## **Curriculum Vita**

#### **PAUL J. KONONOFF**

**Work:** C220J Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE, 68583-0908 | Ph. 402-472-6442 Fax. 402-472-6362 | Email: <a href="mailto:pkononoff2@unl.edu">pkononoff2@unl.edu</a> | Scopus Author ID: 6602127842 ORCID orcid.org/0000-0001-6069-2174

**Personal:** 2231 Scotch Pine Trail, Lincoln, NE, 68512 | Ph. 402-304-3287 | Email <u>pjk168@yahoo.com</u> | Twitter: @rumen8er

Preferred Gender Pronouns: he, him, his

## **EDUCATION**

The Pennsylvania State University

Ph.D. in Dairy and Animal Science 2002

Dissertation Title: "The Effect of Forage Particle Size on Cows in Early Lactation"

University of Saskatchewan

M.Sc. in Animal and Poultry Science 1998

Dissertation Title: "Nature of Effective Fiber in Dairy Rations"

University of Saskatchewan

B.S.A. 1995

Major: Animal Science

Thesis Title: "Review and Use of the Cornell Net Carbohydrate and Protein System"

## **EMPLOYMENT**

University of Nebraska-Lincoln, Department of Animal Science

Lincoln, NE

Professor, Dairy Nutrition 2018 – Present

68% Research, 30% Extension, 2% Service

University of Nebraska-Lincoln, Department of Animal Science

Lincoln, NE

Associate Professor, Dairy Nutrition 2010 – 2018

68% Research, 30% Extension, 2% Service

University of Nebraska-Lincoln, Department of Animal Science

Lincoln, NE

Assistant Professor, Dairy Nutrition 2005 – 2010

68% Research, 30% Extension, 2% Service

University of New Hampshire/Ruminant Feed Analysis Consortium

Durham, NH

Projector Director/Researcher 2004 – 2005

Renaissance Nutrition, Inc.

Roaring Spring, PA

Ruminant Nutritionist 2002 - 2004

## NATIONAL AND REGIONAL COMMITTEE OR BOARD MEMBERSHIP

- Board of Directors, American Dairy Science Association (2020-present)
- Member of the Program Committee for the 40th ADSA DISCOVER Conference "NASEM Nutrient Requirements of Dairy Cattle," June 1-4, 2021, Itasca, IL.
- Member of the Program Committee for the 34th ADSA DISCOVER Conference "Protein-Energy Interactions," May 29 – June 1, 2018, Itasca, IL.
- Member of the Western Dairy Management Conference Planning Committee (2016-present)
- Nutrient Requirements of Dairy Cattle Committee (8th Revised Edition) (National Academies of Sciences, E., and Medicine (U.S.)., Committee on Nutrient Requirements of Dairy Cattle, E. National Academies of Sciences and Medicine (U.S.)., Board on Agriculture and Natural Resources, E. National Academies of Sciences and Medicine (U.S.)., and Division on Earth and Life Studies.
- DAIReXNET Subject Area Member: Nutrition of Milking and Dry Cows
- NC2042: Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises (Rev. NC-1119 and 1042)
- Nebraska State Dairy Association (NSDA), Ex Officio
- Dairy Council of Nebraska (Midwest Dairy), Ex Officio
- Member of the ADSA/ASAS Ruminant Nutrition Program Committee (2005, 2006)
- Member of the Alltech Inc., Graduate Student Publication Award Committee (2005, 2006, 2008-present)
- Chair of the Alltech Graduate Student Publication Award Committee (2007)
- Midwest Branch Officer, ADSA Director (2009-2011)
- Chair of the AFIA Award Committee (2013, 2014)

## **PROFESSIONAL SERVICE**

- Editor-In-Chief, Journal of Dairy Science (2020-present)
- Senior Editor, Animal Nutrition, Journal of Dairy Science (2014-2019)
- Section Editor, Ruminant Nutrition, Canadian Journal of Animal Science (2014-2017)
- Journal Management Committee, Journal of Dairy Science (2009-2014)
- Adjunct Faculty Member, Graduate School, Texas A&M University, College Station, TX (2008-present)

#### **MEMBERSHIPS**

- American Dairy Science Association (ADSA)
- American Association for the Advancement of Science (AAAS)
- Cornhusker Schutzhund Club
- Canadian Society of Animal Science (Past)

## REVIEW PANEL PARTICIPATION (participation year not included for confidentiality)

- Department of Energy's (DOE) Office of the Biomass Program (OBP)
- Alberta Livestock and Meat Agency (ALMA)
- Agriculture and Food Council of Alberta (AFC)
- Dairy Farmers of Canada

#### **CERTIFICATIONS**

- FARM Certified Evaluator and Trainer, National Dairy Farm Program: Farmers Assuring Responsible Management, National Milk Producers Federation, Training completed, June 6, 2013.
- Certified Schutzhund Trail Helper. LV/DVG America. Certification completed November 22, 2013.

## **LEADERSHIP TRAINING**

Development of a Personal Leadership Model under the mentorship of Mr. Pete Steinberg, Executive Coach,
 Master Facilitator and President of Innovative Thought, <a href="https://www.innovative-thought.com">https://www.innovative-thought.com</a>. October 2020
 February 2021.

#### UNIVERSITY OF NEBRASKA COMMITTEES

- Department of Animal Science Graduate Committee (2009-Present)
- Academic Quadrathlon (2007 2010)
- Department of Animal Science Internal Advisory Committee (2007-2009).
- Freshman Advisor. Block and Bridle (2007).
- Member of the University of Nebraska-Lincoln Institutional Animal Care and Use Committee (IACUC) (2007-2014).
- Member of the ARDC Advisory Council (2004-2019).
- University of Nebraska-Lincoln Interdepartmental Nutritional Program (August 2005 2018).
- Faculty Advisor for the Animal Science Graduate Student Association (2005 2007).

## **AWARDS**

•	Nutrition Professionals Inc, Applied Dairy Nutrition Award, ADSA	2019
•	Junior Faculty Excellence in Research ARD Award	2008
•	Big 12 Faculty Fellowship	2006
•	ADSA, Graduate Student Paper Publication Award	2004
•	BASF-Akey Graduate Nutrition Scholarship Award	2000
•	Agway Grant in Aid	1999
•	Almquest Graduate Research Grant	1999
•	Hugh Nicholson Ruminant Nutrition Scholarship	1998
•	Hugh Nicholson Ruminant Nutrition Scholarship	1997

#### PENDING RESEARCH GRANTS

- 1. Kononoff, P. (Principal Investigator), 155488, Contract, "High protein DDGS, energy and dairy cows", The Andersons, Industry, Research, Submitted.
- 2. Kononoff, P. (Principal Investigator), 152967, Contract, "Methane reduction and feed efficiency", Alga Biosciences, Industry, Research, Submitted.

## **RESEARCH AND EXTENSION GRANTS**

- 1. Kononoff, P. (Principal Investigator), 155384, Contract, "Methionine and dairy cows", Kemin Industries, Industry, Research, \$150,000.00, Awarded. (start: December 16, 2022, end: December 15, 2023).
- 2. Kononoff, P. (Principal Investigator), A. (Investigator), 149681, Grant, "AMS and Feed Preference", American Jersey Cattle Research Fdn, Associations/Foundations, Research, \$8,531.00, Awarded. (start: April 1, 2022, end: March 31, 2023).
- 3. Kononoff, P. (Principal Investigator), 143227, Grant, "Alfalfa and Dairy Cattle", Kansas State University, Universities, Research, \$62,200.00, Awarded. (start: September 1, 2019, end: August 31, 2022).
- 4. Doohong, M., B. Bradford, K. Jagadish and **P. J. Kononoff**. 2020. Establishing Value of alfalfa with highly digestibility fiber. USDA-NIFA, Alfalfa and Forage Program. Total Budget: \$478, 826.00, Kononoff Subaward: \$139, 211.00. Funded.

5. **Kononoff, P.J.** 2020. Feed Characterization and studying the effects of a novel corn milling co-product (NexPro) on milk production, composition and nitrogen and energy utilization in lactating dairy cows. Flint Hills Resources. \$ 107,537. Funded.

- 6. Morris, D. L. and Kononoff, P. J. 2019. Updating our knowledge and understanding of the maintenance energy requirements of Jersey cows. American Jersey Cattle Association. \$ 8, 000. funded.
- 7. Kononoff, P. J. 2018. The effects of a novel feed "Sunseo" on the fatty acid profile of milk from dairy cows. \$65, 439. Green Grass. Funded.
- 8. **Kononoff, P. J.** 2018. Feeding the metabolic race car: understanding corn, the superior fuel to support the production of milk protein in lactating dairy cattle. NE Corn Board. \$ 49, 020. Funded.
- 9. **Kononoff, P. J.** 2018. In vivo evaluation of hydrolyzed feather meal (HFM) as a dairy feed: a focus on protein. U.S. Poultry and Egg Association. \$154, 500. Funded.
- 10. **Kononoff, P. J.** 2018. Updating our knowledge and understanding factors that affect heat production by lactating Jersey cows. American Jersey Cattle Research Foundation. \$ 8, 500. Funded.
- 11. **Kononoff, P. J.** K. J. Clark. 2017. Deploying a System of Recommendations for Dietary Chemical and Physical Characteristics Required to Maintain Rumen Health. Nebraska Corn Board, \$ 10, 000. Funded.
- 12. **Kononoff, P. J.** 2017. Effect of Saccharomyces cerevisiae Strain CNCM I-1077 on Fiber Rumen Degradability of Corn and Grass Silages, Alfalfa Haylage, Grass Hay and Concentrate Fiber Ingredients. Lallemand Inc. \$64, 177. Funded.
- 13. **Kononoff, P. J.** 2017. Update on the Knowledge Related to the Feeding Value of Hydrolyzed Poultry Feathers and Poultry By-Products for Lactating Dairy Cattle. U.S. Poultry and Egg Association. \$74, 933. Funded.
- 14. Fernando, S.C., K. Clark, **Kononoff, P.J.** 2016. Reducing Green House Gas Emissions, Nebraska Environmental Trust. \$378. 706. Funded.
- 15. Watson, A., G.E. Erickson, **P.J. Kononoff**, J. MacDonald. 2016. Production Implications of Adjusting Metabolizable Protein Supply in Beef Cattle Diets. USDA-NIFA. \$497, 172. Not Funded.
- 16. **Kononoff, P.J.** 2015. The Effects of a Novel Feed Additive on the Fatty Acid Profile of Bovine Milk. NOVA Microbial Technologies, LLC. \$ 60, 922. Funded.
- 17. **Kononoff, P.J.** and S.C. Fernando. 2015. Investigations of Nutritive Entities Contained in Corn Distillers Grains and Testing the Influence on Methane Production in the Rumen. NE Corn Board. \$ 64, 633. Funded.
- 18. Fernando, S.C., G.E. Erickson and **P.J. Kononoff**. 2015. Improving Air Quality by Reducing Methane Emissions from Cattle. \$ 348, 298. NE Environmental Trust. Funded.
- 19. **Kononoff, P.J.** 2014. Methionine activity from different protected methionine sources. Novus International. \$ 60, 000. Funded.
- 20. **Kononoff, P.**J. 2013. Evaluation of the effects of Alimet on microbial protein production in lactating dairy cows with different levels of degradable and undegradable protein. Novus International. \$38, 407. Funded.
- 21. **Kononoff, P.J.** and S.C. Fernando. 2012. Avoiding milk fat depression by feeding reduced fat DDGS (RFDDGS) to lactating dairy cows and understanding the associated rumen metagenome. Nebraska Corn Board. 2012. \$84, 554.00. Funded.

22. **Kononoff, P.J.** 2008. Comparison of Dairy Cattle Performance in Nebraska When Fed Silage and Grain Produced From Second-Generation Insect Protected (B.t.) Corn (MON 89034), Parental Line or Reference Corn Grown During. Monsanto. Amount: \$38, 115.00. Status: Funded.

- 23. **Kononoff, P.J. 2007.** Nebraska Corn Board. Milk Fat Depression and Wet Distillers Grains and Solubles. Amount: \$ 35, 855.00. Status: Funded.
- 24. **Kononoff, P.J.** and M. Schroeder. 2008. Pioneer, Agriculture and Nutrition. Field production and characterization of maize forage containing trait product DP-09810-6. Amount: \$98,734.86. Status: Funded.
- 25. **Kononoff, P.J.** 2008. Nebraska Corn Board. Development of safe and effective methods to store wet distillers grains for feeding to lactating dairy cows. Amount: \$ 35, 855.00. Status: Funded.
- 26. **Kononoff, P.J.** 2008. Influence of Corn Silage Hybrid on Feed Consumption and Milk Production in Holstein Cattle. Pioneer Hybrid. Amount: \$ 40, 714.00. Status: Funded.
- 27. **Kononoff, P.J.** 2008. Feeding Dairy Cows Brown Midrib Corn Silage and Corn Milling Co-Products: Effects on Milk Production and Utilization of N. Mycogen Seed/Dow Chemical. \$ 26, 808.00. Status: Funded.
- 28. **Kononoff, P.J.** 2007. Nebraska Corn Board. Effects of Forage Type on N Excretion in Dairy Cows Consuming Diets High in Corn Distillers. Amount: \$ 34, 476.66. Status: Funded.
- 29. **Kononoff, P.J.** 2006. Nebraska Corn Board. Dairy Rations that Maximize the Inclusion of Corn Milling Co-Products. Amount: \$ 26,123. Status: Funded.
- 30. **Kononoff, P.J.** 2005. Evaluation of Nitrogen Balance and Effects of Monensin on Dairy Cows Fed Brown Midrib Corn Silage. Mycogen Seed. \$36,000. Status: Funded.
- 31. **Kononoff, P.J.** 2005. Layman Award. Feeding Corn Ethanol Co-Products to Maximize Energy Capture in Dairy Production Systems. Amount: \$9,188.00. Status: Funded.

#### **SUMMARY OF PEER REVIEWED PUBLICATIONS**

As of January 14, 2022 Scopus (Elsevier, Amsterdam, Netherlands) reports that 91 of my publications have been cited a total of 2, 169 times by 1, 565 documents. Working with 133 different co-authors and my *h*-index is 24.

## PEER REVIEWED PUBLICATIONS

- 1. Jenkins, C. J. R. and P.J. Kononoff. 2023. Appearance of choline metabolites in plasma and milk when choline is abomasally infused with or without methionine. JDS Communications. In Press.
- 2. A. L. Carroll, D. L. Morris, M. L. Jolly-Breithaupt and P. J. Kononoff. 2021. Energy of lactating dairy cattle fed increasing inclusion of new high-protein processed corn product. Journal of Dairy Science. Accepted.
- 3. Carroll, A.L., K.K. Buse, J.D. Stypinski, C.J.R. Jenkins, and P.J. Kononoff. 2023. Examining feed preference of different pellet formulations for application to automated milking systems. JDS Communications 4:191–195. doi:10.3168/jdsc.2022-0318.
- 4. Stypinski, J.D., P.J. Kononoff, and W.P. Weiss. 2023. Evaluation of gross energy concentration of neutral detergent fiber contained in feed and fecal samples. JDS Communications 0. doi:10.3168/jdsc.2022-0345.

5. Buse, K.K., D.L. Morris, H.L. Diaz, O.R. Drehmel, and P.J. Kononoff. 2022. Comparison of methods to estimate ruminal degradation and intestinal digestibility of protein in hydrolyzed feather meal with or without blood. JDS Communications 3:101–105. doi:10.3168/jdsc.2021-0139.

- 6. Lee, C., K.A. Beauchemin, J. Dijkstra, D.L. Morris, K. Nichols, P.J. Kononoff, and D. Vyas. 2022. Estimates of daily oxygen consumption, carbon dioxide and methane emissions, and heat production for beef and dairy cattle using spot gas sampling. Journal of Dairy Science 105:9623–9638. doi:10.3168/jds.2022-22213.
- 7. Morris, D.L., and P.J. Kononoff. 2021. Dietary fatty acid and starch content and supplemental lysine supply affect energy and nitrogen utilization in lactating Jersey cows. Journal of Dairy Science 104:10753–10779. doi:10.3168/jds.2020-20055.
- 8. Morris, D.L., and P.J. Kononoff. 2021. Derivation of the maintenance energy requirements and efficiency of metabolizable energy utilization for dry and lactating Jersey cows. Journal of Dairy Science 104:9726–9734. doi:10.3168/jds.2020-20056.
- 9. McLain, K.A., D.L. Morris, and P.J. Kononoff. 2021. Effect of feeding hydrolyzed feather meal and rumen-protected lysine on milk protein and energy utilization in late-lactation Jersey cows. Journal of Dairy Science 104:8708–8720. doi:10.3168/jds.2020-19657.
- 10. Hanigan, M.D., V.C. Souza, R. Martineau, V.L. Daley, and P.J. Kononoff. 2021. Predicting ruminally undegraded and microbial protein flows from the rumen. Journal of Dairy Science 104:8685–8707. doi:10.3168/jds.2020-19672.
- 11. Krogstad, K.C., K.J. Herrick, D.L. Morris, K.J. Hanford, and P.J. Kononoff. 2021. The effects of pelleted dried distillers grains and solubles fed with different forage concentrations on rumen fermentation, feeding behavior, and milk production of lactating dairy cows. Journal of Dairy Science 104:6633–6645. doi:10.3168/jds.2020-19592.
- 12. Morris, D.L., J.L. Firkins, C. Lee, W.P. Weiss, and P.J. Kononoff. 2021. Relationship between urinary energy and urinary nitrogen or carbon excretion in lactating Jersey cows. Journal of Dairy Science 104:6727–6738. doi:10.3168/jds.2020-19684.
- 13. Morris, D.L., T.M. Brown-Brandl, P.S. Miller, W.P. Weiss, R.R. White, and P.J. Kononoff. 2021. Factors that affect heat production in lactating Jersey cows. Journal of Dairy Science 104:346-356. doi:10.3168/jds.2020-18976.
- 14. Krogstad, K.C., D.L. Morris, and P.J. Kononoff. 2020. Use of 30-hour in vitro neutral-detergent-fiber digestibility of feedstuffs in dairy ration-formulation software: Evaluation of predictions for milk and methane production in lactating dairy cows. Applied Animal Science 36:830–838. doi:10.15232/aas.2020-02052.
- 15. Jenkins, C.J.R., S.C. Fernando, C.L. Anderson, N.D. Aluthge, E. Castillo-Lopez, G.I. Zanton, and P.J. Kononoff. 2020. The effects of 2-hydroxy-4-methylthio-butanoic acid supplementation on the rumen microbial population and duodenal flow of microbial nitrogen. Journal of Dairy Science 103:10161–10174. doi:10.3168/jds.2019-17664.
- 16. Daley, V.L., L.E. Armentano, P.J. Kononoff, and M.D. Hanigan. 2020. Modeling fatty acids for dairy cattle: Models to predict total fatty acid concentration and fatty acid digestion of feedstuffs. Journal of Dairy Science 103:6982–6999. doi:10.3168/jds.2019-17407.

17. Morris, D.L., and P.J. Kononoff. 2020. Effects of rumen-protected lysine and histidine on milk production and energy and nitrogen utilization in diets containing hydrolyzed feather meal fed to lactating Jersey cows. Journal of Dairy Science 103:7110–7123. doi:10.3168/jds.2020-18368.

- 18. Morris, D.L., J.V. Judy, and P.J. Kononoff. 2020. Use of indirect calorimetry to evaluate utilization of energy in lactating Jersey dairy cattle consuming diets with increasing inclusion of hydrolyzed feather meal. Journal of Dairy Science 103:4206–4217. doi:10.3168/jds.2019-17762.
- 19. Morris, D.L., T.M. Brown-Brandl, K.E. Hales, K.J. Harvatine, and P.J. Kononoff. 2020. Effects of high-starch or high-fat diets formulated to be isoenergetic on energy and nitrogen partitioning and utilization in lactating Jersey cows. Journal of Dairy Science 103:4378–4389. doi:10.3168/jds.2019-17638.
- 20. Tran, H., A. Schlageter-Tello, A. Caprez, P.S. Miller, M.B. Hall, W.P. Weiss, and P.J. Kononoff. 2020. Development of feed composition tables using a statistical screening procedure. Journal of Dairy Science 103:3786–3803. doi:10.3168/jds.2019-16702.
- 21. Fleming, A.J., H. Lapierre, R.R. White, H. Tran, **P.J. Kononoff**, R. Martineau, W.P. Weiss, and M.D. Hanigan. 2019. Predictions of ruminal outflow of essential amino acids in dairy cattle. Journal of Dairy Science 102:10947—10963. doi:10.3168/jds.2019-16301.
- 22. Reynolds, M.A., T.M. Brown-Brandl, J.V. Judy, K.J. Herrick, K.E. Hales, A.K. Watson, and **P.J. Kononoff**. 2019. Use of indirect calorimetry to evaluate utilization of energy in lactating Jersey dairy cattle consuming common coproducts. Journal of Dairy Science 102:320–333. doi:10.3168/jds.2018-15471.
- 23. Judy, J.V., G.C. Bachman, T.M. Brown-Brandl, S.C. Fernando, K.E. Hales, P.S. Miller, R.R. Stowell, and **P.J. Kononoff**. 2019. Reducing methane production with corn oil and calcium sulfate: Responses on whole-animal energy and nitrogen balance in dairy cattle. Journal of Dairy Science. doi:10.3168/jds.2018-14567.
- 24. Judy, J.V., G.C. Bachman, T.M. Brown-Brandl, S.C. Fernando, K.E. Hales, P.S. Miller, R.R. Stowell, and **P.J. Kononoff**. 2018. Energy balance and diurnal variation in methane production as affected by feeding frequency in Jersey cows in late lactation. Journal of Dairy Science 101:10899–10910. doi:10.3168/jds.2018-14596.
- 25. Judy, J.V., G.C. Bachman, T.M. Brown-Brandl, S.C. Fernando, K.E. Hales, K.J. Harvatine, P.S. Miller, and **P.J. Kononoff**. 2019. Increasing the concentration of linolenic acid in diets fed to Jersey cows in late lactation does not affect methane production. Journal of Dairy Science. doi:10.3168/jds.2018-14608.
- 26. Morris, D.L., R.R. Stowell, T.M. Brown-Brandl, and **P.J. Kononoff**. 2018. Heat Production of Jersey Dairy Cows Measured via Indirect Calorimetry. 10th International Livestock Environment Symposium (ILES X). American Society of Agricultural and Biological Engineers.
- 27. Liebe, D.M., J.L. Firkins, H. Tran, **P.J. Kononoff**, and R.R. White. 2018. Technical note: Methodological and feed factors affecting measurement of protein A, B, and C fractions, degradation rate, and intestinal digestibility of rumen-undegraded protein. Journal of Dairy Science 101:8046–8053. doi:10.3168/jds.2018-14837.
- 28. Drehmel, O.R., T.M. Brown-Brandl, J.V. Judy, S.C. Fernando, P.S. Miller, K.E. Hales, and **P.J. Kononoff**. 2018. The influence of fat and hemicellulose on methane production and energy utilization in lactating Jersey cattle. Journal of Dairy Science 101:7892–7906. doi:10.3168/jds.2017-13822.
- 29. Morris, D.L., S.H. Kim, P.J. Kononoff, and C. Lee. 2018. Continuous 11-week feeding of reduced-fat distillers grains with and without monensin reduces lactation performance of dairy cows. Journal of Dairy Science 101:5971–5983. doi:10.3168/jds.2017-14170.

30. Castillo-Lopez, E., C. Jenkins, N. D. Aluthge, W. Tom, **P. J. Kononoff**, S. C. Fernando. 2017. The effect of regular or reduced-fat distillers grains with solubles on rumen methanogenesis and the rumen bacterial community. Applied Microbiology. 123: 1381 - 1395.

- 31. White, R. R., M.B. Hall, J. L. Firkins, **P. J. Kononoff**. 2017. Effective fiber for lactating dairy cows: a physically adjusted NDF (paNDF) system, I: deriving equations that identify factors that influence effectiveness of fiber. J. Dairy Science. 100: 9551 9568
- 32. White, R. R., M.B. Hall, J. L. Firkins, **P. J. Kononoff**. 2017. Effective fiber for lactating dairy cows: a physically adjusted NDF (paNDF) system, II: development of feeding recommendations. J. Dairy Science. 100: 9569 9584.
- 33. White, R.R., Y. Roman-Garcia, J.L. Firkins, **P. Kononoff**, M.J. VandeHaar, H. Tran, T. McGill, R. Garnett, and M.D. Hanigan. 2017. Evaluation of the National Research Council (2001) dairy model and derivation of new prediction equations. 2. Rumen degradable and undegradable protein. Journal of Dairy Science 100:3611–3627. doi:10.3168/jds.2015-10801.
- 34. White, R.R., **P.J. Kononoff**, and J.L. Firkins. 2017. Technical note: Methodological and feed factors affecting prediction of ruminal degradability and intestinal digestibility of essential amino acids. Journal of Dairy Science. doi:10.3168/jds.2016-12008.
- 35. **Kononoff, P.J.,** P.J. Defoor, M.J. Engler, R.S. Swingle, J.F. Gleghorn, S.T. James, and F.L.S. Marquess. 2017. Impacts of a leptin SNP on growth performance and carcass characters in finishing steers studied over time. Journal of Animal Science 95:194. doi:10.2527/jas.2016.0926.
- 36. Paz, H.A., C.L. Anderson, M.J. Muller, **P.J. Kononoff**, and S.C. Fernando. 2016. Rumen bacterial community composition in Holstein and Jersey cows is different under same dietary condition and is not affected by sampling method. Frontiers in Microbiology. 7. doi:10.3389/fmicb.2016.01206.
- 37. Appuhamy, J.A.D.R.N., J.V. Judy, E. Kebreab, and **P.J. Kononoff**. 2016. Prediction of drinking water intake by dairy cows. Journal of Dairy Science 99:7191–7205. doi:10.3168/jds.2016-10950.
- 38. Ramirez-Ramirez, H.A., E. Castillo Lopez, C.J.R. Jenkins, N.D. Aluthge, C. Anderson, S.C. Fernando, K.J. Harvatine, and **P.J. Kononoff**. 2016. Reduced-fat dried distillers grains with solubles reduces the risk for milk fat depression and supports milk production and ruminal fermentation in dairy cows. Journal of Dairy Science 99:1912–1928. doi:10.3168/jds.2015-9712.
- 39. Ramirez-Ramirez, H.A., K.J. Harvatine, and **P.J. Kononoff**. 2016. Short communication: Forage particle size and fat intake affect rumen passage, the fatty acid profile of milk, and milk fat production in dairy cows consuming dried distillers grains with solubles. Journal of Dairy Science 99:392–398. doi:10.3168/jds.2015-10006.
- 40. Watson, A.K., J.C. MacDonald, G.E. Erickson, **P.J. Kononoff**, and T.J. Klopfenstein. 2015. FORAGES AND PASTURES SYMPOSIUM: Optimizing the use of fibrous residues in beef and dairy diets. Journal of Animal Science 93:2616–2625. doi:10.2527/jas.2014-8780.
- 41. Foth, A.J., T. Brown-Brandl, K.J. Hanford, P.S. Miller, G.G. Gomez, and **P.J. Kononoff**. 2015. Energy content of reduced-fat dried distillers grains with solubles for lactating dairy cows. Journal of Dairy Science 0. doi:10.3168/jds.2014-9226.
- 42. Ramirez Ramirez, H.A., E. Castillo Lopez, K.J. Harvatine, and **P.J. Kononoff**. 2015. Fat and starch as additive risk factors for milk fat depression in dairy diets containing corn dried distillers grains with solubles. Journal of Dairy Science 98:1903–1914. doi:10.3168/jds.2014-8528.

43. Paz, H.A., and **P.J. Kononoff**. 2014. Lactation responses and amino acid utilization of dairy cows fed low-fat distillers dried grains with solubles with or without rumen-protected lysine supplementation. Journal of Dairy Science 97:6519–6530.

- 44. **Kononoff, P.J.**, P. J. Defoor, M. J. Engler, R. S. Swingle, S. T. James, H. M. Deobald, J. L. Deobald, G.N. Woronuk, and F. L. S. Marquess. 2015. Performance and carcass characteristics when sorting feedlot cattle on the basis of phenotype, and leptin genotype along with differential use of β-adrenergic agonists. Canadian Journal of Animal Science. 95(3): 455-463. doi:10.4141/cjas-2014-052.
- 45. Paz, H.A., T.J. Klopfenstein, D. Hostetler, S.C. Fernando, E. Castillo-Lopez, and **P.J. Kononoff**. 2014. Ruminal degradation and intestinal digestibility of protein and amino acids in high-protein feedstuffs commonly used in dairy diets. Journal of Dairy Science. 97:6485–6498. doi:10.3168/jds.2014-8108.
- 46. Castillo-Lopez, E., K.J. Clark, H.A. Paz, H.R. Ramirez, T.H. Klusmeyer, G.F. Hartnell, and **P.J. Kononoff**. 2014. Performance of dairy cows fed silage and grain produced from second-generation insect-protected (Bacillus thuringiensis) corn (MON 89034), compared with parental line corn or reference corn. Journal of Dairy Science 97:3832–3837.
- 47. **Kononoff, P.J.,** P.J. Defoor, M.J. Engler, R.S. Swingle, S.T. James, and F.L.S. Marquess. 2014. Impact of a leptin single nucleotide polymorphism and ractopamine hydrochloride on growth and carcass characteristics in finishing steers. Journal of Animal Science 92:2702–2707. doi:10.2527/jas.2013-7355.
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## **EDITORIAL PUBLICATIONS**

- 1. **Kononoff, P.J.** 2022. Journal of Dairy Science® 2021 Editorial Report. Journal of Dairy Science 105:2729–2732. doi:10.3168/jds.2022-21952.
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## **INVITED LECTURES AND PAPERS**

- 1. Kononoff, P. J. 2018. Preventing rumen acidosis in lactating dairy cattle. International Dairy New Technology Conference, August15 17, 2018, Wuzhong, Ningxia, China.
- **2. Kononoff, P. J.** 2018. Feed co-products: "We're one, but we're not the same." Mid-South Ruminant Nutrition Conference, August 8 and 9, 2018, Grapevine, TX.

**3.** Firkins, J. L. and **P. J. Kononoff.** 2018. Characteristics of Effective Rumen-Protected Methionine Sources and How to Evaluate Them. California Animal Nutrition Conference. May 2 and 3. 2018. Fresno, CA.

- **4. Kononoff, P. J.** 2018. Measuring Rumen and Intestinal Protein Digestion; Translation to Application. 34th ADSA Discover Conference, Reexamining Amino Acid & Energy Interactions in the Dairy Cow. May 31, 2018. Itasca, IL.
- **5. Kononoff, P. J.,** White, R. R., M.B. Hall, J. L. Firkins. 2018. Effective fiber for dairy cattle, how much is not enough? Proceedings of the Southwest Nutrition Conference, February 7 9, 2018. Chandler, AZ. Pages 171 180.
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- **8. Kononoff, P. J.** 2017. Byproducts, unlock their value and kick limitations to the curb. PDPS Feed and Nutrition Conference, Marshfield and Arlington, NE. November 16 and 17, 2017.
- **9. Kononoff, P.J.** 2017. New insight: can DDGS be economical and digestible? WATT Global Media Webinar. July 27, 2017.
- **10. Kononoff, P. J.** 2017. Using feed analysis and computer models to ensure adequate supplies of metabolizable protein and amino acids. Mid-South Ruminant Nutrition Conference. August 9-10, 2017, Grapevine, TX.
- **11. Kononoff, P. J.** 2017. Byproducts for Dairy Cows: Unlocking their Value and Dealing with Their Limitations. Proceedings of the Mid-South Ruminant Nutrition Conference. August 9-10, 2017, Grapevine, TX. Pages 1-6.
- **12. Kononoff, P. J.**, and K. J. Clark. 2017. Water for Dairy Production: Where Does It Go and Why Does Quality Matter. Proceedings of the 4-State Dairy Nutrition Conference. Dubuque, IA. June 14 and 15, 2017. Pages 46-52.
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- **16. Kononoff, P.J.**, D.D. Snow, and D.A. Christensen. 2016. Drinking Water for Dairy Cattle. In Large Dairy Herd Management. May 2nd and 3<sup>rd</sup>, 2016. American Dairy Science Association's Large Dairy Herd Management Conference. Oak Brook, IL.
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- **46. Kononoff, P.J.** 2006. Balance before you blink: Balancing dairy diets with wet corn gluten feed. Husker Nutrition Conference. Lincoln, NE.
- **47. Kononoff, P.J.** 2006. Corn ethanol production and the dairy industry. September 11, 2006. Faculty of Nutrition Texas A&M University. College, Station, TX.
- **48. Kononoff, P.J.** and G.E Erickson. 2006. Feeding corn milling co-products to dairy and beef cattle. Pages 155-163. Proceedings of the Southwest Nutrition Conference. Tempe, AZ.
- 49. Kononoff, P.J. 2006. Impacts of forage choices on milk production. I-29. Pages 5-10. Sioux Falls, SD.
- **50. Kononoff, P.J.** 2005. Effective fiber estimates and ration balancing for dairy cattle. Pages 277 284. Proceedings of the Minnesota Nutrition Conference, St. Paul, MN.
- **51. Kononoff, P.J.** and A.J. Heinrichs. 2005. Managing Corn Silage Particle Size. Mid-South Nutrition Conference. Timonium, Maryland.
- **52. Kononoff, P.J.** 2004. Forage and TMR particle size, factors affecting feeding behavior and rumen fermentation. Pages 167 178. Proceedings of The Cornell Nutrition Conference. Syracuse, NY.

**53.** Marquess, F.L. and **P.J. Kononoff**. 2004. The use and value of a leptin SNP on feedlot management. Merial Workshop: Leptin and its Association with Production and Quality in Cattle. Canadian Society of Animal Science Annual Meeting. Edmonton, AB.

- **54. Kononoff, P.J.** 2004. The effect of a leptin SNP on live animal measurements and carcass quality in feeder cattle. Cargill Animal Nutrition, Winnipeg, MN.
- **55. Kononoff, P.J.** 2003. Proposed research on a Leptin SNP and its effects on energy balance in dairy cattle. Merial Inc., Duluth, GA.
- **56. Kononoff, P.J.** 2003. Implementing TMR particle size analysis. Annual Technical Meeting of Renaissance Nutrition, Inc. Bucknell University, Lewisburg, PA.
- **57. Kononoff, P.J.** 2003. The influence of leptin on energy balance in dairy cattle. Merial Inc., Herd-Health 2003 Conference. Niagara Falls, ON.
- **58. Kononoff, P.J.** and A.J. Heinrichs. 2003. New developments in TMR particle size measurement. Pages 75 86. Proceedings of The Tri-State Dairy Nutrition Conference. Fort Wayne, IN.
- **59. Kononoff, P.J.** 2001. The effect of forage particle size on dairy cattle. Pages 87-95. Proceedings of The Pennsylvania State University's Department of Dairy and Animal Science annual feed industries seminar. Grantville, PA.
- **60.** Heinrichs, A.J. and **P.J. Kononoff**. 1999. Silage fermentation: substrates and their end products. Pages 63 69. Proceedings of The Pennsylvania State University's Department of Dairy and Animal Science Annual Feed Industries Seminar. Grantville, PA.
- **61.** Varga, G.A. and **P.J. Kononoff.** 1999. Dairy rationing using structural and nonstructural carbohydrates: From theory to practice. Pages 77 90. Proceedings of the Southwest Nutrition and Management Conference. Phoenix, AZ.

## **NEBGUIDES (UNIVERSITY OF NEBRASKA EXTENSION PUBLICATIONS)**

- 1. Morris. D. L., K. Clark, Robin R. White, Mary Beth Hall, Jeffrey L. Firkins, **P. J. Kononoff**. 2018. MUNCH: A smartphone application for effective fiber for dairy cows. In Review.
- 2. **Kononoff, P. J.** and K. J. Clark. NebGuide. 2017. Water quality and requirements for dairy cattle. University of Nebraska-Lincoln Extension.
- 3. Regassa, T., R. Koelsch, and **P.J. Kononoff**. 2008. Impact of Feeding Distillers Grains on Nutrient Management Planning on Dairy Farms. University of Nebraska-Lincoln Extension RP193.
- 4. Rasby, R. and **P.J. Kononoff**. 2008. NebGuide: Understanding and Using a Feed Analysis Report. G1892. *Revised.*
- 5. **Kononoff, P.J.** and R.J. Grant. 2008 NebGuide. Water Quality and Requirements for Dairy Cattle. G93-1138-A. *Revised.*
- 6. **Kononoff, P.J.** 2008. Understanding the Lactation Curve and Balancing Dairy Rations for High Producing Dairy Cattle.
- 7. Keown, J.F., **P.J Kononoff**, and D.A. Smith. 2007. Dairy Cow Health and Metabolic Disease Relative to Nutritional Factors. G1743. *Revised*.

8. Keown, J.F., and **P.J Kononoff**. 2006. NebGuide. Dairy 10-Point Quality Control Program — Mastitis Treatment Records. G1666. *Revised*.

- 9. Keown, J.F. and P.J. Kononoff. 2006. Nebguide. How to Set Goals for your Breeding Program. G755. Revised.
- 10. Keown, J.F. and P.J Kononoff. 2007. Nebguide. Estrus (Heat) Detection Guidelines. G952. Revised.
- 11. Anderson, B., R. Rasby, and **P.J. Kononoff**. 2007. NebGuide. Testing livestock feeds for beef cattle, dairy cattle, sheep, and horses. G89-915-A. *Revised*.
- 12. Rasby, R. and P.J. Kononoff. 2007. NebGuide: Nitrates in Livestock Feeding. G74-170-A. Revised.
- 13. **Kononoff, P.J.,** R.J. Grant, and J.F Keown. 2006. NebGuide: Nutritional Management of the High-Producing Dairy Cow in the 21st Century. G1629. *Revised*.
- 14. **Kononoff, P.J.** and J. F. Keown. 2006. NebGuide: Managing Dairy Cattle for Cow Comfort and Maximum Intake. G95-1256-A. *Revised*.
- 15. Grant, R.J. and **P.J. Kononoff**. 2006. NebGuide: Feeding to Maximize Milk Protein and Fat Yields. G98-1358-A. *Revised*.
- 16. **Kononoff, P.J.,** R.J. Grant, and J.F Keown. 2006. NebGuide: Supplemental Fat For High-Producing Dairy Cows, G1581. *Revised*.
- 17. **Kononoff, P.J.** 2006. NebGuide: Does Feeding Distillers Grains to Dairy Cows Affect Milk Components? G1679.
- 18. Keown, J.F. and **P.J. Kononoff**. 2006. NebGuide. How to Estimate a Dairy Herd's Reproductive Losses. G86-822A. *Revised*.
- 19. Keown, J.F. and P.J. Kononoff. 2006. NebGuide: Producing Milk With a Low Bacteria Count. G678. Revised.
- 20. Anderson, B., T. Mader, and **P.J. Kononoff**. 2006. NebGuide. Sampling Feeds for Analysis. G77-331-A. *Revised*.
- 21. Keown, J.F. and **P.J. Kononoff**. 2006. NebGuide. How to Estimate a Dairy Herd's Reproductive Losses. G86-822A. *Revised*.
- 22. Keown, J.F., **P.J. Kononoff**, and L.L. Larson. 2006. NebGuide. Dairy Health Management for Optimum Production and Reproductive Performance. G1285. *Revised*.
- 23. Drudik, D. J.F. Keown, and P.J. Kononoff. 2006. NebGuide: Milk Urea Nitrogen Testing. G1661. Revised.
- 24. Kononoff, P.J. 2005. NebGuide: Understanding Effective Fiber in Rations for Dairy Cattle, G1587.
- 25. Kononoff, P.J. and B. Janicek. 2005. Understanding Milling Feed Byproducts For Dairy Cattle. G1586.
- 26. Keown, J.F., **P.J. Kononoff**, and R.J. Grant. 2005. NebGuide. How to Reduce Heat Stress in Dairy Cattle. G1582. *Revised*.

## STATE (NEBRASKA) EXTENSION PRESENTATIONS

- 1. **Kononoff, P. J.**, J. Judy. 2017. Omega-3 fatty acids fed to dairy cattle. UNL Dairy Extension Workshop: Transition Cows: Health, Nutrition, and Well Being, Oh My! Beatrice, NE.
- 2. **Kononoff, P.J.** 2017. Understanding metabolizabe protein and milk urea nitrogen in dairy cattle. Nebraska DHIA Field Technician Training, August 18, 2017. Columbus, NE.

3. **Kononoff, P.** J. 2017. Rumen microbes: whats good and bad about em? UNL Dairy Extension Workshop: Bugs on Your Farm. Clearwater, NE.

- 4. Clark, K. J. and P. J. Kononoff. 2016. Reducing cold stress in young stock. UNL Dairy Extension Workshop, "Rearing Young Stock for Dairy and Beef Production." November 9 and 10<sup>th</sup>. Beatrice NE and Norfolk, NE.
- 5. **Kononoff, P.**J. 2016. Water quality and dairy production. Nebraska State Dairy Association Annual Convention. February 12, 2015, Columbus, NE.
- 6. **Kononoff, P.**J. 2016. WEBINAR: Water quality for dairy production. June 14, 2016. UNL Dairy Extension Webinar. https://www.youtube.com/watch?v=tlwfoCx72W8&feature=youtu.be
- 7. **Kononoff, P.J.** 2009. Distillers grains use in dairy cattle operations and effect on production and milk characteristics. Presentation given at the 2009 Ethanol Co-Product Storage and Utilization in Beef Systems Conference. A Northeast Region SARE program.
- **8. Kononoff, P.J.** 2009. Silage Fermentation and Quality. Presentation given at the 2009 Nebraska State Dairymen's Association, Columbus, NE, March 15, 2009.
- 9. **Kononoff, P.J.** 2007. Feeding Dairy Cattle Corn Milling Co-Products. Presentation given at the 2007 Nebraska State Dairymen's Association, Mead, NE., March 15, 2007.
- 10. **Kononoff, P.J.** 2006. Balance Before You Blink: Balancing Dairy Diets Containing Wet Corn Gluten Feed. Husker Nutrition Conference, Lincoln, NE. October 20, 2006.
- 11. **Kononoff, P.J.** 2005. Evaluating Growth from Weaning to calving. Nebraska State Dairymen's Association. Mead NE, March 15, 2005.
- 12. **Kononoff, P.J.** 2005. Forage and TMR Particle Size in Dairy Rations. Nebraska National Dairy Heard Improvement Association producer meeting. Beatrice, NE. February 22, 2005. National Dairy Heard Improvement Association.
- 13. **Kononoff, P.J.** 2005. Understanding Particle Size in Dairy Rations. Producer meeting. January 25, 2005. Kansas.

#### **EXTENSION AND TRADE PUBLICATIONS**

- 1. **Kononoff, P.J.** 2015. Balance around drought-stressed corn silage. Hoards Dairyman. Page 767. December, 2015.
- 2. **Kononoff, P.J.** 2015 Track amino acids to improve milk protein production. Hoards Dairyman. Page 129. February, 2015.
- 3. **Kononoff, P.J.** 2014. Distillers bring protein and energy to the table. Hoards Dairyman. Page 582. September, 2014.
- 4. Ramirez Ramirez, H.A. and **P.J. Kononoff**. 2013. Reduced fat DDGS may dampen milk fat risk. Hoards Dairyman. Page 31, January, 2013.
- 5. Ramirez Ramirez, H.A. and **P.J. Kononoff**. 2013. Monitor the nutrient variation of your distillers. Page 59, January, 2013.
- 6. Keown, J.F. and **P.J. Kononoff.** 2007. How to set goals for your breeding program. Progressive Dairyman, Vol. 21, No. 9.

7. **Kononoff, P.J.** and M.A.G. Von Keyserlingk. 2008. Nutrition consultant should create a plan. Feedstuffs Part 1. Vol. 80, No. 19, Pages 18, 19.

- 8. **Kononoff, P.J.** and M.A.G. Von Keyserlingk. 2008. Nutrition consultant should create a plan. Feedstuffs Part 2. Vol. 80, No. 23, Pages 20, 21.
- 9. **Kononoff, P.J.** and M.A.G. Von Keyserlingk. 2008. Nutrition consultant should create a plan. Feedstuffs Part 3. Vol. 80, No. 27, Pages 16, 17.
- 10. **Kononoff, P.J.** 2008. Feeding fiber and non-fiber carbohydrates to lactating dairy cows. Pages 61- 64 in the Proceedings of 3rd Annual Dairy Conference, Brookings, SD, Sheldon IA, and Pipestone, MN.
- 11. **Kononoff, P.J.,** A. M. Gehman, and K.J. Machacek. 2008. Feeding distillers grains plus solubles to lactating dairy cattle. Nebraska Corn Board. Occasional Publication.
- 12. Kononoff, P.J. 2007. Do distillers grains depress milk fat? Page 494. Hoard's Dairyman. July 2007.
- 13. **Kononoff, P.J.** and A.J. Heinrichs. 2006. Forage and TMR particle size, effects on rumen fermentation in dairy cows. Dairy Fact Sheet for National Feed Management Project.
- 14. **Kononoff, P.J.** and B. Janicek. 2005. Feeding distillers grains to dairy cattle. Nebraska Corn Board. Occasional Publication.
- 15. **Kononoff, P.J.** and B. Janicek. 2005. Ten things a dairy manager should know about corn milling by-products for dairy cattle. Hoard's Dairyman. Pages 676-677. October 10, 2005.
- 16. **Kononoff, P. J.** and A. J. Heinrichs. 2004. TMR fiber: Long enough to work without sorting. Hoard's Dairyman. 149:640
- 17. Heinrichs, A.J. and **P.J. Kononoff**. 2003. Proper nutrition includes paying attention to particle size. Farmshine. Page 17. October 24.
- 18. **Kononoff P.J.** and R.T. Bass. 2003. Lameness and laminitis: It's more than just nutrition. The Virginia Dairyman. Pages 17, 21. January 1.
- 19. **Kononoff P.J.** and A.J. Heinrichs. 2002. Particle Separator add-on improves analysis. Hoards Dairyman. Page 620. September 25.
- 20. **Kononoff, P.J.,** A.J. Heinrichs, and G.A. Varga. 2002. Using manure evaluation to enhance dairy cattle nutrition. Technical Bulletin of The Pennsylvania State University, College of Agriculture Science, Cooperative Extension. DAS 02-51.
- 21. Heinrichs, A.J. and **P.J. Kononoff**. 2002. Forage Particle Separators can tell us a lot. Hoard's Dairyman. Page 82. January 25.
- 22. **Kononoff, P.J.** and A.J. Heinrichs. 2002. Evaluating particle size of forages and TMRs using the Penn State Particle Size Separator. Technical Bulletin of The Pennsylvania State University, College of Agriculture Science, Cooperative Extension. DAS 96-20.

## **INVENTIONS**

Kononoff, P.J., and A.J. Heinrichs. Revised (addition to) Forage Particle Separator. PSU Invention Disclosure No. 2001-2491.

# **GRADUATE STUDENT TRAINING**

Listing of graduate students whom I have advised, degree, completion year and current training or position is listed.

Student Name	My role	Degree	Date Completed
Brandy Crist (nee Janicek)	Advisor	MS	Summer, 2007
Jolene Rosentreader (nee Kelzer)	Advisor	MS	Summer, 2008
Amanda Gehman	Advisor	PhD	Summer, 2009
Kim Clark (nee Machacek)	Advisor	MAg	Spring, 2009
Ezequias Castillo Lopez	Co-Advisor	MS	Summer, 2009
Ezequias Castillo Lopez	Advisor	PhD	Fall, 2012
Hugo Ramirez Ramirez	Advisor	MS	Fall, 2011
Hugo Ramirez Ramirez	Advisor	PhD	Fall, 2013
Henry Paz	Advisor	PhD	Fall, 2013
Alison Foth	Advisor	MS	Summer, 2014
Chad Jenkins	Co-Advisor	MS	Fall, 2014
Gabriel Garcia Gomez	Advisor	MS	Fall, 2015
Olivia Drehmal	Advisor	MS	Summer, 2017
Ellan Dufoor	Advisor	MS	Summer, 2017
Mickayla Reynolds (nee Meyers)	Advisor	MS	Summer, 2018
Jared Judy	Advisor	PhD	Spring, 2017
Allison Knoell	Co-Advisor	PhD	Fall, 2020
Paulina Arboleda	Advisor	MAg	Summer, 2019
Logan Morris	Advisor	PhD	Fall, 2020
Kyle McClain	Advisor	MS	Summer, 2020
Kirby Krogstad	Advisor	MS	Summer, 2020
Kassidy Buse	Advisor	MS	Summer, 2020
Chad Jenkins	Advisor	PhD	Summer 2022
Jason Stypinski	Advisor	MS	Spring 2022
Addison Carroll	Advisor	MS	Summer 2022
Kassidy Buse	Advisor	PhD	In progress
Addison Carroll	Advisor	PhD	In progress
Shan Sherwood	Advisory	MS	In progress
Grant Fincham	Advisor	MS	In progress

## **TEACHING (NO BUDGETED TIME)**

- 2019 ANSCI 453 Dairy Management, University of Nebraska-Lincoln, 3 credit hours, 100% responsibility
- 2015 ANSCI 453 Dairy Management, University of Nebraska-Lincoln, 3 credit hours, 100% responsibility
- 2014 ANSCI 924 Forage Evaluation, University of Nebraska-Lincoln, 3 credit hours, 33% responsibility
- 2014 ANSCI 453 Dairy management, University of Nebraska-Lincoln, 3 credit hours, 100% responsibility
- 2013 ANSCI 453 Dairy management, University of Nebraska-Lincoln, 3 credit hours, 100% responsibility
- 2012 ANSCI 924 Forage Evaluation, University of Nebraska-Lincoln, 3 credit hours, 33% responsibility
- 2010 ANSCI 924 Forage Evaluation, University of Nebraska-Lincoln, 3 credit hours, 33% responsibility
- 2008 ANSCI 924 Forage Evaluation, University of Nebraska-Lincoln, 3 credit hours, 33% responsibility
- 2006 ANSCI 924 Forage Evaluation, University of Nebraska-Lincoln, 3 credit hours, 33% responsibility
- 2004 AGRI 2860 Dairy Production Management, North East Community College, 4 credit hours, 100% responsibility