei Agyare**, Amponsah William (2025). Assessment of Potential of Groundwater Yield for Domestic and Dry Season Irrigation in North-East Region of Ghana. *Ghana Journal of Science Technology and Development*. https://doi.org/10.47881/475.967x
4. Ernestina Annan, Fabian Merk, William Amponsah, Kwaku Amaning Adjei, Markus Disse, **Wilson Agyei Agyare** (2025). Impact of land use and land cover changes on water balance in the Ouémé River basin, West Africa. *Hydrological Sciences Journal*. https://doi.org/10.1080/02626667.2025.2516831
5. **Wilson Agyei Agyare**, W Amponsah (2024). Assessing the Impact of Hydro-Climatic Variation on Groundwater Yield in North-East Region of Ghana. *ADRRI Journal Of Advances In Science, Engineering and Artificial Intelligence*. https://scholar.google.com/scholar?cluster=5735730118205042611&hl=en&oi=scholarr
6. **Wilson Agyei Agyare**, W Amponsah (2024). Assessing the Level of Dependency and Sufficiency of Groundwater Use in Rainy and Dry Seasons in North-East Region of Ghana. *ADRRI Journal Of Advances In Science, Engineering and Artificial Intelligence*. https://scholar.google.com/scholar?cluster=2454041387367652090&hl=en&oi=scholarr
7. Seidu Yussif, Nicholas Kyei-baffour, **Wilson Agyei Agyare**, William Amponsah (2024). Assessment of the Trends, Changes and Variations in Rainfall and its Economic Impact on North-East Region of Ghana for the 1990-2019 Period. *Zenodo (CERN European Organization for Nuclear Research)*. https://doi.org/10.5281/zenodo.18137591
8. **WA AGYARE**, W AMPONSAH (2024). EVALUATION OF THE EFFICIENCY OF DISC FILTERS USED BY PERI-URBAN FARMERS IN REMOVING IMPURITIES FROM WASTEWATER AT ZAGYURI IRRIGATION SYSTEM IN SAGNERIGU MUNICIPAL OF NORTHERN …. *GREENER JOURNAL OF SCIENCE, ENGINEERING AND TECHNOLOGICAL RESEARCH Учредители: Greener Journals*. https://scholar.google.com/scholar?cluster=5180541603869594012&hl=en&oi=scholarr
9. **Wilson Agyei Agyare**, W Amponsah (2024). Groundwater quality assessment for domestic and irrigation in North-East Region of Ghana. *ADRRI Journal of Engineering and Technology*. https://scholar.google.com/scholar?cluster=5189548909208434971&hl=en&oi=scholarr
10. Ernestina Annan, William Amponsah, Kwaku Amaning Adjei, Markus Disse, Jean Hounkpè, Ernest Biney, Albert Elikplim Agbenorhevi, **Wilson Agyei Agyare** (2024). Spatio-temporal land use and land cover change assessment: Insights from the Ouémé River Basin. *Scientific African*. https://doi.org/10.1016/j.sciaf.2024.e02262
11. Ismail Koné, Konan-Kan Hippolyte Kouadio, Emmanuel N'Goran Kouadio, **Wilson Agyei Agyare**, Nat Owusu-Prempeh, William Amponsah, Thomas Gaiser (2022). Assessment of soil fertility status in cotton-based cropping systems in Cote d'Ivoire. *Frontiers in Soil Science*. https://doi.org/10.3389/fsoil.2022.959325
12. Felicia Danso, **Wilson Agyei Agyare**, Ato Bart-Plange (2022). Benefits and costs of cultivating rice using biochar-inorganic fertilizer combinations. *Journal of Agriculture and Food Research*. https://doi.org/10.1016/j.jafr.2022.100491
13. Enoch Bessah, William Amponsah, Samuel Owusu Ansah, Andrews Afrifa, Bashiru Yahaya, Cosmos Senyo Wemegah, Michael Tanu, Leonard K. Amekudzi, **Wilson Agyei Agyare** (2022). Climatic zoning of Ghana using selected meteorological variables for the period 1976–2018. *Meteorological Applications*. https://doi.org/10.1002/met.2049
14. Eliasu Salifu, **Wilson Agyare**, Abdul Shaibu (2022). Evaluation of land suitability for crop production in Northern Ghana using GIS and AHP based techniques. *International Journal of Environment and Geoinformatics*. https://doi.org/10.30897/ijegeo.1022275
15. Daniel Atuah Obeng, Enoch Bessah, William Amponsah, Emmanuel Komla Dzisi, **Wilson Agyei Agyare** (2022). Ghana's railway transport services delivery: A review. *Transportation Engineering*. https://doi.org/10.1016/j.treng.2022.100111
16. Yawovi S. Koglo, Thomas Gaiser, Jean M. Sogbedji, **Wilson A. Agyare**, Badabate Diwediga, Tiga Neya, Kossi D. Bissadu, Djan'na Koubodana Houteta (2022). Land use change matrix and slope gradient soil

carbon assessment from forest to different cropping systems in Togo, West Africa. *Environmental Sustainability*. https://doi.org/10.1007/s42398-022-00226-9

17. Ismail Kone, **Wilson Agyei Agyare**, Thomas Gaiser, Nat Owusu-Prempeh, Konan-Kan Hippolyte Kouadio, Emmanuel NGoran Kouadio, William Amponsah (2022). Local Cotton Farmers' Perceptions of Climate Change Events and Adaptations Strategies in Cotton Basin of Cote d'Ivoire. *Journal of Sustainable Development*. https://doi.org/10.5539/jsd.v15n3p108
18. **Wilson Agyei Agyare**, Eliasu Salifu, Gift Dumedah, Nicholas Kyei-Baffour (2021). An Implications of Soil Erosion on Prospects of Maize and Groundnut Yield in Selected Northern Regions of Ghana. *DOAJ (DOAJ: Directory of Open Access Journals)*.
19. Eliasu Salifu, **Wilson Agyei Agyare**, Nicholas Kyei-Baffour, Gift Dumedah (2021). Estimation of Soil Erosion in Three Northern Regions of Ghana Using RUSLE in GIS Environment. *International Journal of Applied Geospatial Research*. https://doi.org/10.4018/ijagr.2021040101
20. Michael Tanu, William Amponsah, Bashiru Yahaya, Enoch Bessah, Samuel Owusu Ansah, Cosmos Senyo Wemegah, **Wilson Agyei Agyare** (2021). Evaluation of global solar radiation, cloudiness index and sky view factor as potential indicators of Ghana's solar energy resource. *Scientific African*. https://doi.org/10.1016/j.sciaf.2021.e01061
21. CA Wongnaa, IA Apike, HO Tuffour, D Awunyo-Vitor, **WA Agyare** (2021). Journal of Agriculture and Food Research. *Journal of Agriculture and Food Research*. https://www.researchgate.net/profile/William-Amponsah-2/publication/355437174_Response_of_chilli_pepper_to_different_irrigation_schedules_and_mulching_technologies_in_semi-arid_environments/links/62fa0ddcb8dc8b4403e47768/Response-of-chilli-pepper-to-different-irrigation-schedules-and-mulching-technologies-in-semi-arid-environments.pdf
22. Thomas Apusiga Adongo, Felix K. Abagale, **Wilson A. Agyare** (2021). Modelling and forecasting reservoir sedimentation of irrigation dams in the Guinea Savannah Ecological Zone of Ghana. *Water Practice & Technology*. https://doi.org/10.2166/wpt.2021.073
23. Felicia Danso, **Wilson Agyei Agyare**, Ato Bart-Plange (2021). Modelling rice yield from biochar-inorganic fertilizer amended fields. *Journal of Agriculture and Food Research*. https://doi.org/10.1016/j.jafr.2021.100123
24. Emmanuel Adekaldu, William Amponsah, Henry Oppong Tuffour, Michael Osei Adu, **Wilson Agyei Agyare** (2021). Response of chilli pepper to different irrigation schedules and mulching technologies in semi-arid environments. *Journal of Agriculture and Food Research*. https://doi.org/10.1016/j.jafr.2021.100222
25. **Wilson Agyei Agyare**, Eliasu Salifu (2021). Spatiotemporal Analysis of Potential Impact of Soil Erosion on Maize and Groundnuts Yield in Northern Ghana. *Journal of Applied Geospatial Information*. https://doi.org/10.30871/jagi.v5i2.3271
26. Raymond Aabeyir, Stephen Adu-Bredu, **Wilson Agyei Agyare**, Michael J. C. Weir (2020). Allometric models for estimating aboveground biomass in the tropical woodlands of Ghana, West Africa. *Forest Ecosystems*. https://doi.org/10.1186/s40663-020-00250-3
27. Nathaniel Parker, **Wilson Agyei Agyare**, Enoch Bessah, Louis Amegbletor (2020). Biochar as a substitute for inorganic fertilizer: Effects on soil chemical properties and maize growth in Ghana. *Journal of Plant Nutrition*. https://doi.org/10.1080/01904167.2020.1867577
28. **Wilson Agyei Agyare** (2020). Dark red kidney bean (Phaseolus vulgaris L.) protein hydrolysates inhibit the growth of oxidizing substances in plain yogurt. *Journal of Agriculture and Food Research*. https://www.sciencedirect.com/science/article/pii/S2666154320300430
29. Raymond Aabeyir, **Wilson Agyei Agyare** (2020). Woodland access arrangement for charcoal production and its influence on woodland degradation in Kintampo Municipality, Ghana. *Scientific African*. https://doi.org/10.1016/j.sciaf.2020.e00572
30. Thomas A. Adongo, Nicholas Kyei-Baffour, Felix K. Abagale, **Wilson A. Agyare** (2019). Assessment of reservoir sedimentation of irrigation dams in northern Ghana. *Lake and Reservoir Management*. https://doi.org/10.1080/10402381.2019.1659461
31. **WA Agyare** (2019). Effect of soil and water conservation methods on maize performance and soil water

retention in Northern region of Ghana. *International Journal of Scientific and Technology Research*. https://www.researchgate.net/profile/Eliasu-Salifu/publication/332140385_Effect_of_soil_and_water_conservation_methods_on_maize_performance_and_soil_water_retention_in_northern_region_of_Ghana/links/619633d8d7d1af224b01c40c/Effect-of-soil-and-water-conservation-methods-on-maize-performance-and-soil-water-retention-in-northern-region-of-Ghana.pdf

32. Isaac Larbi, Gerald Forkuor, Fabien C.C. Hountondji, Faculté d'Agronomie, Université Parakou, Benin, **Wilson Agyei Agyare**, Daouda Mama, Institut National de l'Eau, Université d'Abomey-Calavi, Cotonou, 03, Benin (2019). Predictive Land Use Change under Business-As-Usual and Afforestation Scenarios in the Vea Catchment, West Africa. *International Journal of Advanced Remote Sensing and GIS*. https://doi.org/10.23953/cloud.ijarsg.416
33. T.A. Adongoa, **W.A. Agyare**, F.K. Abagalec, N. Kyei-Baffour (2019). Spatial soil loss estimation using an integrated GIS-based revised universal soil loss equation (RUSLE) in selected watersheds in northern Ghana. *International Journal of Engineering Science and Technology*. https://doi.org/10.4314/ijest.v11i4.6
34. DS MacCarthy, **WA Agyare** (2018). Evaluation of soil properties of the Sudan Savannah ecological zone of Ghana for crop production. *Ghana Journal of Agricultural Science*. https://www.ajol.info/index.php/gjas/article/download/179646/169004/0
35. Yawovi S. Koglo, Thomas Gaiser, **Wilson A. Agyare**, Jean M. Sogbedji, Kokou Kouami (2018). Implications of some major human-induced activities on forest cover using extended change matrix quantity and intensity analysis based on historical Landsat data from the Kloto District, Togo. *Ecological Indicators*. https://doi.org/10.1016/j.ecolind.2018.09.042
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37. Isaac Larbi, Fabien C. C. Hountondji, Thompson Annor, **Wilson Agyei Agyare**, John Mwangi Gathenya, Joshua Amuzu (2018). Spatio-Temporal Trend Analysis of Rainfall and Temperature Extremes in the Vea Catchment, Ghana. *Climate*. https://doi.org/10.3390/cli6040087
38. Patricia Oteng-Darko, Nicholas Kyei-Baffour, Emmanuel Otoo, **Wilson Agyei Agyare** (2017). Growing Seed Yams in the Air: the Agronomic Performance of Two Aeroponics Systems Developed in Ghana. *Sustainable Agriculture Research*. https://doi.org/10.5539/sar.v6n3p106
39. Raymond Aabeyir, **Wilson Agyei Agyare**, Michael J. C. Weir, Stephen Adu-Bredu (2017). Multi-Level Land Cover Change Analysis in the Forest-Savannah Transition Zone of the Kintampo Municipality, Ghana. *Journal of Natural Resources and Development*. https://doi.org/10.5027/jnrd.v7i0.01
40. Raymond Aabeyir, Stephen Adu-Bredu, **Wilson Agyei Agyare**, Michael J.C. Weir (2016). Empirical evidence of the impact of commercial charcoal production on Woodland in the Forest-Savannah transition zone, Ghana. *Energy Sustainable Development/Energy for sustainable development*. https://doi.org/10.1016/j.esd.2016.03.005
41. Kotei, Richard, **Agyare, Wilson Agyei**, Kyei-Baffour, Nicholas, Atta-Darkwa, Thomas, TakyiAtakora, Eric (2016). Estimation of Flow-Duration and Low-Flow Frequency Parameters for the Sumanpa Stream at Mampong-Ashanti in Ghana for the 1985-2009 Period. *American Scientific Research Journal for Engineering, Technology, and Sciences (Global Society of Scientific Research and Researchers)*.
42. **W Agyare** (2015). An evaluation of economic water productivity and water balance of dry season irrigated rice under different irrigation regimes in northern Ghana. *African Journal of Applied Research*. https://ajaronline.com/index.php/AJAR/article/view/77
43. **WA Agyare** (2015). Effect of heat stress on two maize varieties under irrigation in Northern Region of Ghana. *Int. J. Biol. Chem. Sci*. https://scholar.google.com/scholar?cluster=8591779587027510151&hl=en&oi=scholarr
44. Andrew Manoba Limantol, Abel Afouda, B. Lenartz, **Wilson Agyei Agyare** (2015). Impact of climate change on Vea Catchment and irrigation scheme in Upper East Region of Ghana. *2015 AGU Fall Meeting*.
45. **WA Agyare** (2015). Modelling heat stress effect on two maize varieties in Northern Region of Ghana.

Global Advanced Research Journal of Agricultural Science. https://scholar.google.com/scholar?cluster=12717963189496833751&hl=en&oi=scholarr

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47. **Agyei Agyare Wilson**, Kwadwo Asare Isaac, Sogbedji Jean, Attuquaye Clottey Victor (2014). Challenges to maize fertilization in the forest and transition zones of Ghana. *African Journal of Agricultural Research*. https://doi.org/10.5897/ajar12.1698

48. Joseph Sarkodie-addo, EYH Bobobee, **WA Agyare** (2014). Mechanical cassava harvesting as influenced by seedbed preparation and cassava variety. *Applied Engineering in Agriculture*. https://elibrary.asabe.org/abstract.asp?aid=44938

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53. **WA Agyare** (2013). Landuse Changes and their impacts on the hydrology of Sumampa catchment in Mampong-Ashanti, Ghana. Int. *Journal of Engineering Research & Technology*. https://scholar.google.com/scholar?cluster=6338988606790631070&hl=en&oi=scholarr

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58. DS MacCarthy, **WA Agyare**, SGK Adiku (2013). Spatial variability of some soil chemical and physical properties of an agricultural landscape. *West African journal of applied ecology*. https://go.gale.com/ps/i.do?id=GALE%7CA366729640&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=08554307&p=AONE&sw=w

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difference vegetation index derived from the SEBAL for the Atankwidi and a farm sub catchments in Ghana. *J. Eng. Appl. Sci*. https://scholar.google.com/scholar?cluster=2185981260362680294&hl=en&oi=scholarr

61. BK Amegashie, C Quansah, **AW Agyare**, M Bonsu, SN Odai (2012). On-Site Effects and Cost of Fertility Erosion from Five Small Reservoir Catchments in the Upper East Region of Ghana. *Journal of Science and Technology (Ghana)*. https://doi.org/10.4314/just.v32i2.10
62. **Wilson Agyei Agyare** (2011). Design and evaluation of a simple PVC drip irrigation system using akposoe maize variety as a test crop. *Kwame Nkrumah University of Science and Technology*. https://www.researchgate.net/profile/Evans-Asenso/publication/352887684_Design_and_Evaluation_of_Simple_PVC_Drip_Irrigation_System_Using_Akposoe_Maize_Variety_as_a_Test_Crop/links/60e3111c92851ca944aa2369/Design-and-Evaluation-of-Simple-PVC-Drip-Irrigation-System-Using-Akposoe-Maize-Variety-as-a-Test-Crop.pdf
63. **WA Agyare** (2011). Estimating actual evapotranspiration using the SEBAL model for the Atankwidi and Afram catchments in Ghana. *Int J Appl Agric Res*. https://scholar.google.com/scholar?cluster=15636893929474425 04&hl=en&oi=scholarr
64. Bright K. Amegashie, Charles Quansah, **Wilson A. Agyare**, Lulseged Tamene, Paul L. G. Vlek (2011). Sediment-bound nutrient export from five small reservoir catchments and its implications for the Sudan savanna zone of Ghana. *Lakes & Reservoirs Science Policy and Management for Sustainable Use*. https://doi.org/10.1111/j.1440-1770.2011.00459.x
65. PY Andoh, **WA Agyare**, J Dadzie (2011). Selection of an ideal mesh size for the cracking unit of a palm kernel processing plant. *Journal of Science and Technology (Ghana)*. https://doi.org/10.4314/just.v30i3.64623
66. Afua Adwubi, Bright Kofi Amegashie, **Wilson Agyei Agyare**, Lulseged Tamene, Samuel Nii Odai, Charles Quansah, Paul Vlek (2009). Assessing sediment inputs to small reservoirs in Upper East Region, Ghana. *Lakes & Reservoirs Science Policy and Management for Sustainable Use*. https://doi.org/10.1111/j.1440-1770.2009.00410.x
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70. **W. A. Agyare**, S. J. Park, P. L. G. Vlek (2007). Artificial Neural Network Estimation of Saturated Hydraulic Conductivity. *Vadose Zone Journal*. https://doi.org/10.2136/vzj2006.0131
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AND SAVANNA ZONES. *Experimental Agriculture*. https://doi.org/10.1017/s0014479702003010

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Book chapters 2

1. Shaibu Abdul-Ganiyu, Nicholas Kyei-Baffour, **Wilson Agyei Agyare**, Wilson Dogbe (2017). Evaluating the Effect of Irrigation on Paddy Rice Yield by Applying the AquaCrop Model in Northern Ghana. *Science for sustainable societies*. https://doi.org/10.1007/978-981-10-4796-1_6

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