

Ishab Poudel

B.V.Sc. & A.H., M.S., Ph.D.

Poultry scientist specializing in laying hen nutrition, experimental design, and flock management and health, with 10+ years in animal health and production.

Bloomington, Illinois, USA · ishabpoudel@gmail.com · eggscientist.com · linkedin.com/in/ishab-poudel · [Google Scholar](https://scholar.google.com/citations?user=...)

Education

Ph.D., Poultry Science, Mississippi State University, Starkville, Mississippi 2023

Dissertation: “Nutritional strategies to reduce *Salmonella* Enteritidis infections in laying hens: Prebiotic, probiotic, and precision biotics”

M.S., Poultry Science, Mississippi State University, Starkville, Mississippi 2020

Thesis: “The effect of light-emitting diode light on the growth, egg production, egg quality, hormone concentration and health of Hy-Line® W-36 laying hens”

B.V.Sc. & A.H. (Bachelor of Veterinary Science & Animal Husbandry), Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, India 2014

Veterinary Licensure Pathway

- ECFVG certification (AVMA) in progress toward U.S. veterinary licensure
- Basic and Clinical Sciences Examination (BCSE): passed

Professional Experience

Research Scholar, North Carolina State University Oct 2023 – present

Raleigh, North Carolina (hybrid) · Supervisor: Dr. Kenneth Anderson

- Write and submit proposals to industry and government agencies to fund poultry nutrition research.
- Design, write, and coordinate experimental protocols; collaborate with USDA and industry partners.
- Collect and analyze experimental data in SAS and R; prepare presentations and manuscripts for peer-reviewed journals and conference proceedings.
- Major projects: phytase × mineral interactions in extended-lay hens (50–100 wk); 41st North Carolina Layer Performance and Management Test (nine strains, cage vs. cage-free); enzyme strategies for late-phase layers; peanuts as a protein source in poultry feed; oregano essential oils for eggshell quality and gut health; nutritional (non-anorexic) molting in cage and cage-free housing.

Clinical Externship (observational), University of Illinois Jun 2026 – Jul 2026

Urbana, Illinois

- Internal medicine: shadowed case workups of small animal medical cases.
- Farm animal medicine: shadowed cattle, small ruminant, and swine cases.
- Pathology: participated in cytology and hematology through teaching rounds, practice cases, and shadowing.

Graduate Research Assistant (M.S. & Ph.D.), Mississippi State University
Starkville, Mississippi · Major advisor: Dr. Pratima Acharya Adhikari

Jan 2019 – Aug 2023

- Contributed to the planning, design, and implementation of poultry nutrition and management trials; conducted in-vivo and in-vitro probiotic and prebiotic trials against *Salmonella* in laying hens.
- Formulated laying hen diets in Concept5 and WUFFDA; analyzed feed ingredients by NIR.
- BSL-2 microbiology (avian pathogenic *E. coli*, *Salmonella*, *Bacillus*, *Lactobacillus*) and molecular methods: DNA/RNA isolation, cDNA preparation, primer design, gene expression, PCR/RT-PCR (qPCR), ELISA, gel electrophoresis.
- Analyzed data in Excel, GraphPad, SAS, and R; presented results at national and international conferences; guided undergraduate and graduate students in trials.
- Projects: vaccination history and *Salmonella* Enteritidis colonization; *Bacillus* probiotics for *S. Enteritidis* reduction and immunity; low-CP diets and split-calcium feeding for shell quality; split feeding and limestone particle size in late lay (60–80 wk); monochromatic light on growth and production.

Project Coordinator, Heifer Project Nepal
Kathmandu, Nepal

Feb 2016 – Jul 2018

- Formulated diets and supervised field research trials in poultry and swine, ensuring compliance with research and donor protocols.
- Managed data collection, analysis, and reporting for GALVmed.
- Trained veterinary doctors and facilitated post-mortem examinations in pigs.
- Coordinated stakeholders, including government veterinarians; trained and mobilized veterinary technicians.

Veterinary Officer, Heifer International
Kathmandu, Nepal

Apr 2015 – Oct 2015

- Coordinated activities among veterinary technicians, producers, and government agencies for efficient project delivery.
- Managed data collection, analysis, and reporting for USAID.
- Developed training materials and conducted capacity-building workshops for field staff and producers.

Funded Research

PI	“Effect of Phytase and Dacitic Tuff Breccia Supplementation Programs to Support Extended Lay in Laying Hens” U.S. Poultry & Egg Association, 2024	\$79,999
Co-PI	Industry grant: effects of test products and oral <i>Salmonella</i> Enteritidis challenge on fecal shedding and organ translocation in laying hens Industry sponsor, 2022–2023	\$70,000
Co-PI	Industry grant: effects of a test product on <i>Salmonella</i> Enteritidis in vitro Industry sponsor, 2022	\$50,000
Co-PI	“Laboratory Testing and Analytical Service of Feed Ingredient and Biological Samples”	\$200,000
Total funded (4 awards)		~\$400K

Peer-Reviewed Publications

1. **Poudel, I.,** R. Wysocky, C. M. Marshall, K. E. Anderson, R. Malheiros. 2026. Impact of non-anorexic molting on caged laying hens survivability, late-cycle production and egg income. *Poultry Science* (in press).
2. **Poudel, I.,** T. C. Vu, R. Wysocky, R. D. Malheiros, Q. D. Read, K. E. Anderson, O. T. Toomer. 2026. Incorporating high-oleic peanuts in layer diets: impact on production, egg quality & nutritional profile and calculated egg income and feed cost. *Journal of Applied Poultry Research* 35(3):100719. doi:10.1016/j.japr.2026.100719

3. Munmun, A. R., J. C. Caceres, C. Sigmon, O. Toomer, **I. Poudel**, T. Vu, R. Wysocky, R. Malheiros, K. E. Anderson, Y. L. Campbell. 2026. Meat quality of hens fed an unblanched, high-oleic peanut diet. *Poultry Science* 105(2):106225. doi:10.1016/j.psj.2025.106225
4. **Poudel, I.**, A. Calvert, A. S. Kiess, L. Zhang, P. A. Adhikari. 2025. Effect of a *Bacillus*-based probiotic on fecal shedding and cecal colonization of *Salmonella* Enteritidis in laying hens. *Journal of Applied Poultry Research* 34(2):100532. doi:10.1016/j.japr.2025.100532
5. Ovi, F. K., L. Zhang, L. Jia, K. Elliott, A. T. Sukumaran, D. Cosby, D. Wilson, R. Ramachandran, J. Evans, **I. Poudel**, P. Adhikari. 2024. Evaluating the effects of virulence genotype, swarming motility, and multi-locus sequence types of *Escherichia coli* on layer chicken embryos. *Journal of Applied Microbiology* 135(7):lxae141. doi:10.1093/jambio/lxae141
6. **Poudel, I.**, V. R. Hodge, K. G. S. Wamsley, K. D. Roberson, P. A. Adhikari. 2024. Effects of protease enzyme supplementation and varying levels of amino acid inclusion on productive performance, egg quality, amino acid digestibility, and economics of egg production in Hy-Line W-36 laying hen from 50 to 70 wk of age. *Journal of Applied Poultry Research* 33(3):100452. doi:10.1016/j.japr.2024.100452
7. Crespo, R., **I. Poudel**, D. M. Malheiros, K. E. Anderson, R. D. Malheiros. 2024. Comparison of bone quality in table egg layers by quantitative ultrasound, 3-point-bending test, and ash content. *Journal of Applied Poultry Research* 33(4):100489. doi:10.1016/j.japr.2024.100489
8. **Poudel, I.**, P. Adhikari. 2024. Combating the persistence of *Salmonella* infections in laying hens: Nutritional, managemental and vaccination strategies. *World's Poultry Science Journal* 80(2):423–452. doi:10.1080/00439339.2023.2298513
9. Fatemi, S. A., A. Mousstaaid, C. J. Williams, J. Deines, S. Poudel, **I. Poudel**, E. R. Walters, A. W. Levy, E. D. Peebles. 2024. Effects of the Marek's disease vaccine on the performance, meat yield, and incidence of woody breast myopathy in Ross 708 broilers when administered alone or in conjunction with in ovo and dietary supplemental 25-hydroxycholecalciferol. *Animals* 14(9):1308. doi:10.3390/ani14091308
10. **Poudel, I.**, V. R. Hodge, K. G. S. Wamsley, K. D. Roberson, P. A. Adhikari. 2023. Effects of protease enzyme supplementation and varying levels of amino acid inclusion on productive performance, egg quality and amino acid digestibility in laying hens from 30 to 50 weeks of age. *Poultry Science* 102(3):102465. doi:10.1016/j.psj.2022.102465
11. **Poudel, I.**, M. M. Beck, A. S. Kiess, P. A. Adhikari. 2022. The effect of blue and red LED light on the growth, egg production, egg quality, behavior, and hormone concentration of Hy-Line W-36 laying hens. *Journal of Applied Poultry Research* 31(2):100248. doi:10.1016/j.japr.2022.100248
12. Fatemi, S. A., K. S. Macklin, L. Zhang, A. Mousstaaid, S. Poudel, **I. Poudel**, E. D. Peebles. 2022. Improvement in the immunity- and vitamin D₃-activity-related gene expression of coccidiosis-challenged Ross 708 broilers in response to the in ovo injection of 25-hydroxyvitamin D₃. *Animals* 12(19):2517. doi:10.3390/ani12192517
13. **Poudel, I.**, C. D. McDaniel, M. W. Schilling, D. Pflugrath, P. A. Adhikari. 2022. Role of conventional and split feeding of various limestone particle size ratios on the performance and egg quality of Hy-Line W-36 hens in the late production phase. *Animal Feed Science and Technology* 283:115153. doi:10.1016/j.anifeedsci.2021.115153
14. Donadeu, M., C. G. Gauci, **I. Poudel**, K. Sah, D. K. Singh, A. Jabbar, M. W. Lightowlers. 2020. A hyperendemic focus of porcine cystic echinococcosis in the Banke District of Nepal. *Acta Tropica* 201:105203. doi:10.1016/j.actatropica.2019.105203
15. Gauci, C. G., C. Ayebazibwe, Z. Nsadha, C. Rutebarika, **I. Poudel**, K. Sah, D. K. Singh, A. Stent, A. Colston, M. Donadeu, M. W. Lightowlers. 2019. Accurate diagnosis of lesions suspected of being caused by *Taenia solium* in body organs of pigs with naturally acquired porcine cysticercosis. *PLoS Neglected Tropical Diseases* 13(6):e0007408. doi:10.1371/journal.pntd.0007408
16. **Poudel, I.**, K. Sah, S. Subedi, D. K. Singh, P. Kushwaha, A. Colston, C. G. Gauci, M. Donadeu, M. W. Lightowlers. 2019. Implementation of a practical and effective pilot intervention against transmission of *Taenia solium* by pigs in the Banke District of Nepal. *PLoS Neglected Tropical Diseases* 13(2):e0006838. doi:10.1371/journal.pntd.0006838

17. Pokhrel, D., **I. Poudel**, R. Raut, S. Aryal, K. Acharya. 2018. Sero-prevalence of influenza A antibodies in pigs of Bhaktapur, Kavre and Banke districts of Nepal. *International Journal of Applied Sciences and Biotechnology* 6(2):122–126. doi:10.3126/ijasbt.v6i2.20416
18. Sah, K., **I. Poudel**, S. Subedi, D. K. Singh, J. Cocker, P. Kushwaha, A. Colston, M. Donadeu, M. W. Lightowlers. 2017. A hyperendemic focus of *Taenia solium* transmission in the Banke District of Nepal. *Acta Tropica* 176:78–82. doi:10.1016/j.actatropica.2017.07.022

Book Chapter

Poudel, I. 2026. Nutritional Strategies for Enhancing Laying Hen Production and Egg Quality. In: *Poultry Farming – The Latest Scientific Findings and Practical Applications*. IntechOpen. doi:10.5772/intechopen.1013451

Technical Reports

Report of the Forty-First North Carolina Layer Performance and Management Test from 17 to 69 Weeks of Age. NC State Extension, Vol. 41, No. 2, April 2025. **I. Poudel**, coordinator of data compilation and statistical analysis; K. E. Anderson, project leader. Report (PDF)

Erratum: Report on Pullet Rearing Period of the Forty-First North Carolina Layer Performance and Management Test and Alternative Management Test. NC State Extension, Vol. 41, No. 1, January 2024. **I. Poudel**, coordinator of data compilation and statistical analysis; K. E. Anderson, project leader. Report (PDF)

Conference Presentations

PSA: Poultry Science Association Annual Meeting. IPSF: International Poultry Scientific Forum.

1. Ripper, M., **I. Poudel**, R. Wysocky, A. Frias-De-Diego, K. E. Anderson, R. Crespo. Comparative evaluation of radiographic and ultrasonographic imaging in pullets. IPSF, Jan 2026.
2. **Poudel, I.**, et al. Oregano-derived essential oils: Effects on egg production and eggshell quality in laying hens. PSA, Jul 2025.
3. **Poudel, I.**, T. O. Reid, R. Wysocky, K. Harding, K. E. Anderson. Analysis of nine laying hen production in cage and cage-free environments: 41st North Carolina Layer Performance and Management Test. IPSF, Jan 2025. Poster.
4. **Poudel, I.**, T. O. Reid, K. E. Anderson. Comparative analysis of nine laying hen pullet production in cage and cage-free environments: 41st North Carolina Layer Performance and Management Test. PSA, Jul 2024. Oral.
5. Ovi, F. K., et al. (incl. **I. Poudel**). Evaluating the effects of virulence genotype, swarming motility, and multi-locus sequence types of *Escherichia coli* on layer chicken embryo. PSA, Jul 2024. Poster.
6. **Poudel, I.**, et al. Effect of a glycan microbial metabolic modulator on fecal shedding and tissue translocation of *Salmonella* Enteritidis in laying hens. IPSF, Jan 2023.
7. Ovi, F. K., et al. (incl. **I. Poudel**). Effects of virulence genotype, motility, and multi-locus sequence type of *Escherichia coli* on embryo development, mortality, yolk retention, and weight loss of chicken embryo. IPSF, Jan 2023.
8. **Poudel, I.**, A. S. Kiess, P. A. Adhikari. Colonization of *Salmonella* Enteritidis in vaccinated and unvaccinated laying hens using oral inoculation. World's Poultry Congress, Paris, Aug 2022. Poster.
9. Self, G., **I. Poudel**, P. A. Adhikari. The behavioral, welfare, and production effects of late-stage cage-raised laying hens in a cage-free environment. PSA, Jul 2022. Oral.
10. Duong, T., et al. (incl. **I. Poudel**). Administration of postbiotics mitigated experimental subacute necrotic enteritis in broiler chickens. PSA, Jul 2022. Oral.
11. **Poudel, I.**, A. J. Calvert, P. A. Adhikari. In-vitro digestive assay to understand the effect of probiotics and a prebiotic and essential oil blend on *Salmonella* Enteritidis. IPSF, Jan 2022. Poster.
12. Gibson, J. T., H. Mentges, **I. Poudel**, P. A. Adhikari, J. B. Davis. Eggshell strength in three cavity-nesting ducks in Mississippi. Call of the Wild Conference, Nov 2021. Poster.
13. McIntyre, A., **I. Poudel**, V. R. Hodge, T. Tabler, P. A. Adhikari. Does perch material affect performance, perching times and welfare in laying hens? PSA, Jul 2021. Oral.

14. **Poudel, I.**, et al. Effect of prebiotics and essential-oil combination on *Salmonella* Enteritidis in vitro. PSA (virtual), Jul 2021. Poster.
15. **Poudel, I.**, M. M. Beck, A. S. Kiess, P. A. Adhikari. The effects of monochromatic light on the growth, egg production, egg quality, behavior, and hormone concentration of Hy-Line W-36 laying hens. IPSF, Jan 2021. Oral.
16. **Poudel, I.**, et al. Prevalence of avian pathogenic *E. coli* in cage-free W-36 pullets reared under monochromatic blue and normal LED lights. PSA (virtual), Jul 2020. Oral.
17. **Poudel, I.**, C. D. McDaniel, M. W. Schilling, P. A. Adhikari. Effect of split feeding of limestone particle size ratios on the egg production and egg quality of White Leghorn W-36 hens in the late production phase. IPSF, Atlanta, Jan 2020. Oral.

Teaching

Graduate Teaching Assistant, Mississippi State University

PO 4313/6313 Management of Commercial Layers

Fall 2021

PO 4844/6844 Avian Anatomy and Physiology

Spring 2022

Peer Review

Reviewer for *Journal of Applied Poultry Research*; *Animals* (MDPI); *Poultry* (MDPI); *Journal of Veterinary Medicine* (Wiley).

Honors and Awards

Travel Award, Poultry Science Association Annual Meeting · Philadelphia, Pennsylvania	2023
Young Scientist Award, World's Poultry Congress · Paris, France	2022
Heifer International Impact Award · Kathmandu, Nepal	2016

Training and Programs

Evonik Doctoral Seminar · Isle of Palms, South Carolina	
Youth Program, World's Poultry Congress · Paris, France	2022
Poultry Leaders of Tomorrow · Mississippi State University	2021
Arkansas Nutrition Conference · Rogers, Arkansas	2021
Graduate Teaching Workshop and Classroom Teaching Certification · Mississippi State University	2021
Livestock Emergency Guidelines and Standards (LEGS) training · Kathmandu, Nepal	2015

Skills and Tools

Diet formulation	Concept5, WUFFDA; NIR analysis of feed ingredients
Statistics and design	Experimental design and analysis in SAS, R, GraphPad, and Microsoft Excel
Laboratory	BSL-2 microbiology (avian pathogenic <i>E. coli</i> , <i>Salmonella</i> , <i>Bacillus</i> , <i>Lactobacillus</i>); DNA/RNA isolation, cDNA preparation, primer design, gene expression analysis; PCR and real-time PCR; ELISA; gel electrophoresis

Languages

English (professional) · Hindi (professional) · Nepali (native) · Punjabi (basic)