

# Frank Idan, Ph.D.

Department of Animal Science, Faculty of Agric, CANR  
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana  
Email: frank.idan@knust.edu.gh/ frankkidan@gmail.com  
Mobile/WhatsApp: +233 24 338 9831; LinkedIn/ResearchGate: Frank Idan, PhD

## Education

- PhD Grain Science (Feed Processing and Technology) (2019), Kansas State University, Manhattan, Kansas, USA.
- MPhil. Animal Science (Animal Nutrition) (2014), University of Ghana, Legon, Accra, Ghana.
- BSc. (Hons) Agriculture (2004), University of Cape Coast, Cape Coast, Ghana.

## Experience

- September 2020 to Date: **Lecturer**, Department of Animal Science, Faculty of Agriculture, CANR, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
- August 2016 to December 2019: **Ph.D. Graduate Research Assistant**, Department of Grain Science, and Industry, Kansas State University, Manhattan, KS, USA.
- June 2014 to August 2016: **Part-Time Lecturer**, College of Distance Education (CoDE), University of Cape Coast, Kasoa Center, Ghana.
- August 2015 to August 2016: **Teacher** (Integrated Science/Biology), Ghana Education Service (GES), (Awutu Winton SHS, Awutu Breku, Ghana)/ Assistant Examiner of WAEC, Ghana.
- September 2010 to July 2015: **Teacher** (Animal Husbandry/Integrated Science/Biology), GES (Obrachire SHTS).
- October 2006 to June 2010: **Teacher** (Biology/ Integrated Science)/ Head of Science Department, Datus International Senior High School (DATUSCO), Kasoa Branch.

## Specialization

- Ruminant production and nutrition
- Poultry production and nutrition
- Feed manufacturing and processing (Pelleting and Extrusion)
- Poultry data analytics
- Precision livestock farming

## Current Research Focus

- Climate-smart livestock feeding systems
- Greenhouse gas (GHG) mitigation in livestock using fodder tree leaves
- Development of tools for measuring enteric GHG in Livestock
- Alternative ingredients in livestock feeds
- Grain and animal feed mycotoxins mitigation
- Phytochemicals as anti-microbial replacers
- Nonconventional calcium sources (egg and snail shells) in poultry nutrition
- Carbohydrate polymers (chitosan) in animal health and nutrition

## Membership of a Professional Body

- |  |              |
|--|--------------|
| • Member, All Africa Society for Animal Production (AASAP)               | 2023 to Date |
| • Member, World Poultry Science Association (WPSA), Ghana Branch         | 2022 to Date |
| • Member, World Poultry Science Association (WPSA), United States Branch | 2018 to Date |

- Member, Poultry Science Association (PSA), United States 2018 to Date
- Member, Ghana Society of Animal Production (GSAP) 2012 to Date
- Member, Ghana Animal Science Association (GASA) 2021 to Date
- Member, Ghana Association of Science Teachers (GAST) 2010 to 2016
- Member, National Association of Graduate Teachers (NAGRAT) 2010 to 2016

## **Teaching**

- **Undergraduate Courses**
  - Feed Analysis and Agricultural By-Product Management; Principles of Animal Nutrition; Poultry Production and Management; Defense Mechanisms in Plants and Animals; Advanced Livestock Management and Production in Agroforestry Systems
- **Postgraduate Courses**
  - Advanced Monogastric Nutrition
  - Advanced Livestock Management and Production in Agroforestry Systems
- **Institute of Distance Learning (IDL) Courses**
  - Animal Production and Health Management; Dairy/Meat Production and Processing Dairy Processing Section; Nutrition of Farm Animals; Biotechnological Approaches in Animal and Crop Production; Climatic and Environmental Issues in Agriculture

## **Other Professionally Related Experience**

- Internal Examiner, Master's Level, KNUST (Departments of Animal Science and Civil Engineering; MSc Business Consulting and Enterprise Risk Management and Security and Justice Administration of IDL, KNUST).
- Secretary, Curriculum Review Committee for undergraduate and postgraduate programs, Department of Animal Science, KNUST. 2021 to Date.
- Sectional Head, Meat Processing Unit at the Department of Animal Science, KNUST. 2022 to Date.
- Reviewer, Maiden Round College of Agriculture and Natural Resources Research Fund (CANREF), February 2023 to Date.
- **Reviewer for Journals:**
  - Veterinary Medicine and Science - Wiley Online Library
  - MDPI Journal (Animals, Poultry and Antibiotics)
  - Ghana Journal of Science
  - Ghanaian Journal of Animal Science
  - Ghana Journal of Agricultural Science
  - Academia Letters
  - Frontiers of Physiology, USA
  - Journal of Science and Technology, KNUST

## **Publications (Peer-reviewed Journals)**

- **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. ISSN 1871-1413.  
<https://doi.org/10.1016/j.livsci.2023.105296>.
- **Idan, F.**, Adogla-Bessa, T., Owusu Sarkwa, F., Antwi, C., O. Alhassan., & Abdul Aziz, Y. (2023). Effects of fodder tree leave 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>.

- Abdul Aziz, Y., Osman, A., Osafo, E.L.K., Attoh-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. 14(1): 36-45. <https://dx.doi.org/10.4314/gjansci.v14i1.5>
- 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. 14(1):46-63. <https://dx.doi.org/10.4314/gjansci.v14i1.6>
- Boakye, A.K., Asante, B.O., Akutinga, S., Agyeman, D., Prah, S., **Idan, F.**, Antwi, C., & Asante, I.S. (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>.
- Osafo, E. L. K., Osman, A., Attoh-Kotoku, V., Antwi, C., Abdul Aziz, Y., & **Idan, F.** (2023). Chemical composition and in vitro gas production of *Brachiaria decumbens* harvested at different stages of growth in the hot humid region. Online Journal of Animal and Feed Research. 13(4): 302-312. DOI: <https://dx.doi.org/10.51227/ojafr.2023.45>.
- 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>.
- Sarkwa, F. O., Madibela, O. R., Adogla-Bessa, T., Mphinyane, W. N., Perkins, J. S., **Idan, F.**, & Timpong-Jones, E. C. (2023). Synergistic effects of *Albizia lebbek*, *Moringa oleifera*, and *Milletia thonningii* leaves on weight gain and predicted enteric methane emission in sheep. West African Journal of Applied Ecology, 31(1), 64-74.
- **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>.
- **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>.
- 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. Afr. J. Food Agric. Nutr. Dev. 2022; 22(5): 20401-20414 <https://doi.org/10.18697/ajfand.110.21925>.
- Ansah, J.B., Tiekue, 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>.
- **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>.

- **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): 89. ISSN: 2684-1827. <https://doi.org/10.24018/ejfood.2020.2.4.89>.
- **Idan, F.** 2019. The role of feed processing and fiber addition on improving the nutrition and growth performance of broilers. PhD Dissertation, Kansas State University, Manhattan, KS, USA. [search.proquest.com](https://search.proquest.com). [krex.k-state.edu](http://krex.k-state.edu).

### **Some Selected Abstracts and Proceedings**

- Mensah, J., Abdul-Kahal, M., Owusu, A., Owusu Asiamah, S., Ampofo Baiden, C, Nugbemado, P., Akesseh-Prah, K. G., and **Idan, F. (2023)**. Response of Japanese Quails to Diets Containing Natural Spices as Feed Additives. Book of Abstracts of 2nd Joint Conference of Ghana Society of Animal Production and Ghana Animal Science Association held at Kwame Nkrumah University for Science and Technology, Kumasi on 28th August to 1st September, 2023, page 44.
- Eduful, E. K. and **Idan, F. (2023)**. Evaluating the Presence of Phytochemicals in the Leaves and Rhizomes of Bitter Ginger (*Zingiber zerumbet*) and their Antimicrobial Effects on *Salmonella typhi*, *Staphylococcus aureus*, and *Escherichia coli*. Book of Abstracts of 2nd Joint Conference of Ghana Society of Animal Production and Ghana Animal Science Association held at Kwame Nkrumah University for Science and Technology, Kumasi on 28th August to 1st September, 2023, page 31.
- Sarkwa, FO, Peprah, J, Timpong-Jones, EC, Pelane, GL, **Idan, F.** and Yeboah, ED (2023). The contribution of woody species from rangelands as feed resources and other beneficial uses. Book of Abstracts of 2nd Joint Conference of Ghana Society of Animal Production and Ghana Animal Science Association held at Kwame Nkrumah University for Science and Technology, Kumasi on 28th August to 1st September, 2023, page 59.
- Osman, A., Abdul Aziz Y., **Idan, F.**, Antwi, C., Osafo, E.L.K., and Attoh-Kotoku, V. (2023). Growth performance, nutrients digestibility and carcass characteristics of grower rabbits fed graded levels of *Samanea saman* leaf meal. 12th GSA Research Seminar and Poster Presentations. The celebration of the International Year of Basic Sciences for Sustainable Development (IYBSSD-2023) held at Kwame Nkrumah University of Science and Technology, Kumasi from 8-9th March 2023.
- Yunus, A.A., Alhassan, O., Osafo, E. L. K, **Idan, F.**, Apori, S. O., Gyamera, E., and Victoria, A-K. (2022). Effects of concentrate supplement on feed intake, growth performance and blood parameters of N'dama calves fed cultivated Napier grass basal diet. The Developing Talent Proceedings of the British Society of Animal Science in “The Role of Animals in Human and Planetary Health”, BSAS 78th Annual Conference 2022 held at the East Midlands Conference Centre and virtually on 12th – 14th April 2022. Pp 15 – 16.
- **Idan, F.**, C. B. Paulk, T. N. N. Nortey, and C. R. Stark. (2021). 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. 26<sup>th</sup> World’s Poultry Congress (WPC), Paris, France (Abstract ID: 283, Page 270).
- **Idan F.**, Adogla-Bessa, T., Sarkwa, F. O., Frimpong, Y. O., Antwi, C., and Amaning-Kwarteng, K. (2021). Effects of supplementing rice straw with two browse species and their combinations on voluntary feed intake, growth, and nitrogen utilization of Sheep. Proceedings of the 1st Joint Ghana Animal Science Association (GASA)/ Ghana Society of Animal Production (GSAP) Biennial Conference, International Conference Centre, University for Development Studies (UDS), Tamale. Pp 398 – 408.
- Osman, A., Osafo, E. L. K., Attoh-Kotoku, V, Abdul Aziz, Y., and **Idan, F. (2021)**. Effects of supplementing probiotics and concentrate mix on intake and growth performance of intensively kept Sahelian Does fed basal diet of *Brachiaria decumbens* grass. Proceedings of the 1st Joint Ghana Animal

Science Association (GASA)/ Ghana Society of Animal Production (GSAP) Biennial Conference, International Conference Centre, University for Development Studies (UDS), Tamale. Pp 409 – 421.

- Abdul Aziz, Y., Osman, A., **Idan, F.**, Osafo, E. L. K., Gyamera, E, and Samuel, O. A. (2021). An assessment of the knowledge and willingness of urban and peri-urban cattle farmers to cultivate pasture in some selected communities in the Ashanti region of Ghana. Proceedings of the 1st Joint Ghana Animal Science Association (GASA)/ Ghana Society of Animal Production (GSAP) Biennial Conference, International Conference Centre, University for Development Studies (UDS), Tamale. Pp 617 – 628.
- Adogla-Bessa T., Sarkwa, F. O., Adjorlolo, L. K., Timpong-Jones, E. C., **Idan, F.**, Nyarko-Gyimah, A., and Tudeka, C. K. (2021). Proceedings of the 1st Joint Ghana Animal Science Association (GASA)/ Ghana Society of Animal Production (GSAP) Biennial Conference, International Conference Centre, University for Development Studies (UDS), Tamale. Pp 436 – 445.
- **Idan, F.**, T. N. Nortey, C. B. Paulk, S. Beyer, C. Fiehler, C. Truelock, C. Delfelder, and C. R. Stark (2019). Effects of pellet diameter and crumble size on the growth performance and relative gizzard weight of broilers. International Production and Processing Expo (IPPE), International Poultry Scientific Forum, Georgia World Congress Centre, Atlanta, Georgia, USA, February 11 – 12, 2019. Metabolism and Nutrition. Abstract #M57, pp 19.
- **Idan, F.**, C. B. Paulk, and C. R. Stark. (2018). Evaluating the effect of feeding starter crumbles on the overall performance of broilers raised for forty-two (42) days. International Production and Processing Expo (IPPE), International Poultry Scientific Forum, Georgia World Congress Centre, Atlanta, Georgia, USA, January 29 – 30, 2018. Metabolism and Nutrition – Enzymes. Abstract #M24, pp 8 – 9.
- **Idan, F.** (2017). Evaluating the effect of feeding starter crumbles on the overall performance of broilers raised for forty-two (42) days. Grain Science Graduate Students Organization (GSGSO) Symposium.

#### **Conferences/Seminars and Workshops at Which Papers Were Read**

- 2nd Joint Conference of Ghana Society of Animal Production and Ghana Animal Science Association held at Amoono Neizer IDL Conference Centre, Kwame Nkrumah University for Science and Technology, Kumasi from 28th August to 1st September 2023.
- 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.
- 1st Joint Ghana Animal Science Association (GASA)/ Ghana Society of Animal Production (GSAP) Biennial Conference, International Conference Centre, University for Development Studies (UDS), Tamale, 24<sup>th</sup> – 28<sup>th</sup> August 2021.
- International Poultry Scientific Forum, Metabolism and Nutrition Session, International Production & Processing Expo (IPPE) held at the Georgia World Congress Center, Atlanta, Georgia, February 11, 2019.
- International Poultry Scientific Forum, Metabolism and Nutrition Session – Enzymes, IPPE held at Georgia World Congress Center, Atlanta, Georgia, January 30, 2018.

#### **Other Conferences, Seminars, and Workshops Attended**

- Program inception meeting for livestock greenhouse gas (GHG) emission inventory improvement in Ghana organized by Council for Scientific Research Institute-Soil Research Institute and New Zealand Agricultural Research Center, 29<sup>th</sup> November 2023, MJ Grand Hotel, Shiashie, Ghana.
- National Poultry Seminar: A paradigm shift in commercial poultry production in Ghana for National Development organized by the World Poultry Science Association, Ghana Branch, December 6<sup>th</sup> 2023, Osu Ebenezer Presby Church Hall, Accra, Ghana.

- Virtual Conference of the 9<sup>th</sup> Annual Meeting of the ASCE on Advancing Scholarly Publishing through Evolution, Equity, and Empowerment. August 20, 2023.
- Virtual Workshop: Getting started with Design of Experiments organized by The Royal Society of Chemistry in conjunction with Chemistry World and JMP. May 23<sup>rd</sup> – 25<sup>th</sup> 2023.
- Virtual Conference: 2023 Georgia Precision Poultry Farming organized by the University of Georgia's Department of Poultry Science, and Extension Division. May 2<sup>nd</sup> 2023.
- KNUST/ Texas International Education Consortium (TIEC) Online Teaching Course for train the trainers under the Flexible Learning: Responding and Reimagining Education in Ghana TRAIN THE TRAINER Programme. October 12 - 13<sup>th</sup> 2021.

**Other Professional Certification**

- Financial Management (945757) 2009  
Institute of Commercial Management (ICM), Bournemouth, England.
- Business Management and Administration (945757) 2008  
Institute of Commercial Management (ICM), Bournemouth, England.