

CURRICULUM VITAE: BARNABAS KAYIL

PhD Candidate | Agri-Tech Innovator & Technical Lead

Bridging Advanced Physics with Sustainable Agricultural Solutions

CONTACT INFORMATION:

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PROFESSIONAL PROFILE:

A results-oriented PhD candidate specializing in Precision Agriculture, with a solid foundation in Engineering Physics and Agricultural Engineering. An experienced leader and technical expert, I have co-founded and expanded an Agri-tech company. My work focuses on creating and deploying embedded systems, solar-powered automation, and sustainable farming solutions that aim to boost productivity and conserve resources. I integrate thorough academic research with practical, field-validated business applications to advance agricultural innovation across Sub-Saharan Africa.

PROFESSIONAL EXPERIENCE:

- CEO & Technical Lead | Farm-Klass Company Limited (Co-founder) 2018 – Present
- Co-founded and currently lead an innovative Agri-tech company, originating from the prestigious Kosmos Innovation Center (2018/19) program.
- Spearheaded the design, development, and deployment of multiple large-scale, technology-driven farming projects, managing over 60 acres of cultivated land.

Key Project Portfolio:

- Engineered and installed solar-powered drip irrigation systems for a 6-acre vegetable farm, 5-acre cocoa farm, and 40-acre banana plantation.
- Developed and deployed a locally engineered sprinkler system (grid-powered) for a 5-acre watermelon farm and a 4-acre hot pepper farm.

- Pioneered the design and installation of a proprietary "Smart Low Energy Ram Pump Solar-Powered Arduino Aquaponics" (SLERSOPAA) system with a 10,000 fish stocking density and 1,000 plant capacity for a commercial client.
- Successfully transitioned academic research into a viable commercial enterprise, gaining national recognition for innovation in agricultural mechanization.

EDUCATION:

PhD in Precision Agriculture (Candidate)

Intra-Africa PATH Project, University of Abomey-Calavi, Republic of Benin

MPhil in Physics

University of Cape Coast, Ghana

B.Sc. in Engineering Physics

University of Cape Coast, Ghana

Higher National Diploma in Agricultural Engineering

Dr. Hilla Limann Technical University, Ghana

Diploma in Education

University of Education, Winneba, Ghana

Oil and Gas Training in Health and Safety Management

Development and Productivity Institute, Ghana

Military Orientation Training

Army Recruit Training School, Shai Hills, Ghana

TECHNICAL SKILLS & EXPERTISE:

Agricultural Technology:

- Precision Agriculture, Embedded Systems (Arduino), Agricultural Mechanization, Automated Irrigation (Drip & Sprinkler), Aquaponics/Hydroponics, Remote Sensing.

Engineering & Design:

- System Design & Implementation, Solar-Powered Systems, Sensor Integration, Data Acquisition.

Project & Business Management:

- Strategic Planning, Project Lifecycle Management, Agri-Business Development, Team Leadership.

Specialized Training:

- Health & Safety Management (Oil & Gas), Military Orientation.

RECENT PROFESSIONAL DEVELOPMENT:

- Data Science for Research and Institutional Intelligence – RUFORUM - Aug 2025
- Scientific Writing for Early Career Scientists - RUFORUM - Jul 2025
- Research Data Management Course - eLwazi ODSP - Jun-Jul 2025

CONFERENCES & DISSEMINATION

International Conference on Agriculture 2025 (Bangkok, Thailand) "Innovation Lightens the Future way for Global Sustainable Food Security"

- Presentation: Minimizing Power Consumption in Aquaponics: Integrating Smart Solar Pump and Ram Pump for Sustainable Agriculture in Sub-Saharan Africa. |-TIKM - Sep 2025

TinyML4D Academic Network Show and Tell (Virtual)

- Presented on embedded ML applications in agriculture - Jun 2024

RESEARCH & MANUSCRIPTS IN PROGRESS:

- Detection, Damage, and Management of Fall Armyworm Among Maize Farmers in Benin's Phytogeographical Zones: Can Remote Sensing Enable Early Detection?
- Minimizing Power Consumption in Aquaponics: Integrating Smart Solar Pump and Ram Pump for Sustainable Agriculture in Sub-Saharan Africa.

NOTABLE ACHIEVEMENTS:

- Inventor of SLERSOPAA System: Designed and implemented a unique, energy-efficient aquaponics system that combines solar power and ram pump technology, showcasing a sustainable model for Sub-Saharan Africa.
- Academic-to-Commercial Product Development: Successfully turned a B.Sc. thesis project ("Arduino-based Solar-Powered Automated Drip Irrigation System") into a commercially successful and nationally recognized business venture.
- Kosmos Innovation Center Alumnus: Recognized as a high-potential entrepreneur and selected for a leading innovation incubator program.

REFERENCES:

Prof. Kwadwo A. Dompreeh

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