CURRICULUM VITAE

ALEXANDER WIREKO KENA, PhD.

KNUST | DEPARTMENT OF CROP AND SOIL SCIENCES, FACULTY OF AGRICULTURE, COLLEGE OF AGRICULTURE AND NATURAL RESOURCES, KUMASI PMB, KUMASI, GHANA

Table of Contents

CURRICULUM VITAE

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1. EDUCATIONAL BACKGROUND

a. (i) Academic degrees earned with dates

Table 1.1: Academic Qualifications with dates

Academic Qualifications	Date
Doctor of Philosophy (Plant Science), South Dakota State University, Brookings – USA	May 2017
Master of Science (Agronomy, Plant Breeding option), University of Ibadan, Ibadan – Nigeria	November 2011
Bachelor of Science in Agriculture, Kwame Nkrumah University of Science and Technology, Kumasi-Ghana	June 2008

b. (i) Institutions attended with dates

Table 1.2: Institutions attended with dates

Name of Institution	Date
South Dakota State University, Brookings – USA	Aug. 2013 to May 2017
University of Ibadan, Ibadan – Nigeria	Jan. 2010 to Nov. 2011
Kwame Nkrumah University of Science and Technology, Kumasi-Ghana	Aug. 2004 to Jun. 2008

(ii) International Awards

Table 1.3: International Awards

Fellowships	Date
Scholars exchange program, 22-month position as Research Associate IV at Colorado State University, Fort Collins, CO – USA	Jun. 2022 to Dec. 2024
The African Orphan Crops Consortium (AOCC) fellowship to attend the African Plant Breeding Academy (Class IV), University of California, Davis, CA, USA	May 2018 to Dec. 2019
Graduate Research/Teaching Assistantship, South Dakota State University, Brookings – USA	Aug. 2013 to May 2017
The Alliance for a Green Revolution in Africa (AGRA) scholarship award – MSc Scholarship, University of Ibadan, Ibadan – Nigeria	Jan. 2010 to Nov. 2011

2. UNIVERSITY TEACHING AND/ OR RESEARCH EXPERIENCE

a. (i) Academic ranks / Position(s) held

Table 2.1: Academic ranks / Position held

Academic ranks / Position held	Date
Senior Lecturer, Department of Crop and Soil Sciences, Faculty of Agriculture	August 01, 2022, to date
Lecturer, Department of Crop and Soil Sciences, Faculty of Agriculture	August 01, 2018, to July 31, 2022
Assistant Lecturer, Department of Crop and Soil Sciences, Faculty of Agriculture (Granted leave of absence to pursue my doctoral study from August 2013 to August 2017)	August 31, 2012, to July 31, 2018

ii. Teaching responsibilities since first appointment (2012)

Table 2.2: Postgraduate Level Courses Taught

Postgraduate Level		
Courses Taught	**Department**	**Date**
CS 558: Advanced Plant Biotechnology **(MPhil & PhD)**	Department. of Crop and Soil Sciences	2012 - date
CS 586: Quantitative Genetics for Plant Breeding **(MPhil & PhD)**	Department. of Crop and Soil Sciences	2018 - date
CS 582: Quantitative Methods **(MPhil & PhD)**	Department. of Crop and Soil Sciences	2018 - date
CS 565: Research Methods **(MPhil & PhD)**	Department. of Crop and Soil Sciences	2021 - date

Table 2.3: Undergraduate Level Courses Taught

Undergraduate Level		
Courses Taught	**Department**	**Date**
CS 159: Genetics	Department. of Crop and Soil Sciences	2012 to date
AGB 151: Introduction to Agricultural Biotechnology	Department. of Crop and Soil Sciences	2017 to 2020
AGB 155: Fundamental Laboratory Techniques	Department. of Crop and Soil Sciences	2017 to 2020
CS 253: Principles of Plant Breeding	Department. of Crop and Soil Sciences	2012 to 2020
AGB 253: Introduction to Molecular Genetics	Department. of Crop and Soil Sciences	2017 to date
AGB 254: Methods in Molecular Biology	Department. of Crop and Soil Sciences	2013 to 2020
AGB 258: Plant Genetic Resources Conservation	Department. of Crop and Soil Sciences	2013 to 2020
AGB 353: Techniques in Molecular Genetics	Department. of Crop and Soil Sciences	2017 to date
AGB 352: Plant biotechnology	Department. of Crop and Soil Sciences	2017 to 2020
CS 458: Plant Biotechnology	Department. of Crop and Soil Sciences	2013 to date
CS 461: Plant Breeding	Department. of Crop and Soil Sciences	2017 to date

Service course taught

Table 2.3: Service Courses Taught

Courses Taught	Department	Date
MIP 559: IP on Biotechnology, Public Health, Food Security, Plant Breeder's Right **(MPhil)**	Department. of Agricultural and Biosystems Engineering	2019 - date
HORT 558: Research Methods **(MPhil)**	Department. of Horticulture (IDL)	2021 to date

b. Supervision of students' project work/theses/research

Summary of students' project work/theses/research

- Ten (10) PhD Students (8 completed; 2 ongoing)
- Nine (9) MPhil Students (8 completed; 1 ongoing)
- Nineteen (19) BSc. Dissertations (19 completed)

i. Postgraduate supervision since last promotion

2.4: PhD Supervision

S/N	Name of Student	Research Topic	Academic Year
		Ph.D. Supervision	
1	Manfred Bondzie Ewool	Studies of genetic control and development of Pro-Vitamin A maize hybrids in Ghana	2018 Completed
2	Oppong-Sekyere Daniel	Inheritance and genetic analysis of drought and late leaf spot (*Phaeoisariopsis personata*) disease tolerance in groundnut (*Arachis hypogaea* L.)	2019 Completed
3	Amoah Nana Kofi Abaka	Breeding for tolerance to salt stress in rice using a new tolerance donor, *Madina koyo*	2019 Completed
4	Asungre Anabire Peter	Farmer preference, combining ability and yield stability for high grain Fe and Zn content of early maturing Pearl Millet [*Pennisetum glaucum*, (L), R. Br] genotypes in Ghana	2022 Completed
5	David Appiah-Kubi	Breeding for drought tolerant and low-p common bean varieties in Ghana	2023 Completed
6	Emmanuel Yaw Owusu	Development of extra-early maturing, *Striga gesnerioides* (L.) Wild) and *Aphis craccivora* (Koch) resistance cowpea (*Vigna unguiculata* (L.) Walp) varieties using marker-assisted backcrossing	2023 Completed
7	Patrick Attamah	Pyramiding of two different sources of *Aphid* resistance genes into farmer-preferred cowpea varieties in Ghana	2023 Completed
8	Ali Koura Abdoulaye	Breeding cowpea [*Vigna unguiculata* (L)Walp.] for resistance to *Striga gesneroides* using molecular tools	2024 Completed
9	Godfried Ohene-Mensah	Alternaria leaf spot disease on cabbage (*Brassica oleracea* var. Capitata L.), and its management in the semi-deciduous forest zone of Ghana.	2020/2021 Ongoing
10	Richard Yaw Agyare	Assessment of genetic diversity and agronomic performance of fonio (*Digitaria* exilis (Kippist) Stapf) accessions in Ghana	2021/2022 Ongoing

Table 2.5: MPhil Supervision

S/N	Name of Student	Research Topic	Academic Year
MPhil Supervision			
1	Afua Gyaamah Gyima	Evaluation of early maturing single cross yellow maize (*Zea mays* L.) Hybrids under three different nitrogen regimes in the forest-savannah transition ecozone of Ghana	2018 Completed
2	Adamou Baye Issoufa	Evaluation of yellow maize hybrids for yield performance under three nitrogen application rates in forest ecological zone	2018 Completed
3	Mariama Moussa Miaga	Evaluation of extra early maize hybrids for grain yield and other agronomic traits under three nitrogen levels in semi deciduous forest zone	2018 Completed
4	Seydou Konde	Evaluation of extra-early maturing white maize hybrids for grain yield performance under three nitrogen levels in the guinea savanna zone of Ghana	2018 Completed
5	Andrews Appiah	Genetic diversity among a collection of Okra (*Abelmoschus esculentus* L. Moench) genotypes in Ghana using morphological and molecular Markers	2021 Completed
6	Edwyn Kofi Yankson	Assessment of genetic gain for yield and yield related traits of released rice varieties in Ghana	2022 Completed
7	Naomi Adoma Fosu	Combining ability and characterization of yellow maize (*Zea mays* L.) inbred lines for low soil nitrogen tolerance	2024 Completed
8	George Obeng	Genetic analysis of white maize (*Zea mays* L.) inbred lines under low soil nitrogen	2024 Completed
9	Japheth Zacharia Neindow	Genetic variation for drought tolerance and oil quality traits in a groundnut population using sensing technologies	2019/2020 Ongoing

ii. Undergraduate Supervision

Table 2.6: Supervision of student project work/dissertation

S/N	Name of Student	Research Topic	Academic Year
Undergraduate Supervision			
1	Antwi, Samuel Tieku, Benjamin Asamoah, Hagar Kyeremateng Anokye, Bismark	Elimination of Cassava Mosaic Begomovirus from diseased Plants by meristem-tip culture	2018 completed
2	Agnes, Achiaa Bonsu Odartey, Lante Maxwell John Atoklo Frimpong, Emmmanuel Maame Esi Baidoo	Identification of allele-specific marker for fruit size in tomato (*Solanum lycopersicum* L.)	2019 Completed
3	Senanu Ama Wuaku Whyte, Terik Duah, Samuel Appiagyei	Amenability of cassava (*Manihot esculenta* Crantz) meristem-tips to Cryopreservation	2019 Completed

	Appiadu Prince Arhin, Waxwell Nana Akosua Boateng		
4	Opoku Agyemang Evans Sarah Appiatu Atoah Daniel Opoku Kwadwo Nketia Amposah Gloria	Identification of allele-specific markers associated with endosperm sucrose content in corn	2019 Completed
5	Ofosuhene Grace-Sammuella Emmanuella E.N. Adams Aheto Afeke Cyril	Identification of recombinant tomato genotypes in a cherry/pectomech cross	2019 Completed
6	Opoku-Antwi Clifford Kennedy Kumangtum Yeboah Effah Samuel Enchill Patrick Mary Boakye	Producing virus-free cassava plantlets via cryotherapy for in-vitro storage	2019 Completed
7	Gavor Peter Ankomah Edward Kwagbenu Rita Delali Kwandoh Enock Sekyim Ohue-Inegbenoise Onahososse Oseabhi	Micropropagation of plumular tissue explants of *Cocos nucifera* L.	2020 Completed
8	Ahiagah Divine Osei-Obeng Portia Edue Kandifuo Ewurama Moses Jones De-Graft Junior Sosu-Dees Mawuli Kwabena	Inheritance of black seed coat colour in cowpea *(Vigna unguiculata (*L.) Walp.)	2020 Completed
9	Owusu-Ansah Kwesi Tawiah Abrahams Desiree Brenda Afful Henry Sarbeng Sarfo Prince Appiagyei Ama Boatemaa	Validation of candidate gene controlling black seed coat colour in cowpea (*Vigna unguiculata (*L.) Walp.)	2020 Completed
10	Sasraku Adams Danquah David Kweku Debrah-Boateng Randy Maigah Mariama Ibrahim Afrifa Christiana E. O. Sonia	Determining the totipotent capacity of different explant sources in *Brassica oleracea* var. Capitata	2020 Completed
10	Armah Patience Dede Adjei-Yeboah Stephen Mensah Andoh William Ntiamoah Michael Kantata Sarfo Kwame	Rapid *in vitro* multiplication of plantain (*Musa sp.*) propagules	2020 Completed
11	Donbeinaa K Cornelius Amenyah Kabutey Enoch Osei Owusu Peace Ampomah Osei Juliet Gyaama	Introgression of a sugary gene from Sweet Corn into Obatanpa using recurrent backcrossing	2020 Completed

	Bamfo Oti Ishmael		
12	Ajibola Mutiu Dogbey Foster Nyamekye Gloria Otabia Patience Owiredu Daniel	Validation of markers associated with endosperm Sucrose content in maize	2020 Completed
13	Everest Antuona George Sakyi Margaret Mensah Victoria Nyamekye Gabriel Ayornu Ofosu Nana Michael Wilson Joshua Jr Tenadu Mensah Eugene Owusu Kwakye Edward Abubakari Tijani Mohammed Apafloe Nungmetey Benjamin	Morphological characterization of yellow maize (*Zea mays* L.) inbred lines	2021 Completed
14	Akandwanaho Wisdom Naapoal Charles Agbola Selase Paul Frimpong Daniel	Molecular screening for the presence or absence of tomato chlorosis virus (ToCv) in the Ashanti region	2022 Completed
15	Michael Obeng Ebenezer Ogoe Stephen Barnie Amoako	Development of web apps to enhance teaching and learning of Molecular Genetics and Systematics	2022 Completed
16	Abban Gordon Dahaman Gloria Dwobeng Samuel Yeboah Gyegyiri Edward Junior Opare Larbi Princess Oppong Asamoah Junior Shiki Gideon	Gene action and heterotic grouping of early maturing yellow maize inbred lines under low and optimum soil nitrogen	2022 Completed

17	Lucas ASARE ADJEI Evans Bondoug SEBIG Michael BENSON Gerald DONKOR Edith Adwoa AGYIRI Lawrencia Naa Kai AKPOR Williams YEBOAH Lordina OPOKU MENSAH Godwin Amenuveve YAWDEM	Awn formation and development in cereals: connecting the dots	2024 Completed
18	Felix ANKRAH Yakubu BATONG Bernard DONKOR Isaac Agyei Marfo KYEI Obed OSEI KOFI Michael ANNOR Suweiba YUSSIF Kwesi DONKOH David BOATENG Eugene YEBOAH	Implementing scalable tools, technologies, and methods for modernizing field experiments at KNUST	2024 Completed
19	Richmond Jagri Neinaja Sharif Amponsah Kenneth Osei Poku Rudolf Nana Gyekye Raphael Osei-Boakye Okyere Serwaah Adelaide Agyemang Eunice Eshun Deliver Nsowah Alfred Junior Senyegah Raymond Asante	How accurate are trained computer vision models for high-throughput phenotyping in cowpea?	2024 Completed

c. Other professionally related experience(s)

March 5, 2024 to Date: **Project Integration Lead**, Green Evolution Project, Colorado State University, Fort Collins, CO, USA.

October 1, 2024 to Date: **Principal Investigator**, Breeding Analytic Hub, Innovation Lab for Crop Improvement (ILCI – Phase II), Cornell University, Ithaca, NY, USA

June 20, 2022, to Sept. 29, 2024: **Program Manager**, Trait Discovery Objective Area of Inquiry (AOI), ILCI, Cornell University, Ithaca, USA

January 1, 2021, to August 2023: **Assistant Faculty Examinations Officer**, Faculty of Agriculture, KNUST.

Dec. 1, 2019, to Dec. 31, 2020:	**Faculty Coordinator for Marking MCQs**, Faculty of Agriculture, KNUST.
Feb. 1, 2019, to Nov. 30, 2019:	**Assistant Faculty Coordinator for Marking MCQs**, Faculty of Agriculture, KNUST.
Aug. 30, 2019, to August 2022:	**Postgraduate Coordinator**, Department of Crop and Soil Sciences, KNUST.
Sept. 15, 2017, to Date:	**Patron**, Association of Agricultural Biotechnology Students (AABS) KNUST.
August 31, 2012, to Date:	**Hall fellow**, University Hall, KNUST.
Nov. 5, 2018 – date:	**External Assessor**, University for Development Studies, Tamale
March 5, 2020 to Date:	**Reviewer,** Ghana Journal of Agricultural Science (GJAS), Accra
April 18, 2019:	**Speaker**, Career Counselling Day, Fijai Senior High School, Takoradi.
Nov. 12, 2020 to July 7, 2021:	**Chairman/member**, Committee for Development of a Start-up Business plan (1D1S) for the Department of Crop and Soil Sciences, KNUST.
Sept. 18 - 30, 2020 :	**Chairman/member**, Committee for selecting MPhil applicants for admission into postgraduate degree programmes in the Department of Crop and Soil Sciences, KNUST.
October 7, 2020:	**Member**, Accreditation Committee, Departement of Crop and Soil Sciences, KNUST.
Sept. 14, 2020 to Oct. 30, 2020:	**Secretatry/member** of Committee for industry and alumni relations of the Faculty of Agriculture, KNUST
Aug. 30, 20219 to Sep. 30, 2019:	**Secretary/member**, Committee for development of IDL programme in MPhil Crop Science in the Department of Crop and Soil Sciences, KNUST

Jun. 28, 2019 to Aug. 1, 2019: **Secretary/member**, Committee for the development of curriculum for Ph.D. Plant Breeding programme in the Department of Crop and Soil Sciences, KNUST.

May 5, 2021: **External Assessor**, Panel for Appointments and Promotions Board, Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, Kumasi.

3. DETAILS OF RESEARCH/PROJECTS UNDERTAKEN

a. Research conducted (topics with dates)

Research studies conducted since my last appointment are presented in Tables 3.1 and 3.2 below.

Table 3.1. Research conducted - On-going

S/N	Title of Research	Date
1	Combining ability and characterization of yellow maize (*Zea mays* L.) inbred lines for low soil nitrogen tolerance	Jan. 2022 to Date
2	Development of high yielding maize hybrids with tolerance to drought and low soil nitrogen	Jan. 2022 to Date
3	Developing open-source software for crop agnostic pangenome-enabled breeding	Mar. 2024 to Date
4	Developing crop-agnostic tools for genetic prediction of traits given non-linear effects and novel variants in breeding programs	Sept. 2024 to Date
5	Adapting existing "elite gene pool design" methods to facilitate the development of new breeding germplasm with required traits from cereal systems	Sept. 2023 to Date
6.	Refining and deploying crop-agnostic tools on goal-directed hypothesis-driven scientific method (GoHy) related to trait discovery and delivery	Sept. 2024 to Date
7	Identifying target traits for bird resistance in sorghum	Sept. 2024 to Date

Table 3b. Research conducted – Completed

S/N	Title of Research	Date
1	Studies of genetic control and development of Pro-Vitamin A maize hybrids in Ghana	Jan. 2013 to Sept. 2017
2	Inheritance and genetic analysis of drought and late leaf spot (*Phaeoisariopsis personata*) disease tolerance in groundnut (*Arachis hypogaea* L.)	Aug. 2013 to Dec. 2017
3	Breeding for tolerance to salt stress in rice using a new tolerance donor, *Madina koyo*	Jan. 2014 to Feb. 2018
4	Pyramiding of two different sources of Aphid resistance genes into farmer-preferred cowpea varieties in Ghana	Jan. 2015 to Sept. 2021
5	Farmer preference, combining ability and yield stability for high grain fe and zn content of early maturing pearl millet [*Pennisetum glaucum*, (L), R. Br] genotypes in Ghana	Aug. 2017 to Sept. 2021
6	Development of extra-early maturing, *Striga gesnerioides* (L.) Wild) and *Aphis craccivora* (Koch) resistance cowpea (*Vigna unguiculata* (L.) Walp) varieties using marker-assisted backcrossing	Sept. 2018 To May 2022

7	Assessment of genetic gain for yield and yield related traits of released rice varieties in Ghana	Jul. 2020 to Jul. 2021
8	Modeling groundnut (*Arachis hypogaea* L.) performance under drought conditions	Jun. 2017 to May 2018
9	Silencing seed dormancy genes to mitigate risk of transgene flow to weedy rice	Sept. 2013 to Aug. 2017
10	Assembling seed dormancy genes into a system identified their effects on seedbank longevity in weedy rice	Sept. 2014 to Aug. 2018
11	Colchicine-enabled genomic doubling in oil palm (*Elaeis guineensis* Jacq.)	Sept. 2016 to Aug. 2020
12	Molecular and phenotypic characterization of cassava (*Manihot esculenta* Crantz) germplasm in the semi-deciduous forest ecology of Ghana	Jun. 2017 to May 2018
13	Mode of inheritance and combining ability of oleic acid content in groundnut (*Arachis hypogaea* L.)	Sept. 2017 to Aug. 2020
14	Heterotic grouping of tropical and temperate yellow maize (*Zea mays* L.) inbred lines for hybrid cultivar development	Sept. 2020 to Sept. 2021
15	Breeding for drought tolerant and low-p common bean varieties in Ghana	Aug. 2019 to Dec. 2023
16	Breeding Cowpea [*Vigna unguiculata* (L) Walp.] for resistance to *Striga gesneroides* using molecular tools	Dec. 2020 to Oct. 2024
17	Developing a user-friendly R package and web application for designing machine- and human-readable labels for agricultural research	Mar. 2023 to Mar. 2024

4. CONFERENCES/ SEMINARS AND WORKSHOPS AT WHICH PAPERS WERE READ

Table 4.1: List of Conferences at which papers read

S/N	Conference/ seminar	Papers presented	Date
1	American Society of Plant Biologists Midwestern Section Annual Meeting, at South Dakota State University, Brookings, SD, USA	**Alexander Kena**, Heng Ye, Jiuhuan Feng, and Xingyou Gu. 2016. Mutagenesis of genes associated with seed dormancy in rice (*Oryza sativa* L.) using two CRISPR/Cas9 multiplex systems.	March 19 - 20, 2016
2	ASA-CSSA-SSSA International Annual Meeting, at Minneapolis Convention Center, Minneapolis, MN, USA	**Alexander Kena**, Heng Ye, Jiuhuan Feng, Fatma Ismail and Xingyou Gu. 2015. Silencing seed dormancy genes to mitigate risk of transgene flow to weedy rice	Nov. 15 – 18, 2015
3	Artemis Project, Annual Meeting and Workshop, Arusha, Tanzania	**Alexander Kena,** and Geoff Morris. 2022. Identifying specific areas for technological innovations in phenotyping in cowpea and sorghum.	Sept. 15 – 22, 2022

4	ILCI Annual Meeting, at Dakar (Saly), Senegal.	**Alexander Kena,** Clara Cruet Burgos, Geoff Morris. 2022. Using R to visualize the predictions for your trait hypotheses.	Oct. 2 – 8, 2022
5	Artemis Project, Annual Meeting and Workshop, Caly, Colombia	**Alexander Kena,** and Geoff Morris. 2022. Validating the accuracy of trait-based models trained for HTP field phenotyping of stand count and pod count in cowpea.	Oct. 2 – 5, 2023
6	ILCI Annual Meeting, at San Jose, Costa Rica	**Alexander Kena,** and Thierry Tovignan. 2024. qrlabelr: Companion Software to Aid Digital Data Capture	Feb. 25 – Mar. 1, 2024
7	ILCI Annual Meeting, at San Jose, Costa Rica	**Alexander Kena,** Clara Cruet Burgos, Geoff Morris. 2024. Better Breeding Operations with qrlabelr.	Feb. 25 – Mar. 1, 2024
8	ILCI Trait Discovery Breeding Excellence Cohort_2024 for Africa NARs breeders, at Fort Collins, CO and Manhattan, KS, USA.	**Alexander Kena.** 2024. Introducing panGenomeBreedr: R package for pangenome-enabled breeding	Jul. 22 – Aug. 4, 2024

5. LIST OF ALL PUBLICATIONS

Publications with exact references

1. Adu Amoah, R., Akromah, R., Asibuo, J.Y., **Kena**, **A.W.**, Asare, K.B., Lamptey, M., Adu Gyamfi, B., 2020. Mode of inheritance and combining ability of oleic acid content in groundnut (*Arachis hypogaea* L.). Ecological Genetics and Genomics 17, 100064. https://doi.org/10.1016/j.egg.2020.100064
2. Adu, B.G., Yeboah, A., Akromah, R., Bobobee, E., Amoah, S., **Kena**, **A.W.**, Amoah, R.A., 2020. Whole genome SNPs and phenotypic characterization of cassava (*Manihot esculenta* Crantz) germplasm in the semi-deciduous forest ecology of Ghana. Ecological Genetics and Genomics 100068. https://doi.org/10.1016/j.egg.2020.100068
3. Adu, G.B., Akromah, R., Abdulai, M.S., **Kena**, **A.W.**, Tengan, K.M.L., Alidu, H., 2013. Assessment of Genotype by Environment interactions and Grain Yield Performance of Extra-Early Maize (*Zea mays* L .) Hybrids. Journal of Biology, Agriculture and Healthcare 3, 7–15.
4. Agyare, R.Y., Kaczmarek, T., Leclerc, C., Puozaa, D.K., Tengey, T.K., Bonsu, S.K., Kombiok, J.M., Causse, S., Guillerminet, T., **Kena**, **A.W.,** Adjebeng-Danquah, J., Barnaud, A., Billot, C., Akromah, R., 2024. Revealing Ghana's unique fonio genetic diversity: leveraging farmers knowledge for sustainable conservation and breeding strategies. Genet Resour Crop Evol. https://doi.org/10.1007/s10722-024-01974-9
5. Ali Koura, A., Wireko **Kena**, **A.**, Annor, B., Adejumobi, I.I., Maina, F., Maazou, A.-R.S., Razakou, I.B.Y.A., Attamah, P., Kusi, F., Boukar, O., Akromah, R., 2024. DArTseq-based genome-wide SNP markers reveal limited genetic diversity and highly structured population in assembled West African cowpea germplasm. Scientific African 23, e02065. https://doi.org/10.1016/j.sciaf.2024.e02065
6. Amoah, N.K.A., Akromah, R., **Kena**, **A.W.,** Manneh, B., Dieng, I., Bimpong, I.K., 2020. Mapping QTLs for tolerance to salt stress at the early seedling stage in rice (*Oryza sativa* L.)

using a newly identified donor 'Madina Koyo.' Euphytica 216, 156. https://doi.org/10.1007/s10681-020-02689-5

7. Annor, B., **Kena**, **A.W.,** Asare Bediako, K., 2023. Variability among West African okra (*Abelmoschus spp.* L.) accessions based on quantitative traits. Ecological Genetics and Genomics 26, 100156. https://doi.org/10.1016/j.egg.2022.100156
8. Appiah-Kubi, D., Asibuo, J.Y., Butare, L., Yeboah, S., Appiah-Kubi, Z., **Kena**, **A.W.,** Tuffour, H.O., Akromah, R., 2022. Heat Stress Tolerance: A Prerequisite for the Selection of Drought- and Low Phosphorus-Tolerant Common Beans for Equatorial Tropical Regions Such as Ghana. Plants 2022, Vol. 11, Page 2352 11, 2352. https://doi.org/10.3390/PLANTS11182352
9. Asare, S., **Kena**, **A.**, Amoah, S., Annor, B., Osekre, E.A., Akromah, R., 2023. Screening of maize inbred lines and evaluation of hybrids for their resistance to fall armyworm. Plant Stress 8, 100148. https://doi.org/10.1016/j.stress.2023.100148
10. Asungre, P.A., Akromah, R., **Kena**, **A.W.,** Gangashetty, P., 2022. Assessing the adaptability and stability of new pearl millet hybrids for grain yield, grain iron and zinc content in Ghana using AMMI analysis. Journal of Crop Science and Biotechnology 2022 1–14. https://doi.org/10.1007/S12892-022-00147-3
11. Asungre, P.A., Akromah, R., **Kena**, **A.W.,** Gangashetty, P., 2021a. Assessing production constraints, management and use of pearl millet in the Guinea Savanna Agro-ecology of Ghana. African Journal of Plant Science 15, 288–298. https://doi.org/10.5897/AJPS2021.2183
12. Asungre, P.A., Akromah, R., **Kena**, **A.W.,** Gangashetty, P., 2021b. Genotype by Environment Interaction on Grain Yield Stability and Iron and Zinc Content in OPV of Pearl Millet in Ghana Using the AMMI Method. International Journal of Agronomy 2021, 1–10. https://doi.org/10.1155/2021/9656653
13. Attamah, P., Kusi, F., **Kena**, **A.W.**, Awuku, F.J., Lamini, S., Mensah, G., Zackaria, M., Owusu, E.Y., Akromah, R., 2024a. Pyramiding aphid resistance genes into the elite cowpea variety, Zaayura, using marker-assisted backcrossing. Heliyon 10. https://doi.org/10.1016/j.heliyon.2024.e31976
14. Danful, R., Kassim, Y.B., Puozaa, D.K., Oteng-Frimpong, R., Rasheed, M.A., **Kena**, **A.W.**, Akromah, R., 2019. Genetics of Stay-Green Trait and Its Association with Leaf Spot Tolerance and Pod Yield in Groundnut. International Journal of Agronomy 2019, 1–11. https://doi.org/10.1155/2019/3064026
15. **Kena**, **A.**, Ogoe, E., Cruet-Burgos, C., Agyare, R., Adoma, N., Annor, B., Raymundo, R., Morris, G., 2024. Introducing *qrlabelr*: Fast user-friendly software for machine- and human-readable labels in agricultural research and development. Gates Open Research 8. https://doi.org/10.12688/gatesopenres.15268.1
16. **Kena**, **A.W.**, 2017. Silencing Seed Dormancy Genes to Mitigate Risk of Transgene Flow to Weedy Rice. Electronic Theses and Dissertations. South Dakota State University.
17. **Kena**, **A.W.**, Ewool, M.B., Akromah, R., 2021. Development of High Pro-Vitamin A Enriched Hybrid Maize Varieties in Ghana, in: Acquaah, G. (Ed.), Principles of Plant Genetics and Breeding. John Wiley and Sons, West Sussex, pp. 232–235.
18. Koura, A.A., **Kena**, **A.W.**, Annor, B., Adejumobi, I.I., Sayadi Maazou, A.-R., Awuku, F.J., Attamah, P., Boukar, O., Richard, A., 2024. Genome-wide association studies reveals new candidate genes associated with resistance to *Striga gesneroides* in Cowpea [*Vigna unguiculata* (L.) Walp.] accessions from sub-Saharan Africa. Ecological Genetics and Genomics 32, 100267. https://doi.org/10.1016/j.egg.2024.100267

19. Obeng, J., Tuyee Awuah, R., **Kena**, **A.W.**, Armooh, B., 2021. Identification of an Aspergillus isolate with potential for biocontrol of Phytophthora palmivora, causal agent of black pod disease of cocoa. Journal of Crop Protection 10, 375–390.
20. Oteng-Frimpong, R., Kassim, Y.B., Danful, R., Akromah, R., **Kena**, **A.W.**, Forson, S., 2019. Modeling groundnut (*Arachis hypogaea* L.) performance under drought conditions. Journal of Crop Improvement 33, 125–144. https://doi.org/10.1080/15427528.2018.1542363
21. Owusu, E.Y., Kusi, F., **Kena**, **A.W.**, Akromah, R., Attamah, P., Awuku, F.J., Mensah, G., Lamini, S., Zakaria, M., 2022a. Genetic control of earliness in cowpea (*Vigna unguiculata* (L) Walp). Heliyon 8, e09852. https://doi.org/10.1016/J.HELIYON.2022.E09852
22. Owusu, E.Y., Kusi, F., **Kena**, **A.W.**, Akromah, R., Awuku, F.J., Attamah, P., Mensah, G., 2022b. Generation mean analysis of the key earliness related traits in cowpea (*Vigna unguiculata* (L.) Walp). Scientific African 17, e01289. https://doi.org/10.1016/J.SCIAF.2022.E01289
23. Owusu, E.Y., Kusi, F., **Kena**, **A.W.**, Akromah, R., Awuku, F.J., Attamah, P., Mensah, G., Lamini, S., 2022c. Parental evaluation, polymorphic loci marker survey and allelism study of earliness in cowpea (*Vigna unguiculata* (L.) Walp). Ecological Genetics and Genomics 25, 100146. https://doi.org/10.1016/J.EGG.2022.100146
24. Pipatpongpinyo, W., Korkmaz, U., Wu, H., **Kena**, **A.W.**, Ye, H., Feng, J., Gu, X.Y., 2019. Assembling seed dormancy genes into a system identified their effects on seedbank longevity in weedy rice. Heredity. https://doi.org/10.1038/s41437-019-0253-8
25. Savolainen, V., Clottey, V.A., Doubi, B.T.S., Konan, J.L., Quain, M., Bezeng, B.S., Logah, V., **Kena**, **A.W.**, A., Osekre, E.A., Atuah, L., Angui, C.M.V., Ameka, G., Turkson, B., Boatemaa, A., Anankware, J.P., Boafo, H.A., Agyei-Dwarko, D., Collins, C.M. (Tilly), 2020. Systems thinking creates opportunities for a circular economy and sustainable palm agriculture in Africa. Current Research in Environmental Sustainability. https://doi.org/10.1016/j.crsust.2020.05.001
26. Sovi, S., Adomako, K., Kyei, B., **Kena**, **A.W.**, Olympio, O.S., Aggrey, S.E., 2024. A comparative study of population structure and genetic diversity of commercial and indigenous chickens from different agro-ecological zones in Ghana using SilicoDArT and SNP markers. Gene 929, 148823. https://doi.org/10.1016/j.gene.2024.148823
27. Suza, W.P., **Kena**, **A.W.**, Akromah, R., Mugwanya, N., Zeller, M.F., 2018. Fear holds back gene-edited crops - educate the public. Nature 563, 626. https://doi.org/10.1038/d41586-018-07547-y

6. RECORD OF SERVICE TO THE COMMUNITY

Table 6.1: List of Services rendered to the Community

a. Service to the University	**Period**
i. Administrative experience	
Assistant Faculty Examinations Officer, Faculty of Agriculture, KNUST.	Jan. 1, 2021, to date
Faculty Coordinator for Marking MCQs, Faculty of Agriculture, KNUST.	Dec. 1, 2019, to Dec. 31, 2020

Assistant Faculty Coordinator for Marking MCQs, Faculty of Agriculture, KNUST	Feb. 1, 2019, to Nov. 30, 2019
Postgraduate Coordinator, Department of Crop and Soil Sciences, KNUST	Aug. 30, 2019, to date
Patron, Association of Agricultural Biotechnology Students (AABS) KNUST	Sept. 15, 2017, to date
Hall fellow, University Hall, KNUST	Aug. 31, 2012, to Date
ii. Statutory and non-statutory (Membership & positions held)	
Chairman	
Committee for Development of a Start-up Business plan (1D1S) for the Department of Crop and Soil Sciences, KNUST	Nov. 12, 2020, to July 7, 2021
Committee for selecting MPhil applicants for admission into postgraduate degree programs in the Department of Crop and Soil Sciences, KNUST	Sept. 18 - 30, 2020
Secretary	
Committee for industry and alumni relations of the Faculty of Agriculture, KNUST	Sept. 14, 2020, to Oct. 30, 2020
Committee for development of IDL program in MPhil Crop Science in the Department of Crop and Soil Sciences, KNUST	Aug. 30, 2019, to Sep. 30, 2019
Committee for the development of curriculum for Ph.D. Plant Breeding program in the Department of Crop and Soil Sciences, KNUST	Jun. 28, 2019, to Aug. 1, 2019
Member	
Accreditation Committee, Department of Crop and Soil Sciences, KNUST	Oct. 7, 2020
Tutorship/ Mentorship	
Academic Tutor, Faculty of Agriculture, KNUST.	
iii. Financial/ Material Resource Mobilization	
i. Financial Resources	
Grant Subaward, Green Evolution Project, in collaboration with Colorado State University, and funded by the Gates Foundation. **$240,000 .00**	Jan. 2025 to Sept. 2029

Grant Subaward, ILCI (Phase II), in collaboration with Cornell University, funded by the Feed The Future, USAID **$260,465.00**	Oct. 2024 to Sept. 2029
Student exchange program in collaboration with the University of Arkansas at Pine Bluff, USA, funded by 1890 Centre of Excellence for International Engagement and Development (CEIED) **US$ 11,171.00**	Jun.17 to Jul. 1, 2022
Total Financial Mobilization = US$ 511,636.00	
ii. Material Resource Mobilization	
Co-led BSc. Agriculture Class of 2008 to donate two (2) 75-inch Smart TV screens, TV wall mounts, HDMI and VGA splitter and cables, installation cables, other accessories, and laser pointer to the College of Agriculture and Natural Resources https://canr.knust.edu.gh/node/121 **GHC15,000**	Jul. 23, 2021
b. Service to National & International Communities	
Speaker, Career Counselling Day, Fijai Senior High School, Takoradi.	Apr. 18, 2019
Resource person, Improved MSc in Cultivar Development for Africa (IMCDA) Dissemination and Scale-Out Workshop, Southern Sun Hotel, Dar es Salaam, Tanzania	Jul. 2 - 4, 2019
Invited Speaker, University of California African Plant Breeding Academy (Class V).	May 21 - 23, 2022
Program Manager, Trait Discovery AOI, ILCI, Cornell University, Ithaca, NY, USA.	June 20, 2022, to Sept. 29, 2024
Principal Investigator, Breeding Analytic Hub**,** ILCI (Phase II), Cornell University, Ithaca, NY, USA.	Oct. 2024 to Sept. 2029
Project Integration Lead, Green Evolution Project, Colorado State University, Fort Collins, CO, USA.	Mar. 2024 to Date
i. Reviewer for local & international journal	
External Assessor, University for Development Studies, Tamale	Nov. 5, 2018 – date
Reviewer, Ghana Journal of Agricultural Science (GJAS), Accra	Mar. 5, 2020 to date

Reviewer, Theoretical and Applied Genetics (TAG)	Jun., 2024 to date
iii. Membership of Professional Associations	
University Teachers Association of Ghana (UTAG)	Oct. 2010 – date
Crop Science Society of America (CSSA)	Nov. 2015 to date
American Society of Plant Biologists (ASPB)	Mar. 2016 to date
African Plant Breeders Association	Oct. 2019 to date