Curriculum Vitae

Name: Yijie Xiong
Title: Assistant professor, pre-tenure
Unit Name: IANR | Animal Science (75%), Biological Systems Engineering (25%)
Office Address: C217, Animal Science Complex, East Campus, UNL
Email: yijie.xiong@unl.edu
Phone: (402) 472-3246
Google Scholar Profile: https://scholar.google.com/yijie-xiong

SECTION 1 EDUCATION AND EMPLOYMENT

Section 1.1 Education History

Ph.D. Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign (**2019**)
M.S. Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign (**2013**)
B.S. Agricultural and Structural Engineering, China Agricultural University (**2011**)

Section 1.2 Employment History

- University of Nebraska-Lincoln, Animal Science Department and Biological Systems Engineering Department, Assistant professor (65% Research | 35% Extension), ***2020 (August) – present***
- University of Illinois at Urbana-Champaign, Agricultural and Biological Engineering, Postdoctoral Research Associate, ***2020 (January – August)***
- University of Illinois at Urbana-Champaign Extension, Graduate Assistant, ***2016 – 2019***
- United States Grains Council Beijing Office, Engineer Assistant (part-time under CPT), ***2015 – 2017***
- University of Illinois at Urbana-Champaign, Agricultural and Biological Engineering, Graduate Research Assistant, ***2012 – 2019***
- University of Illinois at Urbana-Champaign, Agricultural and Biological Engineering, Graduate Teaching Assistant, ***2013 – 2016***

SECTION 2 RESEARCH ACCOMPLISHMENTS

Section 2.1 Publication Record

Publication Type	Number of Publications
Peer-reviewed, published	20
Peer-reviewed, under review	1
Scientific Proceedings/Abstracts	22
Presentations/Posters	42
Invited Papers	0
Invited Presentations	11
Popular Press Articles and Others	4

Section 2.1.1 Peer-Reviewed Journal Publications (19 published)

Key for contributions to publications: *indicates corresponding author, I = responsible for the ideas for the research, F = secured funding for the research, E = responsible for oversight of the experiment, A = analysis of data, W = writing and critical editing

1. Zhao, B., R. L. McDermott, G.E. Erickson, and **Y. Xiong***. 2024. Technical Note: Assessing GPS Sensor Accuracy Using Real-Time Kinematic Device for Livestock Tracking. *Journal of Animal Science*: *accepted*. [I F E A, W]
2. Dozler, K., **Y. Xiong**, J. T. Mulliniks, A. Little, M. B. Stephenson*. 2024. Influence of virtual fence on heart rate response in beef cattle. *Rangeland.*: Doi: 10.1016/j.rala.2024.04.003. [W]
3. Li, G., R. S. Gates, **Y. Xiong**, B. C. Ramirez, and R. T. Burns. 2023. Evaluating draft EPA emissions models for broiler operations. *Journal of Applied Poultry Research*, 32(4): 100365. Doi:10.1016/j.japr.2023.100365. [F, A, W]
4. **Xiong, Y.***, I.C.F.S. Condotta, J. Musgrave, T. M. Brown-Brandl, and J. T. Mulliniks. 2023. Estimating body weight and body condition score of mature beef cows using depth images. *Translational Animal Science:* txad085. Doi:10.1093/tas/txad085. [I F E A W]
5. **Xiong, Y***., G. Li, B. C. Ramirez, and R. S. Gates. 2023. Evaluating draft EPA emission models for laying hen facilities. *Journal of the ASABE*, 66 (4): 851-863. Doi: 10.13031/ja.15237. [F, A, W]
6. Li, Z., **Y. Xiong**, S. Wang, C. Wang, B. Ji, Y. Liu, C. Liang, and Q. Tong. 2023. Assessing particulate matter concentration level and its limit exceedance based on year-round field measurements of different laying hen building systems. *Biosystems Engineering,* 226 (2023): 266-279. Doi: 10.1016/j.biosystemseng.2023.01.014 [W]
7. **Xiong, Y.***, G. Li, N. C. Willard, M. Ellis, and R. S. Gates. 2023. Modeling Neonatal Piglet Body Temperature with Thermography and Machine Learning. *Journal of the ASABE,* 66(2): 193-204. Doi: 10.13031/ja.14998. [I E A W]
8. Li, G., G. D. Chesser Jr., J. L. Purswell, C. Magee, R. S. Gates, and **Y. Xiong**. 2022. Design and development of a broiler mortality removal robot. *Applied Engineering in Agriculture*, 39(6): 853-863. doi: 10.13031/aea.15013 [W]
9. Li, G., G. E. Erickson, **Y. Xiong***. 2022. Individual beef cattle identification using muzzle images and deep learning techniques. *Animals*, 12(11):1453. doi: 10.3390/ani12111453 [I F E A W]
10. Hu, J.Y., **Y. Xiong**, R. S. Gates, and H.-W. Cheng. 2021. Perches as cooling devices for reducing heat stress in caged laying hens: A review. *Animals,* 11(11), 3026. Doi: 10.3390/ani11113026.
11. Li, G., **Y. Xiong**, Q. Du, Z. Shi, R. S. Gates. 2021. Classifying ingestive behavior of dairy cows via automatic sound recognition. *Sensors*, 21(15):5231. doi: 10.3390/s21155231. [I F E A W]
12. **Xiong, Y.***, R.S. Gates, J. Y. Hu, P. Y. Hester, and H.W. Cheng. 2020. Design and performance of an experimental cooled perch system for heat stress relief of laying hens. *Transactions of the ASABE:* 63(4): 1109-1121. doi: 10.13031/trans.13672. [A, W]
13. Zheng, W., **Y. Xiong**, R. S. Gates, Y. Wang, and K. W. Koelkebeck. 2020. Air temperature, carbon dioxide and ammonia assessment inside a commercial cage layer barn with manure-drying tunnels. *Poultry Science*: 99(8):3885-3896. doi: 10.1016/j.psj.2020.05.009. [A, W]
14. Hu, J. Y., P. Y. Hester, **Y. Xiong**, R. S. Gates, M. M. Makagon, and H. W. Cheng. 2019. Effect of cooled perches on the efficacy of an induced molt in White Leghorn laying hens exposed to cyclic chronic heat. *Poultry Science*: pez317. doi: 10.3382/ps/pez317. [A, W]
15. Hu, J. Y., P. Y. Hester, M. M. Makagon, **Y. Xiong**, R. S. Gates, and H. W. Cheng. 2019. Effect of cooled perches on performance, plumage condition, and foot health of caged white leghorn hens exposed to cyclic chronic heat stress episodes. *Poultry Science*: pez039. doi: 10.3382/ps/pez039. [A, W]
16. Hu, J. Y., P. Y. Hester, M. M. Makagon, **Y. Xiong**, R. S. Gates, and H. W. Cheng. 2019. Effect of cooled perches on physiological parameters of caged White Leghorn hens exposed to cyclic heat. *Poultry Science*: pez012. doi: 10.3382/ps/pez012. [A, W]
17. **Xiong, Y.*,** R.S. Gates, and A. R. Green-Miller. 2018. Factors affecting trailer thermal environment for market pigs transported in the US. *Animals*, 8 (11): 203. doi: 10.3390/ani8110203. [E, A, W]

18. Candido, M. G. L., **Y. Xiong**, R. S. Gates, I. F. F. Tinôco, and K. W. Koelkebeck. 2018. Effects of carbon dioxide on turkey poult performance and behavior. *Poultry Science*: pey128. doi: 10.3382/ps/pey128. [E, A, W]
19. Hu, J. Y., P. Y. Hester, M. M. Makagon, Giuseppe Vezzoli, R. S. Gates, **Y. Xiong**, and H. W. Cheng. 2016. Cooled perch effects on performance and well-being traits in caged White Leghorn hens. *Poultry Science*: pew248. doi: 10.3382/ps/pew248. [E, A, W]
20. **Xiong, Y.***, A.R. Green, and R. S. Gates. Characteristics of Trailer Thermal Environment during Commercial Swine Transport Managed under U.S. Industry Guidelines. 2015. *Animals*, 5, 226-244. doi:10.3390/ani5020226. [E, A, W]

Section 2.1.2 Peer-Reviewed Journal Publications – Under Review

1. Khorchani*, M., M. Schmer, A. Freidenreich, T. Awada, G. Birru, S. Chrisofferson, R. Drijber, G. Erickson, V. Jin, R. McDermott, A. Suyker, A. Watson, B. Woodbury, and **Y. Xiong**. 2024. The LTAR common experiment at Platte River/high plains aquifer: grazinglands. *Journal of Environmental Quality*: *under review*.

Section 2.1.3 Books and Book Chapters

None

Section 2.1.4 Conference Proceedings: Peer-Reviewed

1. Mulliniks, J. T., **Y. Xiong**, I. C. F. S. Condotta, D. J. Anderson, Kacie L. McCarthy, M. B. Stephenson. 2023. Invited Talk: Improving efficiency of grazing livestock production systems with novel sensors (*abst.*). *Journal of Animal Science*: *accepted*.
2. Dotto, J., R.S. Gates, S. K. Pitla, and **Y. Xiong**. 2023. A web-based interface for automatic pollutant emission estimations in poultry facilities. ASABE Annual International Meeting. Omaha, NE, July 9-12, 2023. ASABE: St. Joseph, MI. doi:10.13031/aim.202300416
3. Anderson, D. J., J. T. Mulliniks, I.C.F.S. Condotta, A. K. Watson, and **Y. Xiong.** 2023. Predicting live body weight of beef heifers using 3D imaging. *Journal of Animal Science*: 101 (Supplement_2), 13-14. doi: 10.1093/jas/skad341.015.
4. Heil, H.A., B. Zhao, B. C. Troyer, R. L. Sjostrand, J. Xiong, A. K. Watson, G. E. Erickson, J. Okalebo, Y. Shi, and **Y, Xiong.** 2023. Characterizing yearling beef steers grazing on smooth bromegrass pasture using global positioning technology. *Journal of Animal Science*: 101 (Supplement_2), 11-12. doi: 10.1093/jas/skad341.013.
5. **Xiong, Y.** 2023. A summary of feedlot producer perceptions of precision livestock management technologies. 2nd U.S. Precision Livestock Farming Conference: *accepted*.
6. Li, G., J. T. Mulliniks, R. S. Gates, and **Y. Xiong**. 2023. A digital phenotyping tool for measuring body traits of individual beef cattle. 2nd U.S. Precision Livestock Farming Conference: *accepted*.
7. Dotto, J., R.S. Gates, S. K. Pitla, and **Y. Xiong**. 2022. Renovating the iPMU via Internet of Things for pollutant emission estimations in poultry facilities. Paper No. 2200807. ASABE Annual International Meeting. Houston, TX, July 17-20, 2022. ASABE: St. Joseph, MI. doi:10.13031/aim.202200807
8. **Xiong, Y.**, E. Psota, T. M. Brown-Brandl, B. Mote, T. Schmidt, and G. Erickson. 2022. A volumetric depth imaging method for feed estimation in beef cattle. *Precision Livestock Farming '22*: pp. 231-238. Proceedings of 2022 ECPLF.
9. Trenhaile-Grannemann, M., **Y. Xiong**, W.-Z. Liang, T. M. Brown-Brandl, and B. Mote. 2022. Automatic classification of sow conformation traits for optimized sow selection. *Precision Livestock Farming '22*: pp. 409-416. Proceedings of 2022 ECPLF.
10. Benicio, L. M., K. O. S. Miranda, T. M. Brown-Brandl, I. C. F. S. Condotta, and **Y. Xiong**. 2022. Obtaining broiler chickens' weight through depth image. *Precision Livestock Farming '22*: pp. 151-157. Proceedings of 2022 ECPLF.

11. Erickson, G. E., A. K. Watson, A. Suyker, Y. Xiong, and J. Okalebo. 2022. Importance and difficulty of measuring complete greenhouse gas flix from diverse beef production systems. *Journal of Animal Science*: 100 (Supplement_3), 152-153. doi: 10.1093/jas/skac247.283
12. McPhillips, L. J., Z. Carlson, J. C. MacDonald, A. Suyker, T. Awada, A. K. Watson, J. Okalebo, Y. Xiong, S. Dangal, H. A. Heil, R. Stowell, G. E. Erickson. 2022. Greenhouse gas emissions from two beef systems from birth to slaughter in eastern Nebraska. *Journal of Animal Science*: 100 (Supplement_2), 102. doi:10.1093/jas/skac064.170
13. Cooper, N., K. Vande Pol, M. Ellis, **Y. Xiong**, R. S. Gates. 2020. Effect of oxygen administration to piglets at birth on post-natal body temperatures. *Journal of Animal Science*: 98 (Supplement_3), 154. doi: 10.1093/jas/skaa054.271
14. Vande Pol, K., N. Cooper, A. Tolosa, M. Ellis, R. Gates, **Y. Xiong**, C. M. Shull, K. Brown, S. da Silva. 2020. PSV-7 Effects of drying and oxygenation of piglets at birth on rectal temperatures in the early post-natal period. *Journal of Animal Science*: 98 (Supplement_3), 154-155. doi: 10.1093/jas/skaa054.272.
15. Cooper, N., K. Vande Pol, M. Ellis, Y. Xiong, R. S. Gates. 2019. Effect of piglet birth weight and drying on post-natal changes in rectal temperature. *Journal of Animal Science*: 97 (Supplement_2), 4. doi: 10.1093/jas/skz122.006
16. **Xiong, Y.***, N. C. Cooper, R. S. Gates, and M. Ellis. 2018. Neo-natal piglet core body temperature model from surface temperature and environment measurements. 10th International Livestock Environment Symposium (ILES X). Omaha, NE, September 25 – 27, 2018. ASABE: St. Joseph, MI. doi: 10.13031/iles.18-128
17. **Xiong, Y.,** and R. S. Gates. 2017. Characterizing water utilization in modern US dairies to identify opportunities for reutilization. Paper No.: 1701034. ASABE Annual International Meeting. Spokane WA, July 16-19, 2017. ASABE: St. Joseph, MI. doi: 10.13031/aim.201701034
18. Candido, M. G. L., **Y. Xiong***, R. S. Gates, and K. K. Koelkebeck. 2017. Evaluation of elevated CO_2 concentration on turkey poult weight gain during brooding. International Symposium on Animal Environment and Welfare. Chongqing, China. Oct 23-26, 2017.
19. **Xiong, Y.***, R. S. Gates, J. Hu, K. S. O. Rocha, M. M. Makagon, P. Y. Hester and H. W. Cheng. 2015. Performance assessment of cooled perch system for heat stress trials in egg laying production: Year 1. Paper No. 15-2183667. ASABE Annual International Meeting. New Orleans, July 26-29, 2015. ASABE: St. Joseph, MI. doi: 10.13031/aim.20152183776
20. Gates, R.S., S. A. Enneking, **Y. Xiong**, P.Y. Hester, M.M. Makagon and H.W. Cheng. 2014. Design and performance of cooled perches for alternative egg laying production systems. Paper No. 14-1901235. ASABE Annual International Meeting. Montreal, Quebec Canada, July 13-16. ASABE: St. Joseph, MI. doi: 10.13031/aim.20141901235
21. **Xiong, Y.***, A.R. Green, R.S. Gates. 2013. Thermal conditions of a commercial U.S. swine transport trailer during hot, mild, and cold weather. International Symposium on Animal Environment and Welfare. Chongqing, China. Oct 19-22, 2013.
22. **Xiong, Y.**, A.R. Green, G. Borges, R.S. Gates, J. Su. 2012. Instrumentation system for monitoring the thermal environment of commercial swine trailers. Paper No. 12-ILES2242. Proceeding: International Livestock Environment Symposium. Valencia, Spain. July 08-12. ASABE: St. Joseph, MI. doi: 10.13031/aim.2013.41609

Section 2.1.5 Conference Presentations and/or Posters (presenting author noted by underline)

1. Dozler, K., M. B. Stephenson, **Y. Xiong**, J. T. Mulliniks, A. Little. 2024. The influence of virtual fence cues on heart rate responses of cattle. 2024 SRM Annual Meeting. January 28 – February 1, 2024, Sparks, NV.
2. Zhao, B., M. B. Stephenson, A. Watson, **Y. Xiong,** J. Hiller, T. Awada, R. Wang, B. Wardlow, and Y. Shi. 2024. Forage biomass estimation for smooth bromegrass using drone-based remote sensing to evaluate effects of treatments with nitrogen fertilization and cattle nutrient supplement. 2024 SRM Annual Meeting. January 28 – February 1, 2024, Sparks, NV.

3. Dotto, J., R.S. Gates, S. K. Pitla, and **Y. Xiong**. 2023. A web-based interface for automatic pollutant emission estimations in poultry facilities. ASABE Annual International Meeting. Omaha, NE, July 9-12, 2023. ASABE: St. Joseph, MI.
4. Niwenshuti, J.D., T. M. Brown-Brandl, G. Erickson, and **Y. Xiong**. 2023. Classification of feedlot diets using texture analysis and machine learning techniques. ASABE Annual International Meeting. Omaha, NE, July 9-12, 2023. ASABE: St. Joseph, MI.
5. B. C. Ramirez, G. Li, **Y. Xiong**, R.S. Gates, and R.T. Burns. 2023. Evaluating draft EPA emissions models for swine facilities. ASABE Annual International Meeting. Omaha, NE, July 9-12, 2023. ASABE: St. Joseph, MI.
6. G. Li, **Y. Xiong**, R.S. Gates, B. C. Ramirez, and R.T. Burns. 2023. Evaluating draft EPA emissions models for broiler operations. ASABE Annual International Meeting. Omaha, NE, July 9-12, 2023. ASABE: St. Joseph, MI.
7. **Xiong, Y.**, E. Dennis, G. E. Erickson. 2023. A summary of feedlot producer perceptions of precision livestock management technologies. 2nd U.S. Precision Livestock Farming Conference. May 22 – 24, 2023, Knoxville, TX.
8. Li, G., J. T. Mulliniks, R. S. Gates, and **Y. Xiong**. 2023. A digital phenotyping tool for measuring body traits of individual beef cattle. 2nd U.S. Precision Livestock Farming Conference. May 22 – 24, 2023, Knoxville, TX.
9. Anderson, D. J., J. T. Mulliniks, I.C.F.S. Condotta, A. K. Watson, and **Y. Xiong**. 2023. Predicting live body weight of beef heifers using 3D imaging. Annual meeting of the ASAS Midwest Section. March 13 – 15, 2013. Maddison, WI.
10. Heil, H.A., B. Zhao, B. C. Troyer, R. L. Sjostrand, J. Xiong, A. K. Watson, G. E. Erickson, J. Okalebo, Y. Shi, and **Y. Xiong**. 2023. Characterizing yearling beef steers grazing on smooth bromegrass pasture using global positioning technology. March 13 – 15, 2013. Maddison, WI.
11. Dozler, K., M. B. Stephenson, A. Acala, J. T. Mulliniks, **Y. Xiong**. 2023. Influence of virtual fence cues on heart rate response in cattle. 2023 SRM Annual Meeting. February 12-16, 2023, Boise, ID.
12. Zhao, B., M. B. Stephenson, J. D. Volesky, **Y. Xiong,** T. Awada, B. Wardlow, and Y. Shi. 2023. Selection preference of grazing cattle over time and paddocks in Nebraska Sandhills in 2016 and 2017 seasons. In 2023 SRM Annual Meeting. February 12-16, 2023, Boise, Idaho.
13. Anderson, D. J., J. T. Mulliniks, A. Watson, and **Y. Xiong**. 2022. Predicting live body weight of beef heifers using 3D imaging. Nebraska Cattlemen College. Nebraska Cattlemen Annual Convention. December 6th, 2022. Kearney, NE.
14. **Xiong, Y.**, G. Li, B. C. Ramirez, and R. S. Gates. 2022. Evaluating the draft-US-EPA emissions models for laying hen and broiler facilities (*abstr*). Poultry Science Association 2022 Latin American Scientific Conference. October 4-6th, 2022. Iguaçu Falls, Paraná, Brazil.
15. **Xiong, Y.**, G. Li, B. C. Ramirez, and R.S. Gates. 2022. Evaluating draft EPA emissions models for laying hen facilities. ASABE Annual International Meeting. Houston, TX, July 17-20, 2022. ASABE: St. Joseph, MI.
16. Dotto, J., R.S. Gates, S. K. Pitla, and **Y. Xiong**. 2022. Renovating the iPMU via Internet of Things for pollutant emission estimations in poultry facilities. ASABE Annual International Meeting. Houston, TX, July 17-20, 2022. ASABE: St. Joseph, MI.
17. Niwenshuti, J.D., E. Psota, T. M. Brown-Brandl, G. Erickson, and **Y. Xiong**. 2022. Imaging method to quantify residual feed in fence-line feedlot bunk using depth cameras. ASABE Annual International Meeting. Houston, TX, July 17-20, 2022. ASABE: St. Joseph, MI.
18. Li, G., G. Erickson, and **Y. Xiong**. 2022. Individual feedlot cattle identification using muzzle images and deep learning techniques. ASABE Annual International Meeting. Houston, TX, July 17-20, 2022. ASABE: St. Joseph, MI.
19. **Xiong, Y.**, E. Psota, T. M. Brown-Brandl, B. Mote, T. Schmidt, and G. Erickson. 2022. A volumetric depth imaging method for feed estimation in beef cattle. European Conference on Precision Livestock Farming 2022. August 29th – September 2nd, 2022. EA-PLF: Parma, Italy.

20. Trenhaile-Grannemann, M., **Y. Xiong**, W.-Z. Liang, T. M. Brown-Brandl, and B. Mote. 2022. Automatic classification of sow conformation traits for optimized sow selection. European Conference on Precision Livestock Farming 2022. August 29th – September 2nd, 2022. EA-PLF: Parma, Italy.
21. Benicio, L. M., K. O. S. Miranda, T. M. Brown-Brandl, I. C. F. S. Condotta, and **Y. Xiong**. 2022. Obtaining broiler chickens' weight through depth image. European Conference on Precision Livestock Farming 2022. August 29th – September 2nd, 2022. EA-PLF: Parma, Italy.
22. McPhillips, L., A. Suyker, **Y. Xiong**, A. Watson, and G. Erickson. 2022. Impacts of cow system on greenhouse gas emissions of beef production. 8th International Greenhouse Gas & Animal Agriculture Conference. June 5-10, 2022. GGAA: Orlando, FL.
23. Niwenshuti, J.D., **Y. Xiong**. 2021. Imaging method to quantify the weight of residual feed in fence-line concrete bunk. 2021 Nebraska Cattlemen College. Nebraska Cattlemen. November 30th, 2021. Kearney, NE.
24. Niwenshuti, J.D., **Y. Xiong**. 2021. Imaging method to quantify the geometric characteristics of beef feedyard bunks. 2021 Engineering Summer Undergraduate Research Fair. University of Nebraska-Lincoln. August 3rd, 2021.
25. **Xiong, Y.**, R. S. Gates, and K. W. Koelkebeck. 2019. Interior environment of three laying hen systems during winter conditions. Abstract number: 3217897. Poultry Science Association Annual Meeting. Montreal, QC, Canada, July 14 – 19, 2019. PSA: Champaign, IL.
26. Cooper, N., K. Vandepol, M. Ellis, **Y. Xiong**, and R. Gates. 2019. Effect of piglet birth weight and drying on post-natal changes in rectal temperature. Annual meeting of the ASAS Midwest Section. Omaha, NE, March 11- 13, 2019. ASAS: Champaign, IL. doi: 10.1093/jas/skz122.006
27. Candido, M.G. L., **Y. Xiong**, R. S. Gates, and K. K. Koelkebeck. 2018. Application of image analysis to assess the activity of turkey poults exposed to different carbon dioxide concentrations. PSA Latin American Scientific Conference. Campinas, SP, Brazil. Nov 6 – 8, 2018. PSA: Champaign, IL.
28. **Xiong, Y.**, N. C. Cooper, R. S. Gates, and M. Ellis. 2018. Neo-natal piglet core body temperature model from surface temperature and environment measurements. 10th International Livestock Environment Symposium (ILES X). Omaha, NE, September 25 – 27, 2018. ASABE: St. Joseph, MI. doi: 10.13031/iles.18-128
29. **Xiong, Y.**, M. G. L. Candido, R. S. Gates, I. F. F. Tinôco, and K. W. Koelkebeck. 2018. Effects of carbon dioxide on turkey poult performance and behavior. Poultry Science: 97 (E-Suppl.1). Poultry Science Association Annual Meeting. San Antonio, TX, July 23-26, 2018. PSA: Champaign, IL.
30. **Xiong, Y.,** and R. S. Gates. 2017. Characterizing water utilization in modern US dairies to identify opportunities for reutilization. Paper No.: 1701034. ASABE Annual International Meeting. Spokane WA, July 16-19, 2017. ASABE: St. Joseph, MI. doi: 10.13031/aim.201701034
31. Candido, M. G. L., **Y. Xiong**, R. S. Gates, and K. K. Koelkebeck. 2017. Evaluation of elevated CO_2 concentration on turkey poult weight gain during brooding. International Symposium on Animal Environment and Welfare. Chongqing, China. Oct 23-26, 2017.
32. Cooper, N., M. Ellis, R. Gates, and **Y. Xiong**. 2017. Measuring postnatal changes in piglet body temperature. Pig Welfare Symposium. Des Moines, IA, November 7-9, 2017. National Pork Board.
33. **Xiong, Y.**, W. Zheng, R.S. Gates, K.O.S. Rocha, J. Hu, M.M. Makagon, P.Y. Hester and H.W. Cheng. 2016. Cooled perch system performance for heat stress trials on laying hens: Year 2. ASABE Annual International Meeting. Orlando, July 17-20, 2016. ASABE: St. Joseph, MI.
34. **Xiong, Y.** and R. S. Gates. 2016. Hot weather temperature distribution inside a loaded commercial swine trailer. I SIAPAS/V SIMCRA 2016, International Symposium of Environment and Engineering for Sustainable Livestock Production.
35. Hu, J. Y., M. M. Makagon, R. S. Gates, P. Y. Hester, **Y. Xiong**, and H. W. Cheng. 2015. The effect of cooled perches on caged White Leghorn hen performance during chronic heat stress. Abstract No. 63021. Poultry Science Association Annual Meeting. Louisville, KY, July 27-30, 2015. PSA: Champaign, IL.
36. **Xiong, Y.**, R. S. Gates, J. Hu, K. S. O. Rocha, M. M. Makagon, P. Y. Hester and H. W. Cheng. 2015. Performance assessment of cooled perch system for heat stress trials in egg laying production: Year 1.

Paper No. 15-2183667. ASABE Annual International Meeting. New Orleans, July 26-29, 2015. ASABE: St. Joseph, MI. doi: 10.13031/aim.20152183776

37. Gates, R. S., **Y. Xiong**, R. Zimmerman, T. Funk and M. Hayes. 2015. Alternative mechanical ventilation strategies for filtered-air systems in North American livestock barns. Paper No. 15-2190012. ASABE Annual International Meeting. New Orleans, July 26-29, 2015. ASABE: St. Joseph, MI.
38. **Xiong, Y.**, T. L. Funk, and R. S. Gates. 2015. A survey of manure management situations in modern Chinese livestock operations. Paper No. 15-2190232. ASABE Annual International Meeting. New Orleans, July 26-29, 2015. ASABE: St. Joseph, MI.
39. Gates, R.S., S. A. Enneking, **Y. Xiong**, P.Y. Hester, M.M. Makagon and H.W. Cheng. 2014. Design and performance of cooled perches for alternative egg laying production systems. Paper No. 14-1901235. ASABE Annual International Meeting. Montreal, Quebec Canada, July 13-16. ASABE: St. Joseph, MI. doi: 10.13031/aim.20141901235
40. **Xiong, Y.**, A.R. Green, R.S. Gates. 2013. Thermal conditions of a commercial U.S. swine transport trailer during hot, mild, and cold weather. International Symposium on Animal Environment and Welfare. Chongqing, China. Oct 19-22, 2013.
41. **Xiong, Y.**, A.R. Green, R.S. Gates, J. Su. 2013. Evaluation of hot weather management strategies for pig transport. Paper No. 13-1608601. ASABE Annual International Meeting. Kansas City, Missouri, July 21-24. ASABE: St. Joseph, MI.
42. **Xiong, Y.**, A.R. Green, G. Borges, R.S. Gates, J. Su. 2012. Instrumentation system for monitoring the thermal environment of commercial swine trailers. Paper No. 12-ILES2242. Proceeding: International Livestock Environment Symposium. Valencia, Spain. July 08-12. ASABE: St. Joseph, MI. doi: 10.13031/aim.2013.41609

Section 2.1.6 Invited talks or Keynote Speeches

National

1. USDA ARS Beef Systems Update. April 24, 2024.
2. Aquino, T., M. Drewnoski, **Y. Xiong**. Invited Talk: Virtual Fencing – the future of sustainable beef production? Sponsored by *ISE Extension Engagement Week, University of Missouri*, October 23 – 24m Columbia, MO, USA.
3. Mulliniks, J. T., **Y. Xiong**, I. C. F. S. Condotta, D. J. Anderson, Kacie L. McCarthy, M. B. Stephenson. 2023. Invited Talk: Improving efficiency of grazing livestock production systems with novel sensors. Sponsored by *American Society of Animal Science (ASAS) Central Section*, July 16 - 20, 2023. Albuquerque, NM, USA.
4. **Xiong, Y.** 2022. "Precision Ranching is Here!" ExpoEDU Speaker Sessions. Sponsored by *Nebraska-AgExpo.* December 6th, 2022. Lincoln, NE, USA.
5. **Xiong, Y.** 2022. "Precision Livestock Management: Sensing technologies and applications." Special Session on Digital Agriculture. Sponsored by National Science Foundation (NSF)-Engineering Research Centers program, August 15th – 16th, 2022. Ithaca, NE, USA.
6. **Xiong, Y.** 2022. "Precision Livestock Management: Sensing technologies and applications." Special Session on Digital Agriculture. Sponsored by the Intelligent Systems for Molecular Biology (30th conference), July 12th, 2022. Madison, WI, USA.
7. **Xiong, Y.** 2022. "Beef precision sensing technologies and applications." Genetics, Genomics, and Bioinformatics Symposium – technologies to enhance phenotyping within the Animal Sciences and the AG2PI. Sponsored by American Society of Animal Science Midwest Section, March 15th, 2022. Omaha, NE, USA.
8. **Xiong, Y.** 2022. "Precision livestock management in rangelands." 2022 North Dakota Beef Cattle Improvement Association Annual and Board of Directors Meeting. Sponsored by North Dakota State University, January 19th, 2022.
9. Li, G., R. S. Gates, and **Y. Xiong**. 2021. Introduction to precision poultry farming. UGA-EVONIK Precision Poultry Farming Training. Online, August 27th, 2021.

International

10. **Xiong, Y.** 2021. "Precision livestock management: opportunities and challenges." Online training program on emerging technologies in agriculture and allied sectors for cooperatives. Sponsored by Network for the Development of Agricultural Cooperatives in Asia and the Pacific (NEDAC), Bangkok, Thailand, June 29, 2021.
11. **Xiong, Y.** 2014. Weaned piglets transport in the U.S. Swine Model Farms and Technical Training Seminar. Sponsored by United States Grains Council. Beijing, China, April 2014.

Section 2.1.7 Other Publications

1. **Xiong, Y.**, G. Li, G. E. Erickson. 2022. Beef cattle muzzle/noseprint database for individual identification. Zenodo. https://doi.org/10.5281/zenodo.6324360
2. Ellis, M., N. C. Cooper, K. Vande Pol., R. S. Gates, and **Y. Xiong**. Measuring postnatal changes in piglet body temperature. *National Hog Farmer*: December 2017. http://www.nationalhogfarmer.com/animal-health/measuring-post-natal-changes-piglet-body-temperature.
3. U. S. Grains Council. 2017. Manure land application in the United States: Policies and Practices (English and Chinese editions). Editors: B. Lohmar, **Y. Xiong**, R. S. Gates, T. L. Funk, and T. Lim. 71 pp. Beijing, China: USGC-Beijing.

Section 2.2 Research Funding Record

Section 2.2.1 ***Internally Funded*** Research Grants *($152,500 total as PI)*

1. "Optimizing rangeland cow-calf production with precision livestock management tools (Multistate W3012)". Sponsor: UNL: ARD/NEAES FY22 Hatch Multistate Enhancement Program. Dates of project: 10/01/21-09/30/24. Investigators: Xiong, Y. and J. T. Mulliniks. Total amount: $150,000. Attribution to candidate: 100%.
2. "Imaging method to quantify the geometric characteristics of beef feedyard bunks". Sponsor: UNL: ARD 2021 Undergraduate Research Award. Dates of project: 02/15/21-08/15/21. Investigators: Xiong, Y. and J. Niwenshuti. Total amount: $2,500. Attribution to candidate: 100%.

Section 2.2.2 ***Externally Funded*** Research Grants *($3.7M total; $848,618 attributed to me)*

1. "Seed grant: Broadband connectivity for rural communications and smart livestock management". Sponsor: USDA-AFRI. Dates of project: 09/15/23 – 08/14/25. Investigators: Nie, S., Y. Xiong and X. Liu. Total amount: $300,000. Attribution to candidate: 33%.

   Project Description: The goal of this AFRI A1521 Seed Grant application is to design a hybrid broadband communication scheme and prototype to achieve intelligent animal identification for livestock systems in rural communities. **My role:** Co-PI. **My responsibility:** ideation of the project, identify funding resource, significantly contribute to grant writing, shared responsibilities in research conduction, student mentoring and results dissemination.

2. "CC* Integration-Large: Husker-Net: open Nebraska end-to-end wireless edge networks". Sponsor: NSF. Dates of project: 07/01/23 – 06/30/25. Investigators: Liu, Q. M. Vuran, … Y, Xiong, et al. Total amount: $875,000. Attribution to candidate: 2%.

   Project Description: In this project, we propose a novel open end-to-end cellular edge network (Husker-Net) to address the unfulfilled needs of diverse research projects at UNL. **My role:** Co-PI. **My responsibility:** assisted PI with need assessment, contributed to grant writing, shared responsibilities in research conduction, student mentoring and results dissemination.

3. "Grazing technologies to enhance integrated crop-livestock systems in the Northern Great Plains". Sponsor: NCR, SARE. Dates of project: 01/01/24 – 12/31/26. Investigators: Meehan, M. M. Drewnoski, … Y, Xiong, et al. Total amount: $300,000. Attribution to candidate: 8%.

   Project Description: This project aims to assess the use of multiple available grazing technologies such as mobile fence, virtual fence for improved grazing efficiency. **My role:** Co-PI. **My responsibility:** assisted PI with need assessment, contributed to grant writing, fulfill needed personnel expertise, shared responsibilities in research conduction, student mentoring and results dissemination.

4. "Thermal perches as warming devices for reducing cold stress in caged laying hens". Sponsor: USDA-ARS. Dates of project: 01/01/23 – 12/31/25. Investigators: Cheng, H.-W., M. Erasmus and Y, Xiong. Total amount: $650,000. Attribution to candidate: 22%.

   Project Description: This project aims to supply caged laying hens with warm circulating water during wintertime and assess bird health and welfare. **My role:** UNL PI. **My responsibility:** responsible for system design, assisted PI with experimental design, significantly contributed to grant writing, fulfill needed personnel expertise, shared responsibilities in research conduction, student mentoring and results dissemination.

5. "Testing the Draft EPA Models for swine emissions of ammonia, hydrogen sulfide, and particulate matter". Sponsor: National Pork Board. Dates of project: 07/01/22 – 05/01/23. Investigators: Gates, R.S., R. T. Burns, B. Ramirez, G. Li and Y, Xiong. Total amount: $24,000. Attribution to candidate: 50%.

   Project Description: This completed project was part of a series of research efforts that assess the functionality and feasibility of EPA-developed emission models for livestock housing systems. **My role:** UNL PI. **My responsibility:** leadership role in model assessment, data analysis and visualization; significantly contributed to report writing and results dissemination.

6. "Assessing the Draft EPA Laying Hen Emissions Models". Sponsor: American Egg Board. Dates of project: 12/01/21 – 02/15/22. Investigators: Gates, R.S., R. T. Burns, B. Ramirez, G. Li and Y, Xiong. Total amount: $12,000. Attribution to candidate: 42%.

   Project Description: This completed project was part of a series of research efforts that assess the functionality and feasibility of EPA-developed emission models for livestock housing systems. **My role:** UNL PI. **My responsibility:** leadership role in model assessment, data analysis and visualization; significantly contributed to report writing and results dissemination.

7. "US Grains Council Field Manual Translation". Sponsor: US Grains Council. Dates of project: 11/09/21 –11/19/21. Investigators: Xiong., Y. Total amount: $1,090. Attribution to candidate: 100%.

   Project Description: This completed Extension project was to assist USGC review the manure application field manual in English and Chinese. **My role:** PI. **My responsibility:** solely responsible for the review and provided feedback for USGC to improve.

8. "Low-cost instrumentation for ammonia and particulate matters emission evaluations for egg-laying operations". Sponsor: Iowa State University – Egg Industry Center. Dates of project: 08/01/21-04/30/24. Investigators: Xiong., Y. Total amount: $88,454. Attribution to candidate: 100%.

   Project Description: The objectives of this project were to upgrade a portable and low-cost instrumentation for air quality monitoring in poultry houses and to design a user-friendly web-interface for ammonia and particulate matter emission. **My role:** PI. **My responsibility:** solely responsible for grant writing, secure funding, supervise graduate student in research project and oversee all components in project.

9. "Improving livestock production through the development of precision rangeland management technologies". Sponsor: USDA-ARS. Dates of project: 07/01/21 – 06/30/24. Investigators: Mulliniks, J.T., M. Stephenson, K. McCarthy, Y. Shi and Y. Xiong. Total amount: $1,350,000. Attribution to candidate: 33%.

   Project Description: This project is part of a three-state campaign to assess using novel technology and updated information to assist ranchers and land managers in optimizing land resources for beef cattle

production while maintaining or enhancing the vegetation diversity and sustainability. **My role:** Co-PI. **My responsibility:** assisted PI with need assessment, fulfill needed personnel expertise, shared responsibilities in research conduction, leadership role in conducting precision livestock management emphasized research/extension activities, student mentoring and results dissemination.

10. "Next-generation grow-finish swine health and growth monitoring". Sponsor: Merck Animal Health & Co. Dates of project: 07/01/21-06/30/22. Investigators: Brown-Brandl, T., Y, Xiong. And R. Sharma. Total amount: $121,735. Attribution to candidate: 10%.

    Project Description: This project aimed to design an RFID feeding and drinking station for grow-finish pigs for improved health productivity. **My role:** Co-PI. **My responsibility:** assisted PI with need assessment, significantly contributed to grant writing and assisted PI with funding and resource security of the project.

Section 2.2.3 External Research Grants ***submitted through the UNL OSP*.**

1. "PARTNERSHIP: Biting Flies and Cattle Stress, Welfare, and Productivity". Sponsor: USDA-NIFA. Dates of project: 07/01/2024 - 06/30/2029. Investigators: Bingham, G., D. Boxler, G. Brewer, M. Drewnoski, … Y, Xiong, et al. Total amount: $1,150,000. Attribution to candidate: 2%. Submitted on 10/06/2023.

Section 2.2.4 External Research Grants ***submitted through other institutions*.**

Currently none.

Section 2.2.5 External Research Grants Submitted through the UNL OSP, but ***not Funded*.**

1. "Decentralized Farms for Decarbonization, Climate-Smart Farming, and Resilient Rural Communities (DeFa4DeCa)". Sponsor: USDA-NIFA. Dates of project: 05/01/24 – 04/30/29. Investigators: Pitla, S.K. (PI), Hay J., … Xiong, Y., et al. Total amount: $9,997,987. Attribution to candidate: 10%. Submitted on 07/13/2023.
2. "New Innovator Award – Precision beef cattle management in feedlots." Sponsor: Foundation for Food & Agriculture Research (FFAR). Dates of project: 10/01/23 – 09/30/26. Investigators: Xiong, Y. (PI). W.-Z. Liang, G. Li. Sponsor amount: $450,000. Total amount: $449,902. Attribution to candidate: 60%. Submitted on 5/03/2022.
3. "The AgroAI Institute for Climate-Smart Agriculture and Forestry". Sponsor: NSF. Dates of project: 10/01/22 – 09/30/27. Investigators: Wolf, M. (PI) et al. Sponsor amount: $20,000,000. Total amount: $4,999,491. Attribution to candidate: 0.5%. Submitted on 09/15/2022.
4. "Growing Agricultural Sustainability and Resiliency Through Technological Innovations: The Nebraska Farm of The Future." Sponsor: USDA-AFRI. Dates of project: 04/01/22 – 03/31/26. Investigators: Luck, J. (PI), Allen, C., … Xiong, Y., et al. Total amount: $4,999,491. Attribution to candidate: 0%. Submitted on 10/15/2021.
5. "STEERS: Feedyard of the future – using precision management to optimize finishing beef and welfare outcomes." Sponsor: USDA: NIFA – AFRI. Dates of project: 07/01/22 – 06/30/27. Investigators: Xiong, Y. (PI), Condotta, I. (UIUC), Erickson, G., Funk, R., Woiwode, R. Sponsor amount: $1,000,000. Total amount: $1,000,000. Attribution to candidate: 50%. Submitted on 7/15/2021.
6. "New Innovator Award – Precision beef cattle management in feedlots." Sponsor: Foundation for Food & Agriculture Research (FFAR). Dates of project: 09/01/22 – 08/31/25. Investigators: Xiong, Y. (PI). Sponsor amount: $450,000. Total amount: $449,902. Attribution to candidate: 100%. Submitted on 5/03/2021.
7. "Impact of fertilizer and supplementation inputs on nitrogen and methane emissions from bromegrass pastures under rotational grazing management." Sponsor: National Cattlemen's Beef Association. Dates of project: 07/01/21 – 05/31/23. Investigators: Watson, A. (PI), Erickson, G., Suyker, A., Xiong, Y.

Sponsor amount: $100,000. Total amount: $96,991. Attribution to candidate: 2%. Submitted on 5/07/2021.

Section 2.2.6 External Research Grants Submitted through other entities but ***not Funded***.

1. Title: "Modifying perches as a novel heating device for improved hen welfare and energy efficiency in egg production." Sponsor: USDA: NIFA – AFRI. Lead institution: Iowa State University. Dates of project: 07/01/22 – 06/30/26. Investigators: Gates, R.S. (PI), Cheng, H.-W., Hu, J. Y., Li, G., Xiong, Y. Sponsor amount: $650,000. Total amount: $650,000. Attribution to candidate: 17.8%. Submitted on 7/15/2021.
2. Title: The AgroAI Institute: Intelligently transforming agriculture and food in a changing world. Sponsor: NSF. Lead institution: University of Minnesota. Dates of project: 09/01/21 – 08/31/26. Investigators: Yu, H. (PI), Awada, T., … Xiong, Y., et al. Sponsor amount: $20,000,000. Total amount: $4,999,491. Attribution to candidate: 0%. Submitted on 11/23/2020.
3. "Modifying perches as a novel heating device for improved hen welfare and energy efficiency in egg production." Sponsor: USDA: NIFA – AFRI. Lead institution: Iowa State University. Dates of project: 07/01/22 – 06/30/26. Investigators: Gates, R.S. (PI), Cheng, H.-W., Hu, J. Y., Li, G., Xiong, Y. Sponsor amount: $650,000. Total amount: $650,000. Attribution to candidate: 17.8%. Submitted on 7/15/2021.
4. Title: Modifying perches as a novel heating device for improved hen welfare and energy efficiency in egg production. Sponsor: USDA: NIFA – AFRI. Lead institution: Iowa State University. Dates of project: 01/01/22 – 12/31/24. Investigators: Gates, R.S. (PI), Cheng, H.-W., Hu, J. Y., Xiong, Y. Sponsor amount: $500,000. Total amount: $500,000. Attribution to candidate: 20.7%. Submitted on 5/12/2020.

Section 2.2.7 Internal Research Grants Submitted through the UNL OSP, but ***not Funded***.

1. "Advancing animal health through early detection of disease using phenotyping and precision monitoring technologies". **Y. Xiong** (PI), R. Cortinas, S. Fernando, M. Hille, W.-Z. Liang, J. D. Loy, M. Spangler, B. Vander Ley. $150,000. University of Nebraska-Lincoln, Grand Challenge. Date submitted: 4/30/2022.

Section 2.3 Other (Non-Research) Funding Record

Not applicable.

Section 2.4 Research Patents and Awards

Section 2.4.1 Patents

1. Disclosure title: Software for swine health monitoring. Inventors: T. M. Brown-Brandl, **Y. Xiong**, and R. Sharma. Track Code: D2024-0001. Date of approval: July 07, 2023.

Section 2.4.2 National and International Research Awards and Recognition

1. 2023 ASABE Superior Paper Awards – Li, G., G. D. Chesser Jr., J. L. Purswell, C. Magee, R. S. Gates, and Y. Xiong. 2022. Design and development of a broiler mortality removal robot. Applied Engineering in Agriculture, 39(6): 853-863. doi: 10.13031/aea.15013

Section 2.4.3 Regional and Local Research Awards and Recognition

1. Nebraska Cattlemen Foundation Range & Conservation Endowment Award, Nebraska Cattlemen, 2022
2. Joyce R. Jeffries New Faculty Scholar Award, University of Nebraska-Lincoln, 2022

Section 2.5 Other Research Accomplishments

Not applicable.

SECTION 3 TEACHING ACCOMPLISHMENTS (OTHER THAN CLASSROOM INSTRUCTION)

Section 3.1 Postdoctoral Researchers

Section 3.1.1 **Numbered list of Postdoctoral researchers *supervised*.**

Not applicable.

Section 3.1.2 **Numbered list of Postdoctoral researchers *currently in progress* under your supervision.**

	Name	Department	Degree	My Role	Funding from me
1	Zhao, B.	BSE/ANSI	PhD (NRES), UNL	Co-supervisor	100%

Section 3.2 PhD Students

Section 3.2.1 **Ph.D. students whom you have *supervised* as chair or co-chair of their doctoral committees.**

Not applicable.

Section 3.2.2 **Ph.D. students *currently in progress* whom you are supervising as chair or co-chair of their doctoral committees.**

	Name	Major	Degree	My Role	Funding from me	Expected Graduation
1	Aquino, Thomas E.	ANSI	Ph.D.	Co-advisor	100%	Dec 2026

Section 3.3 MS Students

Section 3.3.1 **MS students (*thesis option*) whom you have supervised as chair or co-chair of their thesis committees.**

	Name	Major	Degree	My Role	Funding from me	Graduation	Current Employment
1	Anderson, Dalton	ANSI	M.S.	Co-advisor	50%	Dec 2023	Consultant, Industry
2	Dotto, Joshua	ABE	M.S.	Advisor	100%	Dec 2023	NDSU, IT Research Engineer
3	Niwenshuti, Jean D.	MYSM	M.S.	Advisor	100%	Aug 2023	Lecturer (BSE)/PhD (NRES), UNL
4	Macon, Asya	MYSM	M.S.	Co-advisor	0%	Jul 2022	PhD, NCSU

Section 3.3.2 **MS students (*thesis option*) currently in progress whom you are supervising as chair or co-chair of their thesis committees.**

	Name	Major	Degree	My Role	Funding from me	Expected Graduation
1	Fernandes, Pedro H.	ANSI	M.S.	Co-advisor	100%	August 2026
2	Shakib, Md Shadman	AGST	M.S.	Advisor	100%	August 2026

Section 3.3.3 **Total number of *non-thesis* option graduate students *advised***

Not applicable.

Section 3.3.4 **Total number of graduate student independent research projects *supervised***

Not applicable.

Section 3.4 Undergraduate Students

Section 3.4.1 **Undergraduate students supervised in independent research study.**

List	Name	Major	Year/Level	Semester	Credit hours
1	Kaden, Wykert	ANSI/Pre-Vet	Sophomore	FA 22, SP 23	0
2	Dotto, Joshua	MYSM	Senior	SP 21	0
3	Niwenshuti, Jean D.	MYSM	Senior	SP & SU 2021	0

Section 3.4.2 **Average number of undergraduate students advised per year**

One in 2022 – 2023

Two in 2020 – 2021

Section 3.5 Visiting Scholars and Students

Section 3.5.1 **Visiting scholars and students whom you have supervised during their official visit to UNL.**

Not applicable.

Section 3.6 Graduate Student Committee Membership

Section 3.6.1 ***UNL Ph.D.*** **students for whom you have served as a *doctoral committee member*.**

	Name	Major	Degree	My Role	Major Advisor	Graduation/ Expected Graduation
1	Sjostrand, Rebecca	ANSI	Ph.D.	Member	G. E. Erickson	Dec 2025
2	Carroll, Addison	ANSI	Ph.D.	Member	P. Kononoff	Dec 2024

Section 3.6.2 ***UNL MS (*****thesis-option)** **students for whom you have served as a *masters committee member*.**

	Name	Major	Degree	My Role	Major Advisor	Graduation/ Expected Graduation
1	Heil, Holly	ANSI	M.S.	Member	G. E. Erickson	Dec 2022

Section 3.6.3 Ph.D. students at *other universities* for whom you have served as an external Ph.D. reviewer.

Not applicable.

Section 3.6.4 Students at *other universities* for whom you have served as graduate committee member.

Not applicable.

Section 3.7 Other Teaching Accomplishments

Curriculum Development

1. Served as an advisory committee member and developed a new Graduate discipline/specialization "Animal health, welfare, and precision management" in ANSC and BSE. Status: *approved Feb. 2022*; *revised and finalized Sep 2023*.

   Educational goals and objectives: The Animal Health, Welfare, & Precision Management Specialization is designed for students to be competitive for positions in applied animal science and/or agri-engineering industries. This unique Specialization combines educational design instruction with rigorous scientific coursework to prepare students for industry development positions in higher education, extension, consulting agencies, corporations, and government organizations.

SECTION 4 SERVICE ACCOMPLISHMENTS

Section 4.1 Professional Service

Section 4.1.1 Journal *Editorships* or *Associate Editorships*

i. **Guest Editor**, Animals (MDPI journals), Special Issue: Automated Monitoring of Livestock and Poultry with Machine Learning Technology. 2022-2023.

Section 4.1.2 Journals for which you have reviewed papers

i. Journal of Animal Science: 1 review in 2024.
ii. Computers and Electronics in Agriculture: 1 reivew in 2024, 1 review in 2023; 1 review in 2021.
iii. Frontiers in Animal Science: 1 review in 2021.
iv. MDPI Journals: 2 reviews in 2022, 1 review in 2021.
v. Transactions/Journals of the ASABE: 2 reviews in 2022; 3 reviews in 2021.

Section 4.1.3 Leadership Positions in International and National Organizations

i. **Program Chair.** Plant, Facilities and Animal Systems (PAFS), 2024 American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting, Anaheim, CA. 2024.
ii. **Faculty Coordinator** for 50 student volunteers. 2023 ASABE AIM in Omaha, NE. 1738 attendees.
iii. **Program Chair**. Plant, Facilities and Animal Systems (PAFS), 2023 American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting. Omaha, NE. 2023.
iv. **Officer**, Secretary. PAFS-40: facilities and systems committee. American Society of Agricultural and Biological Engineers (ASABE). 2023.

Section 4.1.4 Leadership Positions in Regional and Local Organizations

Section 4.1.5 Memberships in Professional Organizations

i. The Honor Society of Agriculture Gamma Sigma Delta, member, 2024 – present
ii. American Society of Animal Science (ASAS), member, 2020 – present
iii. American Society of Heating, Refrigeration, and Air Conditioning (ASHRAE), member, 2020 – present
iv. Poultry Sciences Association (PSA), member, 2017 – present
v. Air & Waste Management Association (AWMA), member, 2016 – 2018
vi. American Society of Agricultural and Biological Engineers (ASABE), member, 2011 – present

Section 4.1.6 National and International Service Awards

None

Section 4.1.7 Regional and Local Service Awards

i. "Caleb Lindhorst Inspire" Award by the Nebraska Section of the American Society of Agricultural and Biological Engineers (ASABE). October 13, 2023.

"The Caleb Lindhorst Inspire Award recognizes an ASABE member of the Nebraska Section who has inspired others through uncompromising perseverance and personal commitment to excellence and achievement."

Section 4.1.8 Research Review panels and dates of service

i. Research Proposal Reviewer, Egg Industry Center. Proposal reviews (1). 2024
ii. Research Proposal Reviewer, Egg Farmers of Canada. Proposals reviews (2). 2023
iii. University of Nebraska-Lincoln Undergraduate Creative Activities and Research Experience (UCARE) program. Application reviewer (4). 2022.
iv. ASAS-Midwest Section. Faculty judge for undergraduate research poster competition. March 2022.
v. European Conference on Precision Livestock Farming. Conference abstracts reviewer. January 2022, 2024.
vi. ASABE Boyd-Scott Graduate Student Research Award Competition. Review panel judge. June 2021.

Section 4.2 University Service

Section 4.2.1 Leadership positions on university-wide committees.

Not applicable.

Section 4.2.2 University-wide committee service.

1. Search for the University Extension Ag Profitability Division leader. Date of service: July 2023. My role: committee member.

Section 4.3 College Service

Section 4.3.1 Leadership positions on college-wide committees.

Not applicable.

Section 4.3.2 Membership positions on college-wide committees.

1. Search for the Suyker Lab Manager position. Date of service: May to December 2022. My role: committee member.
2. Search for the Barta Brother Ranch Research Coordinator position. Date of service: April 2022. My role: committee member.
3. Search committee for the Great Plains Veterinarian and Educational Center (GPVEC) Director position. Date of service: January – August 2021. My role: Search committee member.

Section 4.4 Unit Service

Section 4.4.1 Leadership positions on unit committees.

i. Animal Science Graduate Student Association (ASGSA). Date of service: 2022 – 2023. My role: Sr. Faculty advisor.
ii. Animal Science Graduate Student Association (ASGSA). Date of service: 2021 – 2022. My role: Jr. Faculty advisor.

Section 4.4.2 Membership positions on unit committees.

i. Animal Science Diversity, Equity and Inclusion Committee. Date of service: 2022 – Current. My role: Member.
ii. Animal Science discipline area "Animal health, welfare, and precision management", Date of service: 2021 – Current. My role: Committee member.
iii. Biological Systems Engineering, Faculty Success Committee. Date of service: 2022 – Current. My role: Member.
iv. Biological Systems Engineering, Extension Committee. Date of service: Since 2021 – Current. My role: Member.

Section 4.5 Other Service Accomplishments

i. ASABE PAFS-40: facilities and systems committee, voting member. 2020 – present.
ii. ASABE PAFS-50: environmental air quality committee, observing member. 2020 – present.

Section 4.6 Multistate Organizations

i. W3012 - Optimizing rangeland cow-calf production in the western U.S.
ii. NC1211 - Precision Management of Animals for Improved Care, Health, and Welfare of Livestock and Poultry

SECTION 5 EXTENSION ACCOMPLISHMENTS

Section 5.1 Leadership Position in Extension Programming

1. Serving as **co-lead** of the *Nebraska Extension's "Digital Agriculture" Focus Team* (co-led with Dr. Dirk Charlson, Associate Extension Educator, Digital Agriculture Focus Team, Water and Cropping Systems Program Area Leader). Together, we developed the new Nebraska Extension Digital Agriculture Focus Team State Action Plan. Status: *approved October 2023*.

   Value Statement: Digital agriculture will help address issues around environmental and economic sustainability, labor availability, natural resource use, agricultural intensification, farm animal production, and climatic

variability. This will allow for sustainable food production while meeting the growing demand for food, fiber, feed, and fuel worldwide.

Mission Statement: The mission of the Digital Agriculture Focus Team will be to facilitate knowledge perception and increase the adoption and success of growers, producers, consultants, stakeholders, and businesses in Nebraska to use precision agriculture with digital agriculture tools.

Section 5.2 Overall Extension Accomplishment Summary

Accomplishments Category	Number of Items/Events	Audience Reached (Best-Estimates)	Amount generated
Extension Articles (e.g., BeefWatch)	8	1369	
Extension Reports (e.g., Beef Report)	2		
Podcasts, Interviews, TV Shows/Episodes	5	1888	
Popular Trade Magazine Articles	1		
Workshops, Meetings, Field Days	7	645	
Survey Conducted	3	141	
Sponsors/companies invited	4	120	$1,830

Section 5.3 Extension Outputs

Section 5.3.1 Extension Articles

1. Aquino, T., and **Y. Xiong**. 2024. Modern water monitoring technology on the ranch. BeefWatch Electronic Newsletter. March.
2. Aquino, T., and **Y. Xiong**. 2023. What do stocker and cow-calf producers think of Virtual Fencing? BeefWatch Electronic Newsletter. October.
3. **Xiong, Y.**, K. L. McCarthy, J. T. Mulliniks. 2022. Technology in cow-calf production systems: a good or bad thing? BeefWatch Electronic Newsletter. November.
   - This was picked up by popular News Services and was distributed by three major agricultural news resources: Morning Ag Clips, Western Livestock Journal, Tri-State Livestock News.
4. **Xiong**, **Y.**, T. L. Meyer, J. T. Mulliniks. 2022. The 2022 GSL Youth Science Field Day. BeefWatch Electronic Newsletter. November.
5. Dozler, K., M. Stephenson, **Y. Xiong**. 2022. Virtual fencing: a new frontier for grazing management. GSL Research Newsletter. Fall.
6. **Xiong, Y.**, and M. Stephenson. 2022. Technical Note: Where are my cattle at? – Part II: Virtual Fencing. BeefWatch Electronic Newsletter. July.
7. Heil, H., and **Y. Xiong**. 2022. Technical Note: Where are my cattle at? – Part I: GPS sensors. BeefWatch Electronic Newsletter. June.
8. **Xiong, Y.** 2022. Technical Note: Estimating cow live bodyweight using alternative sensing. GSL Researcher Newsletter. Spring.

Section 5.3.2 Popular Trade Magazine, Press, and Media Articles

1. Virtual fence shows potential for livestock producers. Missouri Farmer Today. Cover page story. Vol. 18, No.13. April 6, 2024. Link to article
2. "AI in Cattle Management – How technology is helping producers with productivity and welfare". Nebraska Cattleman Magazine. pp. 12 – 16. October 2023, volume 79, issue 8.
3. "Locating the Future of Ranching". 2023 Strategic Discussions of Nebraska: Data Drives Nebraska. link to article
4. "Interdisciplinary team bringing wireless connectivity to Nebraska farmers". Nebraska Today (University of Nebraska's Central News). November 3, 2023. Link to article

Section 5.3.3 Extension Reports

1. D. J. Anderson, **Y. Xiong**, A. K. Watson, J. T. Mulliniks. 2023. Predicting live body weight of yearling beef heifers using 3D imaging. Nebraska beef cattle report. MP 118: 76-77.
2. J. D. Niwenshuti, N. R. Meier, G. E. Erickson, T. M. Brown-Brandl, E. Psota, **Y. Xiong**. 2022. Quantifying residual feed in a fence-line feedlot bunk using depth camera imaging techniques. Nebraska beef cattle report, MP 117:70-72.

Section 5.3.4 Extension Podcasts, Radios, and TV Interviews

1. "Cattle Technology with Dr. Yijie Xiong". Ep. 627. *DocTalk.* Link to show.
2. "Technology and drones for livestock and pasture management". S3 Ep. 7. *Livestock Wala'au*. 10 October 2023, link to podcast.
3. "Precision livestock management: bridging the gap between technology and its adopters". Episode 23 from *The Beef Podcast Show*. 26 April 2023, link to podcast.
4. "What if… Series: Ranch Technology". Nebraska Public Media. Aired 5 January 2023, link to recording.
   - This interview was well received; the producer (Nebraska Public Media) won the "2023 Silver Award – Service to Agriculture" from Nebraska Broadcasters.
5. "Paving the future of livestock production with precision animal management". *Episode 058 from FarmBits*, 2 February 2022, link to podcast.
6. "Research using GPS technology and virtual fencing" from *UNL BeefWatch Podcast*, 26 July 2022, link to podcast.

Section 5.4 Extension Activities

Section 5.4.1 Workshops, Meetings and Professional Development

1. Iowa Beef Center Professional Development In-Service Training. — April 24th, 2024
   My role: invited presenter for "Up & Coming Technologies for Beef Industry"
   Number of professionals trained: 20.
2. Gudmundsen Sandhills Laboratory Advisory Committee Meeting. Online. — Feb 19, 2024
   My role: Panelist Presenter.
   Number of participants: 25.
3. Gudmundsen Sandhills Laboratory Youth Science Day. Whitman, NE. — Sep 27, 2023
   My role: Session faculty lead. Rotational Lab Session.
   Number of participants: 48.
4. 23rd Nebraska Grazing Conference. Kearney, NE. — Aug 8-9, 2023
   My role: Invited speaker and sponsor organizer.
   Number of sponsors: 4 (out of 12). Generated $1,830 for the event.
   Number of participants: 120.
5. 2023 Excellence in Ag Science Day. Grand Island, NE. — Jun 1, 2023
   My role: Invited speaker.
   Number of participants: 40.
6. Gudmundsen Sandhills Laboratory Youth Science Day. Whitman, NE. — Oct 5, 2022
   My role: Session faculty lead. Rotational Lab Session.
   Number of participants: 47.
7. Gudmundsen Sandhills Laboratory Open House. Whitman, NE. — Aug 24, 2022
   My role: Panelist. Beef research update: breakout sessions.
   Number of participants: 170.

8. Gudmundsen Sandhills Laboratory Advisory Committee Meeting. Online. — Jan 24, 2022
   My role: Panelist Presenter.
   Number of participants: 20.

9. Gudmundsen Sandhills Laboratory Open House. Whitman, NE. — Aug 25, 2021
   My role: Panelist. Beef research update: breakout sessions.
   Number of participants: 200.

Section 5.4.2 Surveys

1. Intercept survey on stocker and cow-calf producers' perception of virtual fencing products. — *Kearney, NE August 8 – 9, 2023*
   - in-person intercepted survey at the 23rd Nebraska Grazing Conference
   - 14 completed surveys collected
2. Developed a survey on precision livestock management producer feedback, targeted for feedyard producers and professionals. — *Responses being collected since Nov 2021*
   - https://go.unl.edu/plm_feedyard
   - 78 completed surveys collected, covering more than 574,000 cattle managed
3. Developed a survey on precision livestock management producer feedback, targeted for ranch (cow-calf) producers and professionals. — *Responses being collected since Aug 2022*
   - https://go.unl.edu/plm_cowcalf
   - 49 completed surveys collected, covering more than 200,000 cow/calves managed

SECTION 6 OTHER ACCOMPLISHMENTS

Section 6.1 Professional Development

1. 2020-2021 University of Nebraska-Lincoln, Research Development Fellows Program. — *Completed May 2021*
   - Selected through a competitive application process and successfully completed the year-long program.

APPENDIX A: LETTERS OF ACCEPTANCE FOR PEER-REVIEWED JOURNAL ARTICLES

APPENDIX B: RESEARCH AWARDS