


Frank Idan, Ph.D.

Senior Lecturer | Feed Scientist and Animal Nutrition Specialist | Researcher
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Professional Summary

Senior Lecturer and Researcher with over a decade of experience in animal nutrition, poultry production, and feed technology, dedicated to advancing sustainable agriculture through science-driven innovation. My work focuses on optimizing feed quality, enhancing livestock health, and implementing cutting-edge solutions in mycotoxin management, feed formulation, and mill quality assurance, thus ensuring both productivity and food safety. With a strong foundation in animal production research, I apply evidence-based strategies to enhance poultry management, focusing on gut health, nutritional programming, and precision feeding techniques. Beyond research, I am passionate about bridging academia and industry by developing training programs, fostering cross-sector collaboration, and translating scientific insights into practical applications. Expertise extends to fundraising, grant writing, and strategic partnerships, having successfully secured funding and led initiatives that support agricultural efficiency and long-term food security. Recognized researcher and educator dedicated to knowledge transmission through data-driven analysis, scientific publications in peer-reviewed journals, and extension initiatives that help industry professionals. Combines innovation, education, and stakeholder engagement and strives to develop robust, long-term solutions for animal nutrition and cattle production.

Technical Skills

- Poultry Health & Management: Applying precision nutrition, gut health optimization, and nutritional programming to maximize flock performance, welfare, and profitability.
- Feed Science & Formulation: Designing cost-effective, high-performance diets tailored to livestock needs, focusing on digestibility, nutrient utilization, and metabolic efficiency.
- Mycotoxin Mitigation: Implementing advanced detection and control strategies to minimize contamination risks, safeguarding animal health and feed integrity.
- Quality Assurance & Compliance: Establishing HACCP, GMP, and ISO-aligned protocols to maintain feed safety, consistency, and regulatory adherence across production systems.
- Industry Collaboration & Applied Research.
- Training & Extension Services.
- Statistical analysis using SPSS, SAS, and R.
- Research design, scientific writing and publication, and conference presentations.

Education

Ph.D. in Grain Science (Feed Processing & Technology), Kansas State University, USA (2016–2019)

Dissertation: The role of feed processing and fiber addition on improving the nutrition and growth performance of broilers.

M.Phil. in Animal Science (Animal Nutrition), University of Ghana, Ghana (2011–2014)

Thesis: The use of fodder tree leaves as supplements for sheep fed untreated rice straw.

B.Sc. (Hons) in Agriculture, University of Cape Coast, Ghana (2000–2004).

Professional Experience

Senior Lecturer, Department of Animal Science, KNUST (Aug. 2025 to Date).

- Lead research programs in poultry nutrition, feed technology, and biosecurity, ensuring alignment with industry needs.
- Develop and submit funding proposals for private sector contracts and public competitive grants.
- Supervise experiments, data collection, and statistical analysis to meet project milestones.
- Supervise postgraduate (Ph.D. and Masters) theses and provide mentorship to undergraduate students.
- Publish research findings in peer-reviewed journals and present at conferences.
- Foster collaboration between academia and industry to co-develop practical poultry nutrition solutions.
- Conduct training and extension programs to disseminate innovative feeding practices among poultry producers.

Lecturer, Department of Animal Science, KNUST (Sept. 2020–July 2025).

- Conducts research on feed safety, with a focus on mycotoxin detection and mitigation strategies.
- Supervises postgraduate and undergraduate research projects on feed analysis and quality control.
- Develop curricula for feed science and technology programs.
- Teaches courses on poultry production and management; principles of animal nutrition; feed biotechnology; feed additives, functional foods, and nutraceuticals; and feed analysis, agricultural by-product management.
- Facilitates training for poultry farmers on feed safety and mycotoxin management.
- Created instructional and lecture plans for classes in compliance with course objectives.
- Utilized diverse teaching methods, lectures, presentations, and class activities to deliver the curriculum.
- Delivered course lectures using modern technology to enhance student comprehension.
- Evaluated student progress, delivering feedback for individual improvement.
- Selected innovative teaching methods to deliver course content.
- Developed lectures to accommodate different learning styles, maximizing students' comprehension.
- Tailored lectures to meet student needs, emphasizing skills and concepts necessary for professional and academic success.
- Identified areas of difficulty for students and developed additional resources for review.

Ph.D. Graduate Research Assistant, Kansas State University (2016–2019)

- Performed mycotoxin testing with ELISA and chromatography methods to evaluate feed safety.

- Developed SOPs for mycotoxin detection and mitigation strategies in feed mills.
- Trained industry professionals from over 20 countries on feed quality assurance and mycotoxin detection.

Major Accomplishments:

1. Broiler Production and Value Chain Leadership (Agri-Impact's HAPPY Broiler Project) – (2024 to Date)

- Led and continues to lead production, processing, and marketing operations for the HAPPY Broiler Project (Agri-Impact/ Mastercard Foundation), managing a sustainable poultry value chain from farm to market.
- Optimized flock performance through improved feed efficiency, biosecurity protocols, and market linkage strategies, resulting in a 30% increase in HAPPY broiler income.
- Collaborated with stakeholders to ensure scalability and profitability while promoting 100 youth, especially women, in the poultry value chain.

2. Poultry Value Chain (PVC) Manual for MasterCard Foundation for Training of Youth in Poultry Production (2024).

- Successfully integrated indigenous poultry farming practices with modern techniques, blending them with scientific best practices to produce a comprehensive manual tailored to Ghana and West African socio-economic and agro-ecological conditions.
- The PVC manual boosted smallholder and youth farmers' productivity, strengthened Ghana's value chain by addressing production, processing, and marketing gaps, and promoted sustainability with cost-effective local feed alternatives and climate-adapted disease management.
- This work has contributed to policy recommendations and was adopted by agricultural extension services in Ghana, helping to boost poultry production efficiency and profitability for local farmers.

3. Technical Training & Capacity Development (KNUST-UNIDO TVET training program)

- Spearheaded curriculum development and facilitation of the KNUST-UNIDO TVET training program for Liberian students, equipping them with practical animal nutrition, feed formulation, and analysis.
- Designed hands-on training manuals and evaluation tools, enhancing competency in modern feed evaluation techniques.
- Program contributed to an increase in skill-based training among graduates, enhancing workforce readiness, thus strengthening cross-border knowledge transfer and sustainable agricultural development.

4. Facilitator and Training Manual Development

- Facilitated the Okufo Pa Poultry Production Model, training 100+ participants in modern poultry husbandry, biosecurity, and waste management, resulting in 45% expressing intent to establish their poultry farms.
- Designed and implemented a comprehensive waste management training manual for the Okuafopa Training in poultry waste program, equipping participants with sustainable waste-handling practices that reduced environmental contamination.

5. **Facilitator, Annual Capacity Building Project: Bridging the Technology Transfer Gap for Poultry Experts and Consultants in Ghana sponsored World Initiative of Soy in Human Health (WISHH) of the American Soybean Association (ASA) – (July 7 – 11th 2025)**
 - Delivered hands-on training in modern broiler production, management, and feed processing technologies. Areas covered include, but are not limited to the following:
 - Mimicking the United States' broiler contract farming and building a broiler supply chain in Ghana.
 - The science of feeding, strategies of feeding, ingredient selection, and least-cost feed formulation.
 - Types of feed mills and advantages.
 - Siting a modern feed mill, biosecurity in feed mills, and prevention of contamination and infections in feed mills.
6. **Researcher and Investor Summit (June 26 – 27th, 2025)**
 - Designed to encourage collaboration, unlock investment opportunities, and chart a new path for the commercialization of Agribusiness Research in Ghana.
 - **Presenter** of the innovation titled “Recycling Egg and Snail Shells to Make Poultry Feed Cheaper” and Harnessing Bamboo Leaves as an alternative feed resource for ruminant animals.
7. **Ghana Research and Industry Collaborative (GRIC) in Collaboration with Research and Innovative Systems for Africa (RISA) and UK International Development – (March 2025)**
 - **Presenter**, Enhancing Animal Health and Productivity with Low Molecular Weight Chitosan.
 - **Presenter**, Using Tree Leaves to Improve Sheep Feeding During Dry Seasons.
8. **Fundraising & Proposal Development**
 - Collaborated with experts from the Council for Scientific Industrial Research (CSIR) and some Ghanaian universities, with the collaboration of the New Zealand Agricultural Greenhouse Research Centre (NZAGRC), to secure funding from the New Zealand Government's Ministries of Foreign Affairs and Trade and Primary Industries for Ghana's Tier II Cattle Greenhouse Gas Inventory.

Research & Peer-Reviewed Publications

1. **Idan, F. & Abbas, Basim, & M., Gopi. (2025). Effect of Mash Particle Size and Die Speed on Machine Performance and Pellet Durability for Broiler Chickens.** Al-Qadisiyah Journal for Agriculture Sciences. 15. 9-19. <https://doi.org/10.33794/qjas.2025.157736.1197>.
2. **Idan, F., Paulk, C. B., Pokoo-Aikins, A., & Stark, C. R. (2023). Growth performance, intestinal morphometry, and blood serum parameters of broiler chickens fed diets containing increasing levels of wheat bran with or without exogenous multi-enzyme supplementation during the grower and finisher phases.** Livestock Science, 275, 105296. <https://doi.org/10.1016/j.livsci.2023.105296>. ISSN 1871-1413.
3. **Idan, F., Adogla-Bessa, T., Owusu Sarkwa, F., Antwi, C., O. Alhassan, & Abdul Aziz, Y. (2023). Effects of Fodder Tree Leaf Supplementation for Basal Rice Straw Diet on Rumen Ammonia, pH, and Degradation Characteristics in Sheep.** Online Journal of Animal and Feed Research. 13(4): 286-294. DOI: <https://dx.doi.org/10.51227/ojafr.2023.43>.
4. **Abdul Aziz, Y., Osman, A., Osafo, E.L.K., Attah-Kotokua, V., Antwia, C., Idan, F., Apori, S.O., and Gyamera, E. (2023). Effects Of Concentrate Supplement on Dry Matter and Water Intake, Nutrient**

- Digestibility, and Nitrogen Balance of N'dama Bull Calves Fed Napier Grass Basal Diet.** Ghanaian Journal of Animal Science. Vol 14 (1): 36-45. <https://dx.doi.org/10.4314/gjansci.v14i1.5>.
5. Antwi, C., Sasu, P., Partey, S., Kwaku, M., Anim-Jnr, A. S., Frimpong, Y. O. & **Idan, F. (2023). Nutritional Evaluation and Supplementation Effect of Bamboo Leaves on Intake, Growth Performance, and Blood Indices of Djallonké Sheep fed Cenchrus purpureus and Brachiaria decumbens as Basal Diets.** Ghanaian Journal of Animal Science. Vol 14 (1): 46-63. <https://dx.doi.org/10.4314/gjansci.v14i1.6>.
 6. A.K. Boakye, B.O. Asante, S. Akutinga, D. Agyeman, S. Prah, **F. Idan**, C. Antwi, & I.S. Asante. (2023). **Farmers' perceptions and willingness to adopt egg and snail shells as alternative calcium sources for poultry production in the Western region of Ghana.** Journal of Agriculture and Food Research, <https://doi.org/10.1016/j.jafr.2023.100818>.
 7. Osafo, E. L. K., Osman, A., Attah-Kotoku, V., Antwi, C., Abdul Aziz, Y., & **Idan, F. (2023). Chemical composition and in vitro gas production of Brachiaria decumbens.** Online Journal of Animal and Feed Research. 13(4): 302-312. DOI: <https://dx.doi.org/10.51227/ojafr.2023.45>.
 8. Boamah, P. O., Onumah, J., Agolisi, M. H., & **Idan, F. (2023). Application of low molecular weight chitosan in animal nutrition, husbandry, and health: A Review.** Carbohydrate Polymer Technologies and Applications, 100329. ISSN 2666-8939, <https://doi.org/10.1016/j.carpta.2023.100329>.
 9. Sarkwa, F. O., Madibela, O. R., Adogla-Bessa, T., Mphinyane, W. N., Perkins, J. S., **Idan, F.**, & Timpong-Jones, E. C. (2023). **7 Synergistic effects of Albizzia lebbek, Moringa oleifera, and Millettia thonningii leaves on weight gain and predicted enteric methane emission in sheep.** West African Journal of Applied Ecology, 31(1), 64-74.
 10. **Idan, F.**, Paulk, C., Beyer, S., & Stark, C. (2023). **Effects of pellet diameter and crumble size on the growth performance and relative gizzard weight of broilers.** Journal of Applied Poultry Research, 100331. <https://doi.org/10.1016/j.japr.2023.100331>.
 11. **Idan, F.**, Adogla-Bessa, T., Sarkwa, F. O., Frimpong, Y. O., & Antwi, C. (2023). **Effects of supplementing rice straw with two fodder tree leaves and their combinations on voluntary feed intake, growth, and nitrogen utilization in sheep.** Translational Animal Science, 7(1), txad004. <https://doi.org/10.1093/tas/txad004>.
 12. Adogla-Bessa T., Sarkwa, F. O., Adjorlolo, L. K., Timpong-Jones, E. C., **Idan, F.**, Nyarko-Gyimah, A., and Tudeka, C. K. (2022). **Performance indicators of sheep-fed rice straw supplemented with browse leaves.** African Journal of Food, Agriculture, Nutrition and Development 22(5): 20401-20414 <https://doi.org/10.18697/ajfand.110.21925>.
 13. Ansah, J.B., Tieku, F.E., Essuman, Y., Kisseih, M., Oduro, F.W., Aryee, R., **Idan, F.**, & Hamidu, J.A. (2022). **The Effect of Prebiotics-Phytobiotics Supplement on Broiler Biological and Immunological Performance.** Asian Journal of Animal and Veterinary Advances, 17, 157-163. <https://doi.org/10.3923/ajava.2022.157.163>.
 14. **Idan, F.**, T. N. N. Nortey, C. B. Paulk, S. Beyer, and C. R. Stark. (2020). **Evaluating the effect of feeding starter crumbles on the overall performance of broilers raised for forty-two (42) days.** Journal of Applied Poultry Research, Elsevier Publications. 29: 692–699. <https://doi.org/10.1016/j.japr.2020.05.003>.
 15. **Idan, F.**, T. Adogla-Bessa, and K. Amaning-Kwarteng. (2020). **Preference, voluntary feed intake, and digestibility of sheep fed untreated rice straw and supplemented with sole or combined fodder tree leaves.** European Journal of Agriculture and Food Sciences. 2 (4): 2-8. <http://dx.doi.org/10.24018/ejfood.2020.2.4.89>.

Conferences, Training Programs & Workshops

- **Presenter**, 2017 IPPE International Scientific Forum, Atlanta, USA – Evaluating the effects of feeding starter crumbles on the overall performance of broilers raised for 42 days.
- **Presenter**, 2019 IPPE International Scientific Forum, Atlanta, USA – Effects of pellet diameter and crumble size on broiler performance.
- **Presenter**, 1st Joint GSAP/GASA Conference in University for Development Studies, Tamale, Ghana (2021) – Effects of supplementing rice straw with two fodder tree leaves and their combinations on voluntary feed intake, growth, and nitrogen utilization in sheep.
- **Presenter**, 26th World's Poultry Congress Organized by the French Branch of the World's Poultry Science Association held at Palais des Congrès De Paris on 07 – 11 August 2022, Paris, France.
– Growth performance, intestinal morphometry, and blood serum parameters of broiler chickens fed diets containing increasing levels of wheat bran with or without exogenous multi-enzyme supplementation.
- **Presenter**, 2nd Joint GSAP/GASA Conference in Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (2023) – Harnessing Natural Spices as Functional Feed Additives: Impacts on Growth Performance, Carcass Traits, Blood Serum Composition, and Microbiological Parameters in Japanese Quails.
- **Participant**, Tier 2 Cattle GHG Inventory Training Workshop, Ghana (2024).
- **Facilitator**, KNUST & ENI Okuafo Pa Project – Training on poultry production and management and mycotoxin risk management (2021 to 2023).
- **Facilitator**, KNUST-UNIDO TVET program for Liberian Students on Animal Nutrition, in KNUST, Ghana (February to June 2025).
- **Participant**, Training workshop on proposal writing and sources of funding by Catalyste+.org. Conference Room of NCB. 12 – 14Th March 2024.
- **Presenter on Manure Management**, Tier 2 Cattle GHG Inventory Training Workshop in Ghana, organized by the Council for Scientific and Industrial Research-Soil Research Institute (CSIR-SRI) with the collaboration of the New Zealand Agricultural Greenhouse Research Centre (NZAGRC), New Zealand. 27 - 29 February 2024. MJ Grand Hotel, East Legon, Accra.
- **Participant**, Inception Meeting: Livestock GHG inventory improvement support in Ghana, organized by the Council for Scientific and Industrial Research-Soil Research Institute (CSIR-SRI) with the collaboration of the New Zealand Agricultural Greenhouse Research Centre (NZAGRC), New Zealand. 29th November 2023. MJ Grand Hotel, East Legon, Accra.
- **Participant**, 2023 Proposal Writing Retreat. 13 – 17Th November 2023. Nyansapo Eco Resort, Moree. Central Region.
- **Participant**, Virtual Conference of the 9th Annual Meeting of the ASCE on Advancing Scholarly Publishing through Evolution, Equity, and Empowerment. August 20, 2023.
- **Participant**, Virtual Workshop: Getting started with Design of Experiments, organized by The Royal Society of Chemistry in conjunction with Chemistry World and JMP. May 23rd – 25th, 2023.
- **Participant**, KNUST/TIEC/OLC Online Teaching Course under the Flexible Learning: Responding and Re-imagining Education in Ghana TRAIN THE TRAINER PROGRAMME

Leadership & Professional Affiliations

- **Financial Secretary**, Ghana Society of Animal Production (GSAP) – 2023 to Present.
- **Sectional Head**, Laboratories (Microbiology & Nutrition), Department of Animal Science, KNUST (Jan 2025–Present).
- **Sectional Head**, Meat Science Unit of the Department of Animal Science, KNUST (2021 to Jan 2025).
- **Programme Examination Officer** (IDL), MSc. Security and Justice Administration and MSc/MPhil Business Consulting and Enterprise Risk Management, KNUST (2022 to Date).
- **Member**, National Planning Committee for the Joint 3rd Biennial GSAP/GASA 2025 Conference.
- **Deputy Secretary, Local Organizing Committee** for the Joint 3rd Biennial GSAP/GASA 2025 Conference (Department of Animal Science, KNUST), 2025.
- **Chairman**, Planning and Logistics Sub-Committee for the Joint 3rd Biennial GSAP/GASA 2025 Conference (Local Organizing Committee, KNUST).
- **Member**, Committee for the Development of a Multi-purpose Laboratory for Undergraduate Students at the KNUST, 2023.
- **Member**, National Planning Committee for the Joint 2nd Biennial GSAP/GASA 2023 Conference, 2022.
- **Chairman**, Planning and Logistics Sub-Committee for the Joint 2nd Biennial GSAP/GASA 2023 Conference (Local Organizing Committee, KNUST), 2023.
- **Chairman**, Scientific Session (Ruminant and Monogastric Animals) for the Joint 2nd Biennial GSAP/GASA 2023 Conference (Local Organizing Committee, KNUST), 2023.
- **Member**, World Poultry Science Association (WPSA, USA and Ghana Branches) – 2018 to Date.
- **Member**, Poultry Science Association (PSA, USA Branch) – 2018 to Date.
- **Member**, Ghana Society of Animal Production (GSAP) – 2012 to Date.
- **Member**, Ghana Animal Science Association (GASA) – 2022 to Date.
- **Member**, University Teachers Association of Ghana (UTAG), (Sept. 2020 - present)
- **Member**, National Association of Graduate Teachers (NAGRAT), (2010 - 2016)
- **Member**, Kansas State University Alumni Association (2019 to Date).
- **Member**, University of Ghana Alumni Association (2014 to Date).
- **Member**, University of Cape Coast Alumni Association (2004 to Date).
- **Reviewer** for peer-reviewed journals, including:
 - MDPI (Animals, Antibiotics & Poultry).
 - Wiley (Veterinary Medicine and Science).
 - Elsevier (Livestock Science, Heliyon).
 - Ghanaian Journal of Animal Science (GJAS)
 - Ghana Journal of Agricultural Science.
 - Journal of Science and Technology (JUST), Kwame Nkrumah University of Science and Technology.
 - Cogent Food & Agriculture (Open Research), Taylor and Francis.
 - Ghana Journal of Science (GJS).
 - Frontiers in Physiology, Frontiers Media S.A.
 - Animal and Veterinary Sciences, Science Publishing Group, USA.

Teaching Courses

Undergraduate Courses at KNUST

- AS 457: Feed Analysis and Agricultural By-Product Management.
- AS 252: Principles of Animal Nutrition; and
- AS 254: Poultry Production and Management.
- AGB 458: Defense Mechanisms in Plants and Animals.
- AGF 457: Advanced Livestock Management and Production in Agroforestry Systems.

Institute of Distance Learning (IDL) Courses at KNUST

- BAS 258: Growth and Nutrition of Animals and Plants.
- BAS 356: Animal Production and Health Management.
- BAS 457: Nutrition of Farm Animals.
- BAS 459: Biotechnological Approaches in Animal and Crop Production.
- BAS 458: Climatic and Environmental Issues in Agriculture.

Postgraduate Courses at KNUST

- AS 557: Advanced Monogastric Nutrition.
- AGF 571: Advanced Livestock Management and Production in Agroforestry Systems.
- AS 598: Feed Biotechnology.
- AS 755: Feed Additives, Functional Foods and Nutraceuticals.
- AS 753: Feed Science and Biotechnology.
- AS 756: Design and Analysis of Animal Research.

Awards and Grants

- World's Poultry Congress Grant (2022): GH¢ 15,000.
- Graduate Student Council Travel Award (2019): \$400.
- AG-Liventis Foundation Scholarship (2012): \$1,500.

Other Certifications

- Single Subject Diploma in Financial Management, ICM, UK (2009) – Distinction.
- Single Subject Diploma in Business Management and Administration, ICM, UK (2008) – Distinction.

References

Available upon request.