

WERA-110 Annual Report, 2008

Refereed Journal Publications

DeLorme, M.J.M., S.L. Lodge-Ivey, and A. M. Craig, 2007. Physiological and digestive effects of *Neotyphodium coenophialum*-infected tall fescue fed to lambs. *J. Anim. Sci.* 85:1199-1206.

Ford, S.P., B.W. Hess, J.S. Gilbert, M.J. Nijland, K.A. Vonnahme, and P.W. Nathanielsz. 2007. Maternal undernutrition from early to mid-gestation in the ewe results in glucose intolerance in male offspring. *J. Anim. Sci.* 85:1285-1294.

Hatfield, P.G., S.L. Blodgett, T.M. Spezzano, H.B. Goosey, A.W. Lenssen, R.W. Kott, and C.B. Marlow. 2007. Incorporating sheep into dryland grain production systems: I Impact on over-wintering larva populations of Wheat stem sawfly, *Cephus cinctus* Norton, (Hymenoptera: Cephidae). *Small Rum. Res.* 67:209-215.

Hatfield, P.G., A.W. Lenssen, T.M. Spezzano, S.L. Blodgett, H.B. Goosey, R.W. Kott, and C.B. Marlow. 2007. Incorporating sheep into dryland grain production systems: II Impact on changes in biomass and weed frequency. *Small Rum. Res.* 67:216-221.

Hatfield, P.G., H.B. Goosey, T.M. Spezzano, S.L. Blodgett, A.W. Lenssen, R.W. Kott, and C.B. Marlow. 2007. Incorporating sheep into dryland grain production systems: III Impact on changes in soil bulk density and soil nutrient profiles. *Small Rum. Res.* 67:222-231.

Krall, J.M., R.W. Goose, M.J. Walsh, V. Nayighugu, J. Cecil, and B. Hess. 2007. Registration of "Laramie" Annual Medic. *J. Plant Registr.* 1:32-33.

Kronberg, S.L., E.J. Scholljegerdes, G. Barceló-Coblijn, and E.J. Murphy. 2007. Flaxseed treatments to reduce biohydrogenation of α -linolenic acid by rumen microbes in cattle. *Lipids* 42:1105-1111.

Lake, S.L., T.R. Weston, E.J. Scholljegerdes, C.M. Murrieta, B.M. Alexander, D.C. Rule, G.E. Moss, and B.W. Hess. 2007. Effects of postpartum dietary fat and body condition score at parturition on plasma, adipose tissue, and milk fatty acid composition of lactating beef cows. *J. Anim. Sci.* 85:717-730.

Nayighugu, V., A.D. Schleicher, D.W. Koch, J.W. Flake, L.J. Held, and B.W. Hess. 2007. Beef cattle production, nutritional quality and economics of windrowed forage vs. baled hay during winter. *Agron. J.* 99:944-951.

Scholljegerdes, E.J., S.L. Lake, T.R. Weston, D.C. Rule, G.E. Moss, T.M. Nett, and B.W. Hess. 2007. Fatty acid composition of plasma, medial basal hypothalamus, and uterine tissue in primiparous beef cows fed high-linoleate safflower seeds. *J. Anim. Sci.* 85:1555-1564.

Suber, L., Roeder, B., P.G. Hatfield, and R.W. Kott. 2006. Feedlot performance and carcass characteristics of spring-born wethers finished on an 80% barley diet either in the fall or spring and slaughtered at seven to eight, or fourteen to fifteen months of age, respectively. *Small Rum. Res.* 66:102-107.

Tanaka, D.L., J.F. Karn, and E.J. Scholljegerdes. 2008. Integrated crop/livestock systems research: Practical research considerations. *Renew. Agric. Food Syst.* 23:80-86.

Tsopito, C.M., B.W. Hess, and A.M. Gray. 2007. Effects of separating leaves and stems from alfalfa hay and extruding on chemical composition and ruminal protein and fiber degradation. *Bots. J. Agric. Appl. Sci.* 3:45-54.

Underwood, K.K., J. Tong, M.J. Zhu, Q.W. Shen, W.J. Means, S.P. Ford, S.I. Paisley, B.W. Hess, and M. Du. 2007. Relationship between kinase phosphorylation, muscle fiber typing, and glycogen accumulation in longissimus muscle of beef cattle with high and low intramuscular fat. *J. Agric. Food Chem.* 55:9698-96703.

Vonnahme, K.A., M.J. Zhu, P.P. Borowicz, T.W. Geary, B.W. Hess, L.P. Reynolds, J.S. Caton, W.J. Means, and S.P. Ford. 2007. Effect of early gestational undernutrition on angiogenic factor expression and vascularity in the bovine placentome. *J. Anim. Sci.* 85:2464-2472.

Waterman, R.C., C.A. Löest, W.D. Bryant, and M.K. Petersen. 2007. Supplemental methionine and urea for gestating beef cows consuming low quality forage diets. *J. Anim. Sci.* 85:731-736.

Zhu, M.J., M. Du, B.W. Hess, P.W. Nathanielsz, and S.P. Ford. 2007. Periconceptional nutrient restriction in the ewe alters MAPK/ERK1/2 and PI3K/Akt growth signaling pathways and vascularity in the placentome. *Placenta* 28:1192-1199.

Zhu, M.J., M. Du, B.W. Hess, W.J. Means, P.W. Nathanielsz, and S.P. Ford. 2007. Maternal nutrient restriction upregulates signaling pathways in the cotyledonary artery of cow placentomes. *Placenta* 28:361-368.

Manuscripts in Peer-review

Galbreath, C. W., E. J. Scholljegerdes, G. P. Lardy, K. G. Odde, M. E. Wilson, J. W. Schroeder, and K. A. Vonnahme. 2008. Effect of feeding flax or linseed meal on progesterone clearance rate in ovariectomized ewes. *Dom. Anim. Endo.* (*Submitted*).

Mathews, B.W., J.R. Carpenter, and L.E. Sollenberger. 2008. *In vitro* digestibility and chemical composition of Kikuyugrass as influenced by silicon, liming, and genotype. *Soil Science and Plant Analysis* (In Review)

Mathews, B.W. and J. R. Carpenter. 2007. Fertilization, aeration and swage biosolids on kikuyugrass pasture productivity. Mathews, B.W., and J.R. Carpenter. 2007. Fertilization, aeration, and sewage biosolid effects on kikuyugrass pasture productivity. *Soil Crop Sci. Soc. of Fla. Proc.* 66: (In Press)

Phillips, R., O. Beerli, E. Scholljegerdes, D. Bjergaard, and J. Hendrickson. 2008. A satellite data-driven model for estimating grazing capacity in northern prairie. *Ag. Syst.* (*Submitted*).

Roberts, A. J., T. W. Geary, E. E. Grings, R. C. Waterman, and M. D. MacNeil. Reproductive performance of heifers offered ad libitum or restricted access to feed for a 140-d period after weaning. *J. Anim. Sci.* (Submitted April 2008)

Scholljegerdes, E., and S. Kronberg. 2008 Influence of supplemental whole flaxseed on forage intake and site and extent of digestion in beef heifers consuming native grass hay. *J. Anim. Sci.* (*Accepted with revision*).

Technical Proceedings

- Buck, K., J.R. Carpenter, M.S. Thorne, B.W. Mathews. 2008. Use of net carbohydrate and protein system (CNCPS) for predicting beef cattle cow-calf production in Hawaii. Proc. West. Sec. Am. Soc. Anim. Sci. Vol 59 (In Press)
- Buck, K., J.R. Carpenter, M.S. Thorne and B.W. Mathews. 2007. In situ rates of insoluble macromineral release from alfalfa and tropical grasses and relationships with dry matter disappearance. Proc. West. Sec. Am. Soc. Anim. Sci. Vol. 58: Suppl. 2, p. 165.
- Buck, K., J. R. Carpenter, and B. W. Mathews. 2006. Rate of dry matter and insoluble macromineral release of tropical pasture during *in situ* digestion trials in cattle. Proc. 2006 Mealani Forage Field Day, UH Mealani Res. Station, Kamuela, HI p. (In Press)
- Carpenter, J.R., and B.W. Mathews. 2006. Effects of Aeration and Sewage Biosolids on Improved Kikuyugrass Pasture Productivity and Nutrient Composition. Proc. 2006 Mealani Forage Field Day, UH Mealani Res. Station, Kamuela, HI p. (In Press)
- Carpenter, J.R., L.S. Lollenberger, and B.W. Mathews. 2008. *In vitro* digestibility and chemical composition of kikuyugrass as influenced by soil silicon, liming, and genotype. Proc. West. Sec. Am. Soc. Anim. Sci. Vol 59 (In Press)
- Dafoe, J.M., P. G. Hatfield, R. W. Kott, B. F. Sowell, J. G. Berardinelli, and K. C. Davis. 2006. Effects of supplemental safflower and vitamin e during late gestation on lamb growth, serum metabolites and thermogenesis. Proc. 55th Annual Montana Livestock Forum and Nutrition Conference April 11-12, 2006 • GranTree Inn, Bozeman. Track 9, CD proceedings
- Dafoe, J.M., P. G. Hatfield, R. W. Kott, B. F. Sowell, J. G. Berardinelli, and K. C. Davis. 2006. Effects of supplemental safflower and vitamin e during late gestation on lamb growth, serum metabolites and thermogenesis. West. Sec. Amer. Soc. Anim. Sci. 57:
- Endecott, R.L., and R.C. Waterman. 2008. Use of a self-fed, small-package protein supplement for beef cows post-weaning. Proc. West. Sec. Am. Soc. Anim. Sci. 59: (*In Press*).
- Endecott, R.L., S. H. Cox, and M. K. Petersen. 2007. Impacts of supplemental glucogenic precursors and cow age on postpartum range cow performance. Proc. West. Sect. Am. Soc. Anim. Sci. 58: 352-357.
- Fox, G. P., B. Osborne, J. Bowman, A. Kelly, M. Cakir, D. Poulsen, A. Inkerman, and R. Henry. 2007. Measurement of genetic and environmental variation in barley (*Hordeum vulgare*) grain hardness. J. Cereal Sci. 46:82-92.
- Fox, G. P., L. Nguyen, J. Bowman, D. Poulsen, A. Inkerman, and R. J. Henry. 2007. Relationship between hardness genes and quality in barley (*Hordeum vulgare*). J. Institute Brewing 113:87-95.
- Grove, A. V., C. R. Kaiser, J. A. Wiley, A. G. Harmsen, and J.G.P. Bowman. 2007. Feeding barley beta-glucan enhances immune response in mice. Proc. West. Sec. Am. Soc. Anim. Sci. 58:207-210.
- Grove, A. V., C. R. Kaiser, N. Iversen, and J.G.P. Bowman. 2007. Intake and digestibility of beta-glucan from 'Valier' barley in young calves. Proc. West. Sec. Am. Soc. Anim. Sci. 58:364-367.

- Halalsheh, R. A., H. M. Sullivan, T. T. Ross, and M. K. Petersen. 2007. Effects of conjugated tannins on forage ensiling and in vitro ruminal fermentation. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58:
- Hess, B.W., E.J. Scholljegerdes, C.M. Murrieta, and D.C. Rule. 2007. Long-chain fatty acid flow to the duodenum of cattle fed limited amounts of forage plus supplementary ruminally undegradable protein containing fishmeal. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58:320-323.
- Horvath, M. B., S. H. Cox, M. K. Petersen, and S. L. Lodge-Ivey. Use of methylglyoxal as a tool in predicting ruminal nitrogen status. 2007. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58: 375-377.
- Iversen, N. L., A. V. Grove, J.G.P. Bowman, D. Boss, and T. K. Blake. 2007. Feeding value of corn and 'Valier' barley for finishing steers. *Proc. West. Sec. Am. Soc. Anim. Sci.* 58:372-374.
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- Kelley, A.L., K.C. Davis, P.G. Hatfield, R.W. Kott, and J.M. Rumph. 2006. Genetic parameters for mature weight and lifetime litter weight weaned in Rambouillet and Targhee ewes. *West. Sec. Amer. Soc. Anim. Sci.* 57:
- Mathis, C. P., S. H. Cox, M. K. Petersen, C. L. Löest, R. L. Endecott, and M. Encinias. 2007. Low-input pasture backgrounding system is more profitable through harvest than high-input drylot system. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58:122-125.
- Mulliniks, J. T., S. H. Cox, J. E. Sawyer, R. Worley, and M. K. Petersen. Utilization of corn gluten meal by heifers as a self-fed supplement. 2007. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58:237-239.
- Olson, K.C., and A. Harty. 2007. Delivery of supplements on rangelands. pp. 203-211. In: *Proc., Range Beef Cow Symposium XX*. Fort Collins, CO.
- Price, P.L., M. Du, S.I. Paisley, V. Nayigihugu, J.D. Hess, and B.W. Hess. 2007. Beef cow performance in response to early through mid-gestational nutrient restriction and provision of supplementary ruminally undegradable protein. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58:134-137.
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- Scholljegerdes, E. J., and S. L. Kronberg. 2008. Effects of supplemental flaxseed on site and extent of digestion in beef heifers grazing summer native pasture in the northern Great Plains. *Proc. 62nd Flax Inst. United States. (In Press)*.
- Scholljegerdes, E. J., L. A. Lekatz, and K. A. Vonnahme. 2008. Effects of short-term oilseed supplementation on plasma fatty acid composition in lactating beef cows. *Proc. West. Sect. Am. Soc. Anim. Sci.* 59: *(In Press)*.

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Van Emon, M. L., A. F. Musselman, P. J. Gunn, M. K. Neary, R. P. Lemenager, E. J. Scholljegerdes, and S. L. Lake. 2008. Effects of added dietary protein and fat on subcutaneous adipose tissue of finishing lambs when fed differing levels of dried distiller's grains with solubles. *Proc. West. Sect. Am. Soc. Anim. Sci.* 59: (*In Press*).

Waggoner, J. W., C. A. Loest, J. L. Turner, C. P. Mathis, K. K. Kane, L. Chen, D. M. Hallford, and M. K. Petersen. Effects of bacterial endotoxin and dietary protein on serum hormones and plasma amino acids in growing steers. 2007. *Proc. West. Sect. Am. Soc. Anim. Sci.* 58: 348-351.

Waterman, R.C., and L.T. Vermeire. 2008. Influence of grazing deferments following summer fire on ewe performance and forage quality. *Proc. West. Sec. Am. Soc. Anim. Sci.* 59: (*In Press*).

Abstracts

Buck, K., J.R. Carpenter and B.W. Mathews. 2006. Rate of insoluble macromineral release of tropical pasture and pasture derived feeds during *in situ* digestion trials in cattle. CTAHR Student Research Symposium, April 8th, p. 53.

Buck, K., J.R. Carpenter, M.S. Thorne, and B.W. Mathews. 2007. Use of net carbohydrate and protein system (CNCPS) for predicting beef cattle cow-calf production in Hawaii. *Proc. West. Sec. Amer. Soc. Anim. Sci.* Vol 59. (*In Press*)

Buck, K., J.R. Carpenter, M.S. Thorne, and B.W. Mathews. 2008. Use of net carbohydrate and protein system (CNCPS) for predicting beef cattle cow-calf production in Hawaii. *Proc. West. Sec. Amer. Soc. Anim. Sci.* Vol 59 (*In Press*)

Carpenter, J.R., L. S. Lollenberger, and B.W. Mathews. 2008. *In vitro* digestibility and chemical composition of kikuyugrass as influenced by soil silicon, liming, and genotype. *Proc. West. Sec. Amer. Soc. Anim. Sci.* Vol 59 (*In Press*)

Carpenter, J.R. and B. Sporleder. 2006. Assessment of energy enhanced roughage (EER) based diets for growing/finishing cattle. *J. Anim. Sci.* 84, Suppl. #1; *J. Dairy Sci.* 89, Supp. #1, p. 122-123.

Kronberg, S. L. and E. J. Scholljegerdes. 2008. A win-win scenario with flaxseed supplementation to reduce methane output and increase weight gains of grazing cattle. *Livestock and Global Climate Change, British Soc. Anim. Sci., Hammamet, Tunisia, May 17-20, 2008.* (*In Press*)

Mathews, B.W. and J.R. Carpenter. 2007. Fertilization, aeration, and sewage biosolid effects on kikuyugrass pasture productivity. Joint FSHS and SCSSF annual meeting, Tampa FL, 4-6 June 2006, p (*In Press*).

Scholljegerdes, E. J. and S. L. Kronberg. 2008. Effects of supplemental flaxseed or corn on site and extent of digestion in beef heifers grazing summer rangelands in the northern Great Plains. *J. Anim. Sci.* 86(Suppl. 1): (*In press*).

Scholljegerdes, E. J. and W. J. Hill. 2008. Effects of supplemental cobalt on site and extent of digestion in beef heifers consuming chopped grass hay. *J. Anim. Sci.* 86(Suppl. 1): (*In press*).

Waggoner, J. W., C. A. Loest, J. L. Turner, C. P. Mathis, K. K. Kane, D. M. Hallford, and M. K. Petersen. 2007. Effects of endotoxin and dietary protein on N metabolism, and serum cortisol and haptoglobin in growing beef steers. *J. Anim. Sci.* (Suppl. 1) Abst. No. 358.

Wesley, R. L., A. F. Cibils, E. R. Pollak, S. H. Cox, T. Mulliniks, M. K. Petersen, and E. Fredrickson. 2007. Measures of daily distribution patterns of cow calf pairs using global positioning systems on both cows and calves. *J. Rangeland Ecolol. Manage.*

Theses/Dissertations

Kevin Buck– M.S., Dept. of Human Nutrition, Food and Animal Sciences. Thesis Title: Utilization of tropical pasture by beef cattle: The Cornell net carbohydrate and protein system (CNCPS) and *in situ* mineral release in the rumen. August 2007.

Book Chapters

Hatfield, P.G., H. Goosey, A. Lenssen, and S. Blodgett. 2006. Incorporating Target Grains Into Farming Systems. Chpt 14. IN: TARGETED GRAZING. A natural approach to vegetation management and landscape enhancement. pp 129-140. Copyright 2006 American Sheep Industry Association.

Invited Papers

Hatfield, P.G. 2006. The Montana sheep ration program. Proc. 55th Annual Montana Track 5, Livestock Forum and Nutrition Conference April 11-12, 2006 • GranTree Inn, Bozeman. CD proceedings