

VITAE

Dr. Rick Funston

Professor and Beef Cattle Reproduction Specialist
University of Nebraska-Lincoln
Animal Science Department
West Central Research and Extension Center
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Responsibility

Provide leadership and subject matter expertise for educational programs in cow-calf production management for the West Central district and statewide expertise in beef reproductive management programs. Conduct research addressing cow/calf reproductive problems unique to West Central Nebraska and to other beef producers within the state.

Significant Accomplishments:

Research

- Research on lighter heifer development is receiving national attention/adoption
- First demonstration of fetal programming effects on postnatal calf performance including carcass characteristics and reproduction.
- Team member of nationally recognized beef systems research

Extension

- Serve on the production and research advisory board of the National Cattlemen's Beef Association - a major focus of the group is to find solutions for the decreasing support for production agriculture research and university extension services, NCBA sees this continued research and education of vital importance to the US beef industry
- Provide leadership in reproductive management for NE and the region
- Member of nationally recognized Ranch Practicum team
- Member of North Central Region Bovine Reproductive Task Force, to date we have conducted 16 national meetings on improving reproductive efficiency in beef cattle

Education

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| 1995 | Post Doctoral Fellow | Colorado State University, Reproduction/Biotechnology |
| 1993 | Ph.D. | University of Wyoming, Reproductive Biology |
| 1987 | M.S. | Montana State University, Animal Science |
| 1985 | B.S. | North Dakota State University, Animal Science |

Professional Experience

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| 2002–present | Reproductive Specialist, Professor, Animal Science, University of Nebraska West Central Research and Extension Center |
| 1998–2002 | Extension Beef Specialist, Animal/Range Sciences, Montana State University |

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| 1995–1998 | Assistant Professor, Animal Science, Chadron State College |
| 1993–1995 | Postdoctoral Fellow, Physiology, Colorado State University |
| 1990–1993 | Graduate Research Assistant, Animal Science, University of Wyoming |
| 1989–1990 | Nutritionist/Sales Manager, Woody’s Feed and Grain, Dickinson, ND |
| 1988–1989 | Sales Representative, Moorman’s Feed Company, Bismarck, ND |
| 1987–1988 | Extension Agent, Montana State University, Scobey, MT |
| 1985–1987 | Graduate Research Assistant, Animal/Range Sciences, Montana State University |

Grants

Funston, R.N. Effects of multi-sire artificial insemination on pregnancy rate and paternity ratios in beef heifers from the Nebraska sandhills. USDA-NIFA-AFRI-009755. \$384,554. 01/01/2024 - 12/31/2026. In Review.

Funston, R.N. Effects of multi-sire artificial insemination on pregnancy rate and paternity ratios in beef heifers from the Nebraska sandhills. NC SARE. \$166,303. 01/01/2024 - 12/31/2025. Declined.

Schacht, W. (Principal Investigator), Spangler, M. (Investigator), Funston, R. (Investigator), Stephenson, M. (Investigator), Drewnoski, M. (Investigator), MacDonald, J. (Investigator), Parsons, J. (Investigator), Redfearn, D. (Investigator), IC-3754, Grant, "Five-year Plan for the Beef Systems Initiative", Internal, \$750,000.00, Awarded. (start: August 1, 2017, end: July 31, 2022). Funded.

Funston, R.N. Reproductive physiology research Support. NU Foundation. \$11,554. 7/1/2018-7/1/2020. Funded.

Mulliniks, T. (Principal Investigator), Funston, R. (Investigator), 125763, Grant, "Cow Metabolic Flexibility", Dept of Agriculture-NIFA, Federal, Research, \$499,990.1/1/2020-12/31/2024. Declined

Volesky, J. (Investigator), Funston, R. (Investigator), Keshwani, D. R. (Investigator), Allison, R. (Investigator), Stockton, M. (Investigator), Young, S. (Principal Investigator), ICO-1322, Grant, "Impacts of eastern redcedar removal in Nebraska grasslands: a systems approach to improving grassland health and strengthening livestock production through restoration and investing in rural communities through biomass bioenergy", Internal, Declined.

Funston, R. (Principal Investigator), Mulliniks, T. (Investigator), IC-14604, Grant, "NC1201: Methods to Increase Reproductive Efficiency in Cattle", Internal, Declined.

Mulliniks, T. (Principal Investigator), Funston, R. (Investigator), 130082, Grant, "USDA Cow Herd Metabolic Flexibility", Dept of Agriculture-NIFA, Federal, Research, 1/2019-12/2023. \$499,990, Declined..

Bruns, K. (Principal Investigator), Whittier, J. (Investigator), Adesemoye, T. (Investigator), Declined. Boxler, D. (Investigator), Bradshaw, J. (Investigator), Funston, R. (Investigator), Jenkins, K. (Investigator), Kruger, G. (Investigator), Peterson, J. (Investigator), Plugge, B. (Investigator), Shaver, T. (Investigator), Stephenson, M. (Investigator), Volesky, J. (Investigator), Creech, C. (Investigator), 92036, Grant, "AFRI Experiential Learning", Dept of Agriculture-NIFA, Federal, Research, 1/2016-11/2020. \$600,000. Declined.

NC1201: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$500,000; 10/1/2012-9/30/2017; R. Funston.

A comparative field study to evaluate the efficacy of corathon ear tags for the control of horn flies, face flies, and stable flies infesting stocker cattle and evaluate added weight gain due to fly control. Bayer Animal Health. \$18,500; 04/01/2011 - 03/31/2014. D. Boxler, and R.N. Funston.

Cost effective heifer development systems. Alberta Livestock and Meat Agency. \$228,800; 5/1/2010 to 9/30/2013. H.A. Lardner and R.N. Funston.

Economic impacts of protein supplementation during late gestation on rebreeding in cows and effects on growth, development and carcass characteristics of steer calves; Five-State Ruminant Consortium; \$120,000; 3/29/2009 to 10/31/2012; R. Funston, S. Lake, K. Vonnahme, and A. Weaver.

Impact of post weaning heifer calf management on average daily gain and feed efficiency as pregnant heifers; Spronsen and Bainbridge Award, University of Nebraska Foundation; \$60,000, 7/01/2009 to 6/30/2011; R. Funston, A. Cupp, A. Stalker, J. Volesky, and M. Stockton.

NC1038: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$16,500; 10/1/2010-9/30/2011; R. Funston.

NC1038: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$16,500; 10/1/2009-9/30/2010; R. Funston.

NC1038: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$15,000; 10/01/2008 to 9/30/2009; R. Funston.

Dried distillers grains as a source of supplemental energy and protein for developing replacement heifers; Nebraska Center for Energy Sciences Research, \$31,893; 11/01/2007 to 10/31/2008; R. Funston, A. Cupp, and R. Rasby.

NC1038: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$15,000; 10/01/2007 to 9/30/2008; R. Funston.

Whole-farm Economic Biological Stochastic Simulation Model of Small to Medium Cow-calf Farms with Research, Teaching and Extension Modules; USDA CREEES NRI; \$499,740; 9/01/2007 to 08/31/2011; M. Stockton, R. Funston, A. Stalker, and D. Smith.

Effect of supplemental nutrition on embryo survival and pregnancy rate in beef heifers; Ralph H. Bainbridge Award, University of Nebraska Foundation; \$5,000; 6/01/2007 to 5/31/2008; R. Funston, A. Stalker, J. Volesky, and M. Stockton.

Integrated Beef-Forage Systems Short Course; Nebraska Corn Board; \$1,000; 2007; R. Funston, A. Stalker, M. Stockton, and J. Volesky.

eXtension Beef Cattle Clearinghouse National Website; eXtension; \$150,000; 12/01/2006 to 12/31/2009; R. Rasby, G. Erickson, R. Funston, T. Mader, and I. Rush.

Dried distillers grains as a source of supplemental energy and protein for developing replacement heifers; Nebraska Center for Energy Sciences Research, \$26,943; 11/01/2006 to 10/31/2007; R. Funston, A. Cupp, and R. Rasby.

Effect of supplemental nutrition on embryo survival and pregnancy rate in beef heifers; NCR-SARE Graduate Student Grant; \$10,000; 10/01/2006 to 9/30/2007; R. Funston.

Integrating extended grazing into beef calving and finishing systems; NU Foundation; \$17,300; 6/01/2006 to 5/31/2007; D. Adams, A. Stalker, R. Funston, T. Klopfenstein, and J. Volesky

NC1038: Methods to increase reproductive efficiency in cattle; USDA CSREES; \$15,000; 2006; R. Funston.

Supplementing whole soybeans to beef heifers of different physiological maturity; Nebraska Soybean Board; \$22,612; 2006; R. Funston.

Integrating extended grazing into beef calving and finishing systems; Ralph H. Bainbridge Award, University of Nebraska Foundation; \$10,000; 2005-2007; D. Adams, D. Feuz, and R. Funston.

Effects of supplemental protein during the last trimester of gestation on feed efficiency, pubertal development, and reproductive performance of heifer calves; Layman Award; \$10,000; 2005; R. Funston.

Supplementing whole soybeans to beef heifers of different physiological maturity; Nebraska Soybean Board; \$21,997; 2005; R. Funston.

Increasing distillers grains use in cow calf diets; Nebraska Corn Board; \$19,811; 2004; R. Funston

Increasing distillers grains use in cow calf diets; Nebraska Corn Board; \$29,881; 2003; R. Funston.

Montana Beef Network: An integrated total quality management approach for beef production; USDA CSREES; \$694,000; 2001; R. Funston, J. Paterson, and P. Burfening.

American Simmental Association; \$50,000; 2000; R. Funston, T. Geary, and R. Ansotegui.

Montana Beef Network: An integrated total quality management approach for beef production; USDA CSREES; \$650,000; 2000; R. Funston, J. Paterson, and P. Burfening.

Synchronization and pregnancy rate in heifers fed supplemental fat from whole sunflower seeds; Bair Ranch Foundation; \$6,000; 2000; R. Funston.

American Simmental Association; \$36,620; 1999; R. Funston, T. Geary, and R. Ansotegui.

Montana Beef Network: An integrated total quality management approach for beef production; USDA CSREES; \$500,000; 1999; R. Funston, J. Paterson, and P. Burfening.

Publications-Book Chapters

D. Broadhead, J.T. Mulliniks, and R.N. Funston. 2019. Developmental programming in a beef production system. In: *Clinics Review Articles: Developmental Programming in Livestock Production*. Vol. 35(2):379-390.

R.N. Funston and A.F. Summers. 2013. Epigenetics: Setting up lifetime production of beef cows by managing nutrition. In: *Annual Review of Animal Biosciences*. Vol. 1:339-363.

R.N. Funston and A.F. Summers. 2013. Effect of prenatal programming on heifer development. In: *Clinics Review Articles: Management Considerations in Beef Heifer Development and Puberty*. Vol. 29 (3):517-537.

S.K. Johnson and R.N. Funston. 2013. Postbreeding Heifer Management. In: *Clinics Review Articles: Management Considerations in Beef Heifer Development and Puberty*. Vol. 29 (3):627-643.

Publications-Refereed Journal Articles

Tibbitts, B.T., R.M. Jones, C.A. Welchons, R.L. Ziegler, K.H. Wilke, R.N. Funston, and J.C. MacDonald. 2024. Effects of supplemental rumen-degradable protein, rumen undegradable protein, and energy on performance of growing steers grazing corn residue. *Applied Anim. Sci.* 40:526–534 doi.org/10.15232/aas.2023-02522

Sperber, J.L., R.G. Bondurant, G.E. Erickson, K. Bruns, R.N. Funston, and J.C. MacDonald. 2024. Effect of extended days on feed on carcass gain, efficiency, and quality of individually fed beef steers. *Transl. Anim. Sci.* doi.org/10.1093/tas/

Tadich, L.F., R. Rodgers, and R.N. Funston. 2024. Effect of short-term nutritional increase prior

to artificial insemination on average daily gain and reproductive efficiency in March-calving beef heifer development systems. *Applied Anim. Sci.*40:191-198.doi.org/10.15232/aas.2023-02399

- Webb, M.J., J. J. Block, J.R. Jaeger, R.N. Funston, M.G. Gonda, K.R. Underwood, J.K. Grubbs, K.C. Olson, A.D. Blair. 2023. Beef color and tenderness response to production systems utilizing additive combinations of growth promotant technologies. *Translational Animal Science*, 7, txad092<https://doi.org/10.1093/tas/txad092>
- Beard, J.K., J. A. Musgrave, K. J. Hanford, E. Sharkey, R. N. Funston, and J. T. Mulliniks. 2023. The effect of dam age on progeny pre- and post-weaning growth and performance. *Transl. Anim. Sci.*
- Rich, J.J., R., E.J. Northrop, K.M. Epperson, S.M Zoca, S.D. Perkins, J.A. Walker, R.N. Funston, V.R.G. Mercadante, and G.A. Perry. 2023. Supplemental GnRH used in synchronization protocols among beef cows and heifers. *Applied Animal Science* 39:443–448 <https://doi.org/10.15232/aas.2023-02429>.
- Christenson, D.M., J. M. Thomas, D. J. Kelly, and R. N. Funston. 2022 Extending melengestrol acetate feeding from fourteen to eighteen days during an estrus synchronization and artificial insemination protocol for March-calving beef heifers. *Applied Anim. Sci.*38:499-504. <https://doi.org/10.15232/aas.2022-02317>
- Musgrave, J.A., D.L. Broadhead, and R.N. Funston. 2022. Impact of pre- and postpartum nutrition on March-calving beef cow and progeny productivity grazing corn residue and subirrigated meadow and/or fed hay. *Applied Anim. Sci.* 38:620-626. <https://doi.org/10.15232/aas.2022-02316>
- Block, J.J., M.J. Webb, K.R. Underwood, M.G. Gonda, A.A. Harty, R.R. Salverson, R.N. Funston, K.C. Olson, and A.D. Blair. Influence of maternal protein restriction in primiparous beef heifers during mid- and/or late gestation on progeny feedlot performance and carcass characteristics. *Animals* 2022, 12, 588. <https://doi.org/10.3390/ani12050588>.
- Rich, J.J., R., E.J. Northrop, K.M. Epperson, S.M Zoca, S.D. Perkins, J.A. Walker, R.N. Funston, V.R.G. Mercadante, and G.A. Perry. 2022. Supplemental GnRH used in synchronization protocols among beef cows and heifers. *Therio.* (submitted)
- Lansford, A.C., B.T. Tibbitts, and R.N. Funston. 2021. Effects of maternal late-gestation nutrition on dam and subsequent progeny grown and performance of beef cattle. *Applied Anim. Sci.* 37:479-489. [Doi.org/10.15232/aas.2020-2133](https://doi.org/10.15232/aas.2020-2133).
- Springman, S.A., M.E. Drewnoski, and R.N. Funston. 2021. Effects of hydroxy trace mineral supplementation on gain and reproductive performance in beef heifers. *Livestock Science* 245 (2021) 104425. [Doi.org/10.1016/j.livsci.2021.104425](https://doi.org/10.1016/j.livsci.2021.104425).
- King, T.M. J.A. Musgrave, R.N. Funston, J.T. Mulliniks. 2020. Impact of cow milk production on cow-calf performance in the Nebraska Sandhills. *Transl. Anim. Sci.* 2020.4:S145-S148 [doi: 10.1093/tas/txaa123](https://doi.org/10.1093/tas/txaa123)
- Ziegler, R.L., J.A. Musgrave, R.N. Funston, K.J. Hanford, J.T. Mulliniks. 2020. The impact of cow size on cow-calf performance and post-weaning progeny performance in the Nebraska Sandhills. *Transl. Anim. Sci.* 2020.4:1-11 [doi: 10.1093/tas/txaa194](https://doi.org/10.1093/tas/txaa194).
- Webb, M.J., J. J. Block, A.A. Harty, R.R. Salverson, R.F. Daly, J.R. Jaeger, K.R. Underwood, R.N. Funston, D.P. Pendell, C.A. Rotz, K.C. Olson, and A.D. Blair. 2020. Cattle and carcass performance, and life cycle assessment of production systems utilizing additive combinations of growth promotant technologies. *Transl. Anim. Sci.* 2020.4:1-15 [doi: 10.1093/tas/txaa216](https://doi.org/10.1093/tas/txaa216)
- Springman, S.A., M.E. Drewnoski, and R.N. Funston. 2020. Effects of hydroxyl trace mineral

- supplementation on gain and reproductive performance in beef heifers. *Lvstk Sci (accepted.)*.
- Beard, J.K., W. Abbas, J.A. Musgrave, R.N. Funston, S.C. Fernando, and J.T. Mulliniks. 2020. Metabolomic profile associated with pre-breeding puberty status in range beef heifers. *TAS (submitted)*
- Block, J.J., A.D. Blair, R.N. Funston, K.R. Underwood, M.G. Gonda, A.A. Harty, R.R. Salverson, and K. C. Olson. Influence of maternal protein restriction in primiparous heifers during mid- and/or late gestation on dam and suckling calf performance through weaning. *TAS (submitted)*
- Lansford, A., B.T. Tibbitts, and R.N. Funston. 2021. Effects of maternal late gestation nutrition on dam and subsequent progeny growth and performance. *Applied Anim. Sci.* 37:479-489.
- Webbe, M.J., J.J. Blocka, R.N. Funston, K.R. Underwood, J.F. Legakoc, A.A. Harty, R.R. Salverson, K.C. Olson, and A.D. Blair. 2019. Influence of maternal protein restriction in primiparous heifers during mid and/or late-gestation on meat quality and fatty acid profile of progeny. *Meat Science* 152:31-37.
- Beard, J.K. J.A. Musgrave, K.J. Hanford, R.N. Funston. And J.T. Mulliniks. 2019. The effect of dam age on heifer progeny performance and longevity. *Transl. Anim. Sci.* 2019.3:1710–1713 doi: 10.1093/tas/txz063
- Lubbe, K.M., L.A. Stalker, T.J. Klopfenstein, and R.N. Funston. 2019. Influence of weaning date and late gestation supplementation on beef system productivity I: Animal performance. *Trans. Anim. Sci. Volume 3, Issue 4; 1492–1501*, <https://doi.org/10.1093/tas/txz116>
- Lubbe, K.M., L.A. Stalker, M.C. Stockton, T.J. Klopfenstein, and R.N. Funston. 2019. Influence of weaning date and late gestation supplementation on beef system productivity II: Economic analysis. *Trans. Anim. Sci* 1502–1512, <https://doi.org/10.1093/tas/txz120>
- Cantrell, B., H. Lachance, B. Murdoch, J. Sjoquist, R. Funston, R. Weaver, and S. McKay, 2019. Global DNA methylation in the limbic system of cattle. *Epigenomes.* 3(8):1-7.
- Cantrell, B., H. Lachance, B. Murdoch, R. Funston, R. Weaver, and S. McKay, 2018. First report of global DNA methylation in the limbic system of cattle with extreme measures of docility. *BMC Genomics.*
- Harty, A. J., Kincheloe, R. Funston, R. Salverson, M. Webb, K. Underwood, J. Legako, K. Olson. 2018. Influence of maternal protein restriction in primiparous heifers during mid- and/or late-gestation on meat quality and fatty acid profile of progeny. *Meat. Sci.*
- Springman, S.A. J. G. Maddux, M. E. Drewnoski, and R. N. Funston. 2018. Effects of injectable trace minerals on reproductive performance of beef heifers in adequate trace mineral status. *Prof. Anim. Sci.* 34:649-652.
- Beard, J.K., J.A. Musgrave, R.N. Funston, and J.T. Mulliniks. 2018. The effect of cow udder score on subsequent calf performance in the Nebraska Sandhills. *Trans. Anim. Sci.* doi.org/10.1093/tas/txy025
- Roberts, A.J., J.N. Ketchum, and R.N. Funston. 2018. Developmental and reproductive characteristics of beef heifers classified by number of estrous cycles experienced by start of first breeding. *Trans. Anim. Sci.* doi.org/10.1093/tas/txy118.
- Oosthuizen, N., A.C. Lansford, L.B. Canal, P.L.P. Fontes, C.D. Sanford, C.R. Dahlen, N. DiLorenzo, R.N. Funston, and G.C. Lamb. 2017. Comparison of two alternate PGF2 α products in two estrus synchronization protocols in beef heifers. *J. Anim. Sci.* 96:1388-1395.
- Lansford, A.C., J.A. Musgrave, and R.N. Funston. 2018. Effect of supplementation during the breeding season on a May-calving herd in the Nebraska Sandhills. *Prof. Anim. Sci.* 34:269-

274.

- Springman, S.A., H.R. Nielson, and R.N. Funston. 2018. Impact of heifer development system on subsequent growth and reproduction in two breeding seasons. *Prof. Anim. Sci.* 34:177-182.
- Bondurant, R.G., J.C. MacDonald, G. E. Erickson, K. Brooks, K. Bruns, and R. N. Funston. 2018. Effect of extended days on feed on carcass gain, efficiency, quality, and profitability for beef steers. *Prof. Anim. Sci.*
- Roberts, A.J., da Silva, A.G., A.F. Summers, T.W. Geary, and R.N. Funston. 2017. Developmental and reproductive characteristics of beef heifers classified by pubertal status at time of first breeding. *J. Anim. Sci.* 95:5629-5636.
- Springman, S.A., T.L. Meyer, and R.N. Funston. 2017. Effect of postweaning heifer development system on average daily gain, pregnancy rates, and subsequent feed efficiency as a pregnant heifer. *J. Anim. Sci.* 95:5320-5326.
- Tibbitts, B.T., T.L. Meyer, D.J. Kelly, and R.N. Funston. 2017. Comparison of timed insemination vs. modified estrus detection protocol in beef heifers. *Prof. Anim. Sci.* 33:97-100.
- Tibbitts, B.T., H.R. Nielson, K.H. Ramsay, and R.N. Funston. 2017. Growth and reproductive performance of yearling beef heifers implanted with Revalor G in the Nebraska Sandhills. *Prof. Anim. Sci.* 33:92-96.
- Nielson, H.R., D.J. Kelly, and R.N. Funston. 2016. Effect of delayed insemination of nonestrus beef heifers in a melengestrol acetate-prostaglandin F_{2α} timed artificial insemination protocol. *Prof. Anim. Sci.* 32:445-447.
- Roberts, A.J., R.N. Funston, E.E. Grings, and M.K. Petersen. 2016. Beef heifer development and lifetime productivity in rangeland –based production systems. *J. Anim. Sci.* 94:2705-2715.
- Kramer, R.W., D.R. Smith, G.R. Rupp, D.D. Griffin, and R.N. Funston. 2016. Estimation of calving date in beef cattle with real time ultrasound. *Prof. Anim. Sci.* 32:322-327.
- Funston, R.N., E.E. Grings, A.J. Roberts, and B.T. Tibbitts. 2016. INVITED SYMPOSIUM PAPER: Choosing a calving date. *Prof. Anim. Sci.* 32:145-153.
- Rasby, R.J. and R.N. Funston. 2016. INVITED SYMPOSIUM PAPER: Nutrition and management of cows – supplementation and feed additives. *Prof. Anim. Sci.* 32:135-144.
- da Silva, A.G., D.C. Adams, and R.N. Funston. 2016. Fall-breeding beef females failing to conceive during spring breeding. *Prof. Anim. Sci.* 32:243-247.
- Nielson, H.R., A.F. Summers, and R.N. Funston. 2016. A comparison of two implant protocols; Synovex-Choice/Synovex-Plus vs. Synovex-S/Revalor-S on steer feedlot performance and carcass characteristics. *Prof. Anim. Sci.* 32:63-66.
- Mercadante, V.R.G., E. Kozicki, F. M. Ciriaco1, D. D. Henry, C. R. Dahlen, R. N. Funston, J. E. Larson, G.A. Perry, T. L. Steckler, and G. C. Lamb. 2015. Effects of administration of prostaglandin F_{2α} (PGF) at initiation of the 7-day CO-Synch+CIDR estrus synchronization protocol for suckled beef cows and replacement beef heifers. *J. Anim. Sci.* 93:5204-5213.
- Roberts, A.J., M.K. Petersen, and R.N. Funston. 2015. Can we build the cowherd by increasing longevity of females? *J. Anim. Sci.* 93:4235–4243.
- Summers, A.F., T.L. Meyer, and R.N. Funston. 2015. Impact of supplemental protein source offered to primiparous heifers during gestation on. I. ADG, feed intake, calf birth weight, and rebreeding in pregnant beef heifers. *J. Anim. Sci.* 93:1865-1870.
- Summers, A.F., A.D. Blair, and R.N. Funston. 2015. Impact of supplemental protein source offered to primiparous heifers during gestation on. II. Progeny performance and carcass

- characteristics. *J. Anim. Sci.* 93:1871-1880.
- Stockton, M.C., R.K. Wilson, D.M. Feuz, L.A. Stalker, and R.N. Funston. 2014. Bio-economic factors of beef heifer maturity to consider when establishing criteria to optimally select and/or, retain herd replacements. *J. Anim. Sci.* 92:4733-4740.
- Harms, J.D., A.F. Summers, and R.N. Funston. 2014. Effect of two ovulation synchronization protocols on reproductive performance of May calving cows. *Prof. Anim. Sci.* 30:497-501.
- Lardner, H.A., D. Damiran, S. Hendrick, K. Larson and R. Funston. 2014. Effect of development system on growth and reproductive performance of beef heifers. *J. Anim. Sci.* 92:3116-3126.
- Summers, A.F., S.P. Weber, H.A. Lardner, and R.N. Funston. 2014. Effect of beef heifer development system on average daily gain, reproduction, and adaptation to corn residue during first pregnancy. *J. Anim. Sci.* 92:2620-2629.
- Vraspir, R.A., A.F. Summers, D. O'Hare, L.D. Rowden, and R.N. Funston. 2013. Comparison of melengestrol acetate and controlled internal drug release long-term progestin-based synchronization protocols on fixed-time AI pregnancy rate in beef heifers. *Prof. Anim. Sci.* 29:575-579.
- Cushman, R.A., L.K. Kill, R.N. Funston, E.M. Mousel, and G.A. Perry. 2013. Heifer calving date positively influences calf weaning weights through six parturitions. *J. Anim. Sci.* 91:4486-4491.
- Johnson, S.K., and R.N. Funston. 2013. Post breeding heifer management. *Vet. Clinics of North America: Food Anim. Practice* 29:627-641.
- Funston, R.N., and A.F. Summers. 2013. Effect of prenatal programming on heifer development. *Vet. Clinics of North America: Food Anim. Practice* 29:517-536.
- Funston, R.N., and A.F. Summers. 2013. Epigenetics: Setting Up Lifetime Production of Cows by Managing Nutrition. *Annu. Rev. Anim. Biosci.* 1:14.1-14.25.
- Stockton, M.C., R.K. Wilson, D.M. Feuz, L.A. Stalker, and R.N. Funston. 2013. Using measurable physical characteristics to forecast beef heifer maturity: the identification of a maturity index. *J. Anim. Sci.* 91:4462-4468.
- Endecott, R.L., R.N. Funston, J.T. Mulliniks and A.J. Roberts. 2013. Implications of beef heifer development systems and lifetime productivity. *J. Anim. Sci.* 91:1329-1335.
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- Springman, S.A. 2017. Management strategies for beef heifer development.
- Tibbitts, B.T. 2016. Beef systems management strategies: Calving date selection, estrus synchronization, and post-weaning management.
- Nielson, H.R. 2015. Beef cattle management systems for estrus synchronization and heifer development.
- Vraspir, R.A. 2014. Effects of pubertal status and number of estrous cycles prior to breeding in beef heifers, average daily gain on reproductive performance and comparison of two fixed time AI estrus synchronization protocols.
- Harms, J.D. 2013. Effects of Maternal Nutrition and Post-Weaning Management in a Late Spring Calving System and Synchronization of Estrus using Fixed Time AI Protocols.

- Summers, A.F. 2012. Beef cattle production: understanding the effect of heifer development system, late gestation protein supplementation, and ovarian steroidogenic environment on productivity, reproduction and longevity. Ph.D. Diss., Univ. Nebraska, Lincoln.
- Weber, S.P. 2012. Utilization of corn residue, winter range, or dry lot, in beef heifer development systems. M.S. Thesis. Univ. Nebraska, Lincoln.
- Griffin, W.A. 2011. The effect of calving season and wintering system on cow and calf performance and economics from conception through finishing and the effect of supplementing dried distillers grains to calves in forage based systems. Ph.D. Diss., Univ. Nebraska, Lincoln.
- Larson, D.M. 2009. Nutritional and biochemical factors impacting reproduction in replacement heifers and puberty in bull calves. Ph.D. Diss., Univ. Nebraska, Lincoln.
- Martin, J.L. 2007. Effects of protein supplementation and source in cow/calf systems and heifer development. Ph.D. Diss., Univ. Nebraska, Lincoln.
- Harris, H.L. 2005. Utilization of soybeans or corn milling co-products in beef heifer development diets. M.S. Thesis, Univ. Nebraska, Lincoln.
- Stalker, L.A. 2005. Protein and energy supplements in range beef production systems. Ph.D. Diss., Univ. Nebraska, Lincoln.
- Fennewald, D.J. 2002. Methods to reduce morbidity in feeder calves. M.S. Thesis. Montana State Univ. Bozeman.
- Bottger, J.D. 2000. Effects of two types of supplemental cracked safflower seeds on production, reproduction, metabolites, metabolic hormones, and fatty acid profiles of milk, adipose tissue and plasma of primiparous beef heifers. M.S. Thesis. Univ. of Wyoming. Laramie.

Awards and Honors:

- Animal Management for the American Society of Animal Science Award. 2017.
- Nebraska Beef Cow-Calf Professorship. 2015-
- North Central Region of Cooperative Extension and USDA's National Institute of Food and Agriculture Regional Excellence in Extension Award-2014.
- Omtvedt Innovation Award in Extension-2014.
- Western Section American Society of Animal Science Extension Award – 2014.
- National Institute of Food and Agriculture, Partnership Award for Multi State Efforts - 2013
- UNL Distinguished Specialist Award - 2011
- Gudmundsen Excellence Fund Award – 2012-2013
- Wendell Burgher Beef Industry Award – 2011-2012
- Nebraska Beef Industry Endowment Award – 2011-2012-2013
- Second place award for excellence in applied animal science research Western Section ASAS (2013)
- Second place award for excellence in applied animal science research Western Section ASAS (2011)
- First and Second place award for excellence in applied animal science research Western Section ASAS (2010)
- Third place award for excellence in applied animal science research Western Section ASAS (2009)
- Third place award for excellence in applied animal science research Western Section ASAS (2008)
- First place award for excellence in applied animal science research Western Section ASAS

(2006)

Director's Award for Excellence for leadership in the MT Beef Network
American Society of Animal Science Scholarship Award
Gamma Sigma Delta Honor Society, UW, Laramie
Alpha Zeta Honorary Fraternity, NDSU, Fargo
Rodeo Scholarship, NDSU, Fargo

Workshops and Outreach Teaching Presentations

Biotechnology in Beef Production
Lowering Beef Production Costs
Beefability – Learn how your cattle perform in the feedlot and on the rail
Winter Nutrition
MT Beef Network
Retained Ownership
Reproductive Management
Live Animal and Carcass Evaluation
Beef Quality/Consistency Issues
Expected Progeny Differences
Beef Quality Assurance Training
Carcass Value Determination
Estrous Synchronization Programs
Genetic Management for Profitability
Mineral Supplementation
4-H Beef Project
DECI Demonstration
Fort Keogh Research Update
Live Animal Evaluation and Carcass Value Determination
What Makes a Profitable Feeder Calf?
State Wide Beefability Planning Program
Considerations of Calving and Weaning Time, Implanting Strategies and Carcass Data in
Cow/Calf Decisions
Best Management Practices for Beef Producers
Using Carcass Data to Manage and Market Cattle
Misconceptions in the Beef Industry
4-H Market Animal Quality Assurance

Courses Taught

Management of Reproduction
Advanced Beef Production
Principles of Nutrition
Genetics
Reproduction in Farm Animals
Physiology of Gestation
Domestic Animal Physiology
Animal Breeding
Introductory Animal Science

Horse Production
Applied Animal Nutrition
Range Livestock Production
International Food Policy
Farm and Ranch Management

Laboratory and Technical Skills

Protein, DNA and RNA isolation and purification
HPLC and FPLC
Northern, Western, Southern and Ligand blots
PCR and RTPCR
Electrophoresis of proteins, RNA and DNA
Radioimmunoassays
Electron microscopy
Topical autoradiography
Cryo and paraffin sectioning
In-vitro fertilization
In-situ hybridization
Cell Culture
Cloning and sequencing
Embryo transfer and AI
Ultrasonography; carcass and pregnancy
Palpation for pregnancy

Organizations / Service

Rodeo Team Coach, Chadron State College
Co-advisor of Agriculture Club, Chadron State College
Co-advisor of Pre-Vet Club, Chadron State College
American Society of Animal Science Member
Western Beef Resource Committee Member
Montana Representative for ADDS National Beef Infobase
WRCC-110 Nutrition Committee
Western Section of the American Society of Anim. Sci. Extension Committee
Western Section Extension Committee (Chair and symposium coordinator; 2001)
Beef Questions and Answers Newsletter Co-editor
State Beef Quality Assurance Advisory Board
MT State 4-H Livestock Committee
MT State 4-H Livestock Sale Committee
Fort Keogh Information Technology Committee
Gate to Plate Organization and Planning Committee
Cow Capital Beef Conference Planning Committee
Fort Keogh Field Day Planning Committee and MC for Presentations
Bovine Connection Planning Committee
January Thaw Planning Committee
Multi-state - Fort Keogh, Bi-annual Agent/Specialist Symposium, Organizer
State Beefability Coordinator

Member of GSL planning committee
Faculty coordinator for beef cattle research and facilities at WCREC
Member of the North Central Region Bovine Reproductive Task Force
Editorial board for Journal of Animal Science
NCBA Beef Production Research Committee
Appointed to graduate faculty
Serve as major advisor for Jennifer Olson (MSU), Heidi Harris (UNL), also serve on committees for Brian Rainey (MSU) and Aaron Stalker (UNL).
Western Section American Society of Animal Science Beef Symposium, Chair

Professional Development

National American Society of Animal Science Meetings – Denver, CO, Phoenix, AZ
Western Section ASAS Meetings – Provo, UT, Davis, CA, Bozeman, MT, Fort Collins, CO
Tri-State Nutrition Conference – Miles City and Dickinson, ND
DECI Training, Clay Center, NE
Winter Grazing Seminar, Miles City
Marketing Workshop, Miles City
Marketing and Trade Policies Workshop, Miles City
Reproductive Diseases in Beef Cattle Workshop, Miles City
Fundamentals of Livestock Breakevens Workshop, Miles City
Looking Ahead in the Cattle Market Workshop, Miles City
Time Management Seminar, Miles City
National Cattlemen’s Beef Association Annual Meeting, San Antonio, TX
Beef Improvement Federation Annual Meeting, San Antonio, TX
National Cattlemen’s Beef Association Annual Meeting, Denver, CO
Beef Improvement Federation Annual Meeting, Omaha, NE.
Beef Improvement Federation Annual Meeting, Sioux Falls, SD.