

Research, Creative Accomplishments and Scholarship, Varga, B-1

- 1a. Research and Scholarly publications: Articles published in referred journals** (listed chronologically. Where candidate is the primary author, it indicates that she designed, conducted, analyzed and wrote the manuscript for publication. Where the candidate is second author the majority of these publications are those of the candidate's graduate student).

Davies, C. K., **G. A. Varga**, and R. S. Hinkson, Jr. 1975. *Conversion of animal wastes to feed supplements via the organiform process*. Proceedings of the 3rd International Symposium on Livestock Wastes 275:227. In *Managing Livestock Wastes*. ASAE Pub. Proc. 275:227. (Part of Master's thesis research)

Prigge, E. C., **G. A. Varga**, J. L. Vicini, and R. L. Reid. 1981. *Comparison of ytterbium chloride and chromium sesquioxide as fecal indicators*. J. Anim. Sci. 53:1639. (Dr. Varga participated in design, conduct, analyses and write-up of the experiment.)

Varga, G. A., L. A. Slyter, L. W. Smith, and E. C. Leffel. 1981. *The utilization of urea, uric acid and caged layer waste by rumen microorganisms continuously cultured in vitro*. J. Anim. Sci. 54:1581. (Ph.D. thesis research)

Lough, D. S., E. C. Prigge, W. H. Hoover, and **G. A. Varga**. 1982. *The utilization of ruminally infused acetate or propionate and abomasally infused casein in lactating goats*. J. Dairy Sci. 66:756. (Dr. Varga participated in design, conduct and critical review of the experiment.)

Prigge, E. C., W. H. Hoover, and **G. A. Varga**. 1982. *Simplified procedure for abomasal cannulation in rumen fistulated goats and sheep*. J. Dairy Sci. 65:871. (Dr. Varga participated in design, collection and data analyses.)

Varga, G. A., and E. C. Prigge. 1982. *Influence of forage species and level of intake on ruminal liquid and solids turnover rates*. J. Anim. Sci. 55:1498. (Dr. Varga was principal investigator, designed and conducted the experiment and wrote the manuscript.)

Vicini, J. L., E. C. Prigge, W. B. Bryan, and **G. A. Varga**. 1982. *The influence of forage species and creep grazing on a cow-calf system. I. Intake and digestibility of forages*. J. Anim. Sci. 55:752. (Dr. Varga participated in collection of data and contributed in the writing of the manuscript.)

Vicini, J. L., E. C. Prigge, W. C. Bryan, and **G. A. Varga**. 1982. *The influence of forage species and creep grazing on a cow-calf system. II. Calf production*. J. Anim. Sci. 55:759. (Dr. Varga participated in collection of data and contributed to the writing of the manuscript.)

Crawford, R. J., Jr., B. J. Shriver, **G. A. Varga**, and W. H. Hoover. 1983. *Buffer requirements for maintenance of pH during fermentation of individual feeds in continuous culture*. J. Dairy Sci. 66:1881. (Dr. Varga participated in design and contributed to the writing of the manuscript.)

Hoover, W. H., C. R. Kincaid, **G. A. Varga**, W. V. Thayne, and L. L. Junkins, Jr. 1983. *Effects of solids and liquid flows on fermentation in continuous cultures. IV. pH and*

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dilution rate. J. Anim. Sci. 58:692. (Dr. Varga was co-chair of the graduate student's committee.)

Prigge, E. C., M. J. Baker, and **G. A. Varga**. 1983. *Relationship of rumen kinetics and level of intake to the comparative digestion of forages by steers and wethers*. J. Anim. Sci. 59:237. (Dr. Varga participated in design, collection of data and writing of the manuscript.)

Varga, G. A., and W. H. Hoover. 1983. *Rate and extent of neutral detergent fiber degradation of feedstuffs *in situ**. J. Dairy Sci. 66:2109. (Dr. Varga designed and conducted the experiment, analyzed the data and wrote the manuscript.)

Varga, G. A., E. M. Meisterling, R. A. Dailey, and W. H. Hoover. 1984. *Effect of low and high fill diets on dry matter intake, milk production and reproductive performance during early lactation*. J. Dairy Sci. 67:1240. (Dr. Varga designed and conducted the experiment, analyzed the data and wrote the manuscript.)

Varga, G. A., W. H. Hoover, and R. A. Dailey. 1985. *Survey of nutritional management practices and metabolic disorders of West Virginia dairy herds*. J. Dairy Sci. 68:1507. (Dr. Varga designed and conducted the experiment, analyzed the data and wrote the manuscript.)

Varga, G. A., W. H. Hoover, L. L. Junkins, and B. J. Shriver. 1988. *Effects of urea and isoacids on *in vivo* fermentation of diets containing formaldehyde treated soybean meal*. J. Dairy Sci. 71:737. (Dr. Varga designed and conducted the experiment, analyzed the data and wrote the manuscript for this experiment.)

Boutton, T. W., H. F. Tyrrell, B. W. Patterson, **G. A. Varga**, and P. D. Klein. 1988. *Carbon kinetics of milk formation in Holstein cows in late lactation*. J. Anim. Sci. 66:2636. (Dr. Varga participated in design and collection of data.)

Huntington, G. B., **G. A. Varga**, B. P. Glenn, and D. R. Waldo. 1988. *Net absorption and oxygen consumption by Holstein steers fed alfalfa or orchardgrass silage at two equalized intakes*. J. Anim. Sci. 66:1292. (Dr. Varga designed the experiment and was in charge of data acquisition and participated in writing of the manuscript.)

Yang, C. -M. J., and **G. A. Varga**. 1989. *Effect of three concentrate feeding frequencies on rumen protozoa, rumen digesta kinetics, and milk yield in dairy cows*. J. Dairy Sci. 72:950. (Dr. Varga supervised graduate student's research.)

Glenn, B. P., **G. A. Varga**, G. B. Huntington, and D. R. Waldo. 1989. *Duodenal nutrient flow and digestibility in Holstein steers fed formaldehyde and formic acid-treated alfalfa or orchardgrass silages at two intakes*. J. Anim. Sci. 67:513. (Dr. Varga designed experiment and participated in writing of the manuscript.)

Donkin, S. S., **G. A. Varga**, T. F. Sweeney, and L. D. Muller. 1989. *Rumen-protected methionine and lysine: Effects on animal performance, milk protein yield, and physiological measures*. J. Dairy Sci. 72:1484. (Dr. Varga supervised graduate student's research.)

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- Yang, C. -M. J., and **G. A. Varga**. 1989. *Effect of sampling site on protozoa and fermentation end products in the rumen of dairy cows*. J. Dairy Sci. 72:1492. (Dr. Varga supervised graduate student's research.)
- Roeder, B. L., M. M. Chengappa, K. F. Lechtenberg, T. G. Nagaraja, and **G. A. Varga**. 1989. *Isolation of fusobacterium associated with facial and mandibular abscesses in Blue Duiker antelope*. J. Wild. Dis. 25 (3):370. (Dr. Varga supervised graduate student's research.)
- Taylor, B. A., **G. A. Varga**, T. J. Whitsel, and T. V. Hershberger. 1990. *Lactation in the Blue Duiker (Cephalophus monticola): milk composition and milk intake by the calf*. Small Rum. Res. J. 3:1. (Dr. Varga supervised graduate student's research.)
- Canale, C. J., L. D. Muller, H. A. McCahon, T. J. Whitsel, **G. A. Varga**, and M. J. Lormore. 1990. *Dietary fat and rumen protected amino acids for high producing dairy cows*. J. Dairy Sci. 73:135. (Dr. Varga was involved in design, critical evaluation of results and writing of the manuscript.)
- Canale, C. J., P. L. Burgess, L. D. Muller, and **G. A. Varga**. 1990. *Calcium salts of fatty acids in diets that differ in neutral detergent fiber: Effect on lactation performance and nutrient digestibility*. J. Dairy Sci. 73:1031. (Dr. Varga was involved in design and writing of the manuscript.)
- Canale, C. J., S. M. Abrams, **G. A. Varga**, and L. D. Muller. 1990. *Alkali-treated orchardgrass and alfalfa: composition and in situ digestion of dry matter and cell wall components*. J. Dairy Sci. 73:2404. (Dr. Varga was involved in critical evaluation of results and preparation of the manuscript.)
- Ziemer, C. J., A. J. Heinrichs, C. J. Canale, and **G. A. Varga**. 1990. *Alfalfa hay treated with a chemical drying agent: effect on digestibility in situ*. J. Dairy Sci. 73:2417. (Dr. Varga was involved in design, critical evaluation of data, and review of the manuscript.)
- Varga, G. A.**, H. F. Tyrrell, G. B. Huntington, D. R. Waldo, and B. P. Glenn. 1990. *Utilization of nitrogen and energy by Holstein steers fed formaldehyde- and formic acid-treated alfalfa or orchardgrass silage at two intakes*. J. Anim. Sci. 68:3780. (Dr. Varga designed and conducted the experiment, analyzed the data and prepared the manuscript.)
- Waldo, D. R., **G. A. Varga**, G. B. Huntington, B. P. Glenn, and H. F. Tyrrell. 1991. *Energy components of growth in Holstein steers fed alfalfa or orchardgrass silages at equalized intakes of dry matter*. J. Anim. Sci. 68:3792. (Dr. Varga designed experiment and participated in writing and critical evaluation of the manuscript.)
- Ziemer, C. J., A. J. Heinrichs, C. J. Canale, and **G. A. Varga**. 1991. *Chemical drying agents for alfalfa hay: effect of nutrient digestibility and lactational performances*. J. Dairy Sci. 74:2764. (Dr. Varga participated in discussions of design of the experiment and served on graduate student's committee.)
- Roeder, B. L., **G. A. Varga**, and R. F. Wideman, Jr. 1991. *Effects of dietary calcium and*

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- phosphorous on mineral metabolism and acid-base balance in blue duiker antelopes.* Small Rum. Res. 5:93. (Dr. Varga supervised graduate student's research.)
- Waybright, T., and **G. A. Varga**. 1991. *Effect of water-filled bags in the rumen of wethers on ruminal digesta kinetics and total tract nutrient digestibility.* J. Animal Sci. 69:2157 (Dr. Varga supervised the graduate student and participated in the design of the study and preparation of the manuscript.)
- Dehority, B. A., and **G. A. Varga**. 1991. *Bacterial and fungae numbers in rumen and cecum contents of the blue duiker (Cephalophus monticola).* App. Environ. Microb. 57:469. (Dr. Varga collaborated on the project with Dr. Dehority, a researcher at Ohio State University. The research was conducted at Penn State.)
- Varga, G. A.**, and T. J. Whitsel. 1991. *Effect of nonstructural to structural carbohydrate ratio on rate and extent of nutrient utilization.* Anim. Feed Sci. and Tech. 32:275. (Dr. Varga designed and conducted the experiment, analyzed the data and prepared the manuscript.)
- Canale, C. J., **G. A. Varga**, and S. M. Abrams. 1991. *In situ disappearance of cell wall monosaccharides in alkali-treated orchardgrass and alfalfa.* J. Dairy Sci. 74:1018. (Dr. Varga served on student's committee and participated in design and critical evaluation of the manuscript.)
- Meinert, R. A., C. M. J. Yang, A. J. Heinrichs, and **G. A. Varga**. 1991. *Effect of monensin on growth, reproductive performance, and estimated body composition in Holstein heifers.* J. Dairy Sci. 74:257. (Dr. Varga served on student's committee and provided expertise during the course of the study.)
- Polan, C. E., K. A. Cummins, C. J. Sniffen, T. V. Muscato, J. L. Vicini, B. A. Crooker, J. H. Clark, D. G. Johnson, D. E. Otterby, B. Guillaume, L. D. Muller, **G. A. Varga**, R. A. Murray, and S. B. Pierce-Sander. 1991. *Responses of dairy cows to supplemental rumen protected forms of methionine and lysine.* J. Dairy Sci. 74:2997. (Conducted research as Co-PI with Larry Muller, assisted in data analyses and in preparation of the manuscript.)
- Swartz, L. A., A. J. Heinrichs, **G. A. Varga**, and L. D. Muller. 1991. *Varying dietary undegradable protein content on dry matter intake, growth and carcass composition of Holstein calves.* J. Dairy Sci. 74:3884. (Dr. Varga served on student's committee and participated in design of study and critical evaluation of the manuscript.)
- Karunanandaa, K., S. L. Fales, **G. A. Varga**, and D. J. Royse. 1992. *Chemical composition and biodegradability of crop residues colonized by white-rot fungi.* J. Sci. Food Agr. 60:105. (Dr. Varga was co-advisor of graduate student.)
- Aldrich, J. A., L. D. Muller, **G. A. Varga**, and P. J. Hillard. 1993. *Effect of somatotropin administration and duodenal infusion of methionine and lysine on lactational performance and nutrient flow to the small intestine.* Brit. J. Nutr. 69:49. (Dr. Varga served on student's committee and participated in design of study and preparation of the manuscript.)

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- Aldrich, J. M., L. D. Muller, **G. A. Varga**, and L. C. Griel, Jr. 1993. *Nonstructural carbohydrate and protein effects on rumen fermentation, nutrient flow, and performance of dairy cows*. J. Dairy Sci. 76:1091. (Dr. Varga served on student's committee and participated in design of study and preparation of the manuscript.)
- Vazquez-Anon, M., A. J. Heinrichs, J. M. Aldrich, and **G. A. Varga**. 1993. *Postweaning age effects on rumen fermentation end-products and digesta kinetics in calves weaned at 5 weeks of age*. J. Dairy Sci. 76:2742. (Dr. Varga served on student's committee and participated in design of experiment and critical evaluation of the manuscript.)
- Vazquez-Anon, M., A. J. Heinrichs, J. M. Aldrich, and **G. A. Varga**. 1993. *Effect of postweaning age on rate of in situ protein disappearance and digesta kinetics in calves weaned at 5 weeks of age*. J. Dairy Sci. 76:2749. (Dr. Varga served on student's committee and participated in design of experiment and critical evaluation of the manuscript.)
- Yang, C.-J. M., and **G. A. Varga**. 1993. *The effects of continuous ruminal dosing with dioctyl sodium sulphosuccinate on ruminal and metabolic characteristics of lactating cows*. Brit. J. Nutr. 69:397. (Dr. Varga was the student's advisor.)
- Holden, L. A., L. D. Muller, **G. A. Varga**, and P. J. Hillard. 1994. *Ruminal digestion and duodenal nutrient flows in dairy cows consuming grass as pasture, hay, or silage*. J. Dairy Sci. 77:3034. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Stern, M. D., **G. A. Varga**, J. H. Clark, J. L. Firkins, J. T. Huber, and D. L. Palmquist. 1994. *Evaluation of chemical and physical properties of feeds that affect protein metabolism in the rumen*. J. Dairy Sci. 77:2762. (Joint publication from regional project NC-185).
- Karunanandaa, K., L. E. Goodling, **G. A. Varga**, L. D. Muller, W. W. McNeill, T. W. Cassidy, and T. Lykos. 1994. *Supplemental dietary fat and ruminally protected amino acids for lactating Jersey cows*. J. Dairy Sci. 77:3417. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Swartz, D. L., L. D. Muller, G. W. Rogers, and **G. A. Varga**. 1994. *Effect of yeast cultures on performance of lactating dairy cows: A field study*. J. Dairy Sci. 77:3073. (Dr. Varga served on student's committee and participated in design of experiment and evaluation of the manuscript.)
- Chen, J., S. L. Fales, **G. A. Varga**, and D. J. Royse. 1995. *Biodegradation of cell wall components of maize stover colonized by white-rot fungi and resulting impact on in vitro digestibility*. J. Food Agric. Sci. 68:91. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Lykos, T. and **G. A. Varga**. 1995. *Effects of heat treatment and particle size on degradation characteristics on protein and carbohydrate sources in situ*. J. Dairy Sci. 78:1789. (Dr. Varga supervised graduate student, participated in design of experiment and preparation of the manuscript.)

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- Karunanandaa, K., **G. A. Varga**, D. E. Akin, L. L. Rigsby and D. J. Royse. 1995. *Botanical fractions of rice straw colonized by white-rat fungi: changes in chemical composition and structure*. Anim. Feed Sci. Tech. 55:179. (Dr. Varga supervised graduate student, participated in design of experiment and preparation of the manuscript.)
- Karunanandaa K., and **G. A. Varga**. 1996. *Colonization of rice straw by white-rot fungi (Cyathus stercoreus): Effect on ruminal fermentation pattern, nitrogen metabolism and fiber utilization during continuous culture*. Anim. Feed Sci. Tech. 61:1 (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Jung, G. A., J. A. Shaffer, J. R. Everhart, and **G. A. Varga**. 1996. *Performance of Puna Chicory when harvested at different canopy heights*. Agron. J. 88:104-111(see page B-13) (Cooperative project with researcher at USDA Pasture Lab).
- Moore, D. A. and **G. A. Varga**. 1996. *BUN and MUN: Urea nitrogen testing in dairy cattle*. Vet. Compend. Cont. Educ. Pract. Vet. 18:712. (Drs. Moore and Varga jointly wrote this manuscript.)
- Karunanandaa K., and **G. A. Varga**. 1996. *Colonization of rice straw by white-rot fungi (Cyathus stercoreus): Effect on ruminal fermentation pattern, nitrogen metabolism and fiber utilization during continuous culture*. Anim. Feed Sci. Tech. 61:1 (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Karunanandaa, K., and **G. A. Varga**. 1996. *Colonization of rice straw by white-rot fungi: cell wall monosaccharides, phenolic acids, ruminal fermentation characteristics and digestibility of cell wall fiber components in vitro*. Anim. Feed Sci. Tech. 63:273.
- Aldrich, J. M., L. A. Holden, L. D. Muller, and **G. A. Varga**. 1997. *Rumen availabilities of nonstructural carbohydrate and protein estimated from in situ incubation of ingredients versus diets*. Anim. Feed Sci. Tech. 63:257. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Varga, G. A.** and E. S. Kolver. 1997. *Microbial and animal limitations to fiber digestion and utilization*. J. Nutr. 127:819S.
- Lykos., T., **G. A. Varga**, and D. Casper. 1997. *Varying degradation rates of total nonstructural carbohydrates: Effects on ruminal fermentation, blood metabolites, and milk production and composition in high producing Holstein cows*. J. Dairy Sci. 80:3341-3355. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Lykos., T., **G. A. Varga**. 1997. *Varying degradation rates of total nonstructural carbohydrates: Effects on nutrient uptake and utilization by the mammary gland in high producing Holstein cows*. J. Dairy Sci. 80:3356-3367. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)

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- Kolver, E. S., L. D. Muller, and **G. A. Varga**. 1998. *Ruminal utilization of pasture in response to inclusion of dietary starch*. Proc. New Zeal. Soc. Anim. Prod. 57:38-41. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Kolver, E. S., L. D. Muller, **G. A. Varga**, and T. J. Cassidy. 1998. *Synchronizing ruminal degradation of supplemental carbohydrate with pasture nitrogen in lactating dairy cows*. J. Dairy Sci. 81:2017-2028. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Hongerholt, D. D., **G. A. Varga**, and L. D. Muller. 1998. *Effects of feeding dried grass pasture and a grain ration differing in rumen degradable protein at two feeding frequencies on nutrient digestibility and microbial protein synthesis during continuous culture*. Anim. Feed Sci. Tech. 74:1-13. (Dr. Varga served on student's committee and participated in design of experiment and preparation of the manuscript.)
- Putnam D. E. and **G.A. Varga**. 1998. *Protein density and its influence on metabolite concentration and nitrogen retention in late gestation Holstein cows*. J. Dairy Sci. 81:1608-1618. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Varga, G. A.**, H. M. Dann, and V. A. Ishler. 1998. *Use of fiber in ration formulation*. J. Dairy Sci. 81:3063-3074).
- Putnam, D. E., **G. A. Varga** and H.M. Dann. 1999. *Metabolic and production responses to dietary protein and exogenous somatotropin in late gestation dairy cattle*. J. Dairy Sci. 82: 982-995. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Putnam, D. E., **G. A. Varga** and M. Green. 1999. *Glucose kinetic responses to protein supplementation and exogenous somatotropin in prepartum dairy cattle*. J. Dairy Sci. 82:1274-1281. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Dann, H. M., **G. A. Varga**, and D. E. Putnam. 1999. *Improving energy supply to late gestation and early postpartum dairy cows*. J. Dairy Sci. 82:1765-1778. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)
- Holden, L., **G. A. Varga**, and J. A. Shaffer. 1999. *Comparison of Puna chicory and orchardgrass for multiple harvests at three different management levels during two years*. Agronomy J. 92:192-194.
- Vázquez-Añón, M., T. Cassidy, P. McCullough, and **G. A. Varga**. 2000. *Effects of Alimet® on nutrient digestibility, bacterial protein synthesis, and ruminal disappearance during continuous culture*. J. Dairy Sci. 84:159-166 (Dr. Varga helped design and conducted the study and wrote part of the manuscript).
- Vallimont, J. E., **G. A. Varga**, T. W. Cassidy, A. Arieli, and K. A. Cummins. 2001.

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Singular and combined effects of prepartum somatotropin and monensin on metabolism and production of periparturient Holstein dairy cows. J. Dairy Sci. 84:2607-2621 (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript.)

Arieli, A., J. E. Vallimont, Y. Aharoni, and **G. A. Varga**. 2001. *Effects of monensin and growth hormone on glucose metabolism in the prepartum cow.* J. Dairy Sci. 84:2770-2776 (Dr. Varga supervised the visiting scientist and graduate student and participated in design and preparation of the manuscript).

G. A. Varga and R. S. Ordway. 2001. Protein and energy needs of the transition cow. Adv. in Dairy Techn. 13:29-40.

Ordway, R. S., V. Ishler, and **G. A. Varga**. 2002. *Effect of fermentable carbohydrate sources on dry matter intake, milk production and blood metabolites of periparturient Holstein dairy cows.* J. Dairy Sci. 85:879-888 (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript).

Roeder, B. L., **G. A. Varga**, R. F. Wideman, and B. W. Hollis. 2002. *Effect of dietary calcium and phosphorous vitamin D metabolites 25 (OH)D and 1,25(OH)2D, and response to bPTH (1-34) in Blue Duikers.* Zoo Biology 21:171-183. (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript).

Bargo, F., **G. A. Varga**, L. D. Muller, and E. S. Kolver. 2003. *Digestion of pasture only and pasture plus concentrate diets during continuous culture fermentation.* J. Dairy Sci. 86:1330-1340.

Bargo, F., L. D. Muller, **G. A. Varga**, J. E. Delahoy, and T. W. Cassidy. 2003. *Ruminal digestion and fermentation of high producing dairy cows with three different feeding systems combining pasture and total mixed rations.* J. Dairy Sci. 85:2964-2973.

Arieli, A. J. E. Vallimont, S. S. Donkin, and **G. A. Varga**. 2003. *Effects of growth hormone on adipose tissue lipogenesis in transition cows.* Eur. Assoc. Anim. Prod. September, Germany.

Varga, G. A. 2003. *Practical Ration Evaluation: Things to look for if your nutritionist is doing a good job.* Adv. Dairy Techn. 15:215-226.

Varga, G.A. 2003. *Do we need two close up dry cow groups?* Adv. Dairy Techn. 15: 331-346.

Quintero-Gonzalez, J. W. Comerford, and **G. A. Varga**. 2003. *Effects of direct-fed microbials on growth, health, and blood parameters of young Holstein calves.* Prof. Anim. Sci. 19:211-220.

Varga, G. A. 2004. *Feeding carbohydrates to high producing dairy cows.* XI Congreso Internacional de Medicina Bovina, Gijon, Spain, pp 99-104.

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- Varga, G. A. 2004. Feeding protein to high producing dairy cows. XI Congreso Internacional de Medicina Bovina, Gijon, Spain, pp 105-110.
- Vallimont, J. E., F. Bargo, T. W. Cassidy, N. D. Luchini, G. A. Broderick, and G. A. Varga. 2004. Effects of replacing dietary starch with sucrose on ruminal fermentation and nitrogen metabolism in continuous culture. *J. Dairy Sci.* 87:4221-4229. (Dr. Varga did all the experiment and 80% of the manuscript preparation).
- Tozer, P. R., G. A. Varga, and W. R. Henning. 2005. *Do Dairy Producers Market and Manage Dairy Cows to Improve Beef Quality?* *Prof. Anim. Sci.*
- Firkins, J. L., A. N. Hristov, M. B. Hall, and G. A. Varga. 2005. Integration of ruminal metabolism in dairy cattle. *J. Dairy Sci.* (In Press).
- Wheeler, E. F., P.A. Topper, Y. G.A. Varga, N. Brown, R.E Graves. V. Ishler, A.J. Heinrichs. V Blanes Vidal. 2006. Ammonia emission monitoring using flux chamber methods. In *Proceedings AgEng 2006, World Congress*. Bonn, Germany. 8 pp on CD.
- Wheeler, E.F., P.A. Topper, G.A. Varga, N. Brown, V. Blanes-Vidal, A.J. Heinrichs, T.L. Richard. R.E. Graves and V. Ishler, G.I. Zanton, and M.L. Moody. 2006. Reducing ammonia emission from dairy housing using nutritional strategies. In *Proceedings Agricultural Air Quality Workshop*, Washington DC. pp. 1229-1235.
- Williams, E. L., M.M. Pickett, G.A. Varga, and S.S. Donkin. 2007. *Effect of dietary carbohydrate source and monensin on expression of gluconeogenic enzymes in liver of transition dairy cows*. (Dr. Varga and her graduate student conducted the study and sent liver samples to Donkin lab for gene expression work). *J. Anim. Sci.* 85:690-699.
- Y.-H. Chung, D. E. Rico, C. M. Martinez, T. W. Cassidy, V. Noiro, A. Ames, and G. A. Varga. 2007. *Effects of feeding dry glycerin to early postpartum Holstein dairy cows on lactational performance and metabolic profiles*. *J. Dairy Sci.* (In Press).
- Y.-H. Chung, I. D. Girard, and G. A. Varga. 2007. *Effects of feeding dry propylene glycol to early postpartum Holstein dairy cows on production and metabolic profiles* *J. Dairy Sci.* (In Press).

1b. Research and Scholarly Publications: Manuscripts submitted for publication

- Donkin, S. S., C. Agca, A. Arieli, J. E. Vallimont, and G. A. Varga. 2007. *Effect of bST and monensin on lipogenesis and gene expression in adipose tissue during the transition to calving*. *J. Dairy Sci.* (Dr. Varga supervised graduate student and participated in design and preparation of the manuscript).
- Van Saun, R.J., A. Todd, and G.A. Varga. 2007. *Serum mineral concentrations and periparturient disease in Holstein dairy cows*. *J. Dairy Sci.* (Undergraduate student project, Dr. Van Saun, A. Todd and G.A. Varga had equal participation in the writing of the manuscript).
- Toshniwal, J. K., C. D. Dechow, B. G. Cassell, J. A. D. R. N. Appuhamy, and G. A. Varga. 2007. Heritability of electronically recorded daily body weight and correlations with yield, dry matter intake and body condition. *J. Dairy Sci.*

1c. Research and Scholarly Publications: Parts of books.

Fahey, G., K. Karunanandaa, and **G. A. Varga**. 1995. *Environmentally-Friendly Methods to Process Crop-Residues to Enhance Fiber Digestion*. In the International Symposium on Nutrient Management of Food Animals to Enhance the Environment. Blacksburg, VA Fontenot, J. (Ed).

1d.1 Book Reviews

Animal Nutrition. 1999. McDonald, P., R. A. Edwards, J. F. D. Greenhalgh, and C. A. Morgan. Addison Wesley Longman, United Kingdom.

Grass for Dairy Cattle. 1998. Cherney, J. H. and D. J. R. Cherney. CABI Publishing, Oxon, United Kingdom.

1d.2 Research and Scholarly Publications: Non-refereed journals (popular press, with by-line).

Hoover, H. H., R. A. Dailey, E. M. Meisterling, and **G. A. Varga**. 1983. *Use of a neutral detergent fiber in formulating dairy rations*. West Virginia Agriculture Experiment Station - Circular 126.

Varga, G. A. 1990. *The potential of enzyme additives for improving storage preservation and feeding value*. Pennsylvania Forage and Grassland Section, Farmshine Magazine.

Varga, G. A. 1992. *Women in Agriculture*. Lancaster Farming.

Varga, G. A. 1993. *Cows watch what they eat too!* Lancaster Farming.

Ishler, V. A., R. S. Adams, A. J. Heinrichs and **G. A. Varga**. 1994. *Concentrates for dairy cattle*. Dairy and Animal Science Circular DAS 94-06.

Moore, D. and **G. A. Varga**. 1995. *Is MUN testing useful?* Herd Health Mimeo, November.

Putnam, D. E. and **G. A. Varga**. 1997. *Supplemental protein in close-up rations reviewed*. Feedstuffs 69:10.

Varga, G. A. 1998. *The dairy NRC: an update*. Lancaster Farming

Varga, G. A. 1999. *Current recommendations for feeding dry cows*. Lancaster Farming.

Vallimont, J. and **G. A. Varga**. 2000. *Protein requirements for dry cows*. Hoard's Dairymen

Harpster, H. and **G. A. Varga**. 2000. *Companion Animals: A New Initiative in Animal Science*. Lancaster Farming.

Varga, G. A. and J. Vallimont. 2000. Protein, energy needs of the dry cow. Feedstuffs, Feb 14th. p 12-15.

Research, Creative Accomplishments and Scholarship, Varga, B-11

Varga, G. A. 2000. *Ongoing Dairy Research*. Agway Cooperator.

Varga, G. A. 2001. *Dry cow feeding programs*. Northeast Dairy Business, p18-20.

Varga, G. A., R. Ordway, M. Pickett and V. Ishler. 2003. Cows did well on a one-group dry cow feeding program. *Hoard's Dairyman*, January 10th, p 25.

Varga, G. A. 2003. Nutrition, management to determine dairy cow productivity. *Feedstuffs*, March 10, p 10-13.

Ishler, V. and G. A. Varga. 2003. Excess nitrogen affects both air and water quality. *Hoard's Dairyman*, April 10th, p 282.

Ishler, V. and G. A. Varga. 2005. How to use NDF digestibility information in ration balancing. *Hoard's Dairyman*.

G. A. Varga and V. A. Ishler. 2007. Managing Nutrition for Optimal Milk Components: Milk Fat. *Hoard's Dairyman* (In Press).

G. A. Varga and V.A. Ishler. 2007. Managing Nutrition for Optimal Milk Components: Milk Protein. *Hoard's Dairyman* (In Press).

1d.3 Research and Scholarly Publications: Non-refereed journals (Conference proceedings)

Varga, G. A. 1979. *Comparison of three non-protein nitrogen sources by rumen microorganisms continuously cultured in vitro*. Pages 116-120 in Proceedings of Maryland Nutrition Conference.

Varga, G. A., H. F. Tyrrell, D. R. Waldo, G. B. Huntington, and B. P. Glenn. 1987. *Effect of alfalfa and orchardgrass silages on energy and nitrogen utilization for growth by Holstein steers*. European Association for Animal Production. 10th Symposium on Energy Metabolism. September 16-22. Airlie, VA.

Tyrrell, H. F., and G. A. Varga. 1987. *Energy value for lactation of rations containing ground whole ear maize or maize meal both conserved dry or ensiled at high moisture*. European Association for Animal Production. 10th Symposium on Energy Metabolism. September 16-22. Airlie, VA.

Huntington, G. B., G. A. Varga, D. R. Waldo, and B. P. Glenn. 1987. *Oxygen consumption by portal drained viscera and whole body of Holstein steers fed alfalfa or orchardgrass silages at two intakes*. European Association for Animal Production. 10th Symposium on Energy Metabolism. September 16-22. Airlie, VA.

Yang, C.-M. J., and G. A. Varga. 1986. *Influence of concentrate feeding frequency, sampling method and location on ruminal protozoa and fermentation characteristics in the lactating dairy cow*. Comparative Aspects of Physiology of Digestion in Ruminants. Cornell University. July 21-23. Page 18.

Research, Creative Accomplishments and Scholarship, Varga, B-12

- Varga, G. A.** 1987. *Factors which affect estimation of lag time in the rumen.* In: International Symposium on Feed Intake by Beef Cattle. Oklahoma City, OK.
- Glenn, B. P., D. R. Waldo, **G. A. Varga**, and G. B. Huntington. 1987. *Duodenal nutrient flow in growing steers fed alfalfa and orchardgrass silages at two intakes.* 8th Silage Conference Agricultural and Forage Research Council. Institute for Grassland and Animal Production. Hurley, England.
- Varga, G. A.**, and H. F. Tyrrell. 1988. *Effect of prior rate of gain and end weight on energy metabolism, visceral organ mass and body composition of Angus x Hereford steers.* European Association for Animal Production. 11th Symposium on Energy Metabolism of Farm Animals. Lunteren, The Netherlands.
- Karunanandaa, K., S. Fales, and **G. A. Varga.** 1990. *Biodegradability of low quality roughages by white-rot fungi and resulting fermentation characteristics in continuous culture.* American Forage Grassland Conference. Blacksburg, VA.
- Holden, L. A., L. D. Muller, and **G. A. Varga.** 1993. *Quantification of nutrients consumed and utilized by lactating Holstein cows grazing grass pastures in the northeastern United States.* XVII International Grassland Congress, Palmerston North, New Zealand.
- Varga, G. A.** and V. A. Ishler. 1993. *Balancing dairy rations for degradable protein and nonstructural carbohydrates.* Northeast Winter Dairy Management Schools, Cornell Cooperative Extension.
- Varga, G. A.** and V. A. Ishler. 1993. *Silage additives: When and if to use an additive.* Northeast Winter Dairy Management Schools, Cornell Cooperative Extension.
- Varga, G. A.** and H. W. Harpster 1995. *Gut size and rate of passage.* In: International Symposium on Feed Intake by Beef Cattle. Tulsa, OK.
- Varga, G. A.** and D. Putnam. 1995. *Dairy Cattle Nutrition Research: 1994.* In: 43rd Pfizer Annual Research Conference Proceedings.
- Varga, G. A.** 1997. *Fiber in the ration: How effective should it be?* Cornell Nutrition Conference, p 117, Rochester, NY, Oct.
- Varga, G. A.** 1999. *Carbohydrate nutrition in lactating cattle.* Ruminant Health Nutrition Conference, Liverpool, NY, Jan.
- Varga, G. A.** 1999. *Dairy rationing using structural and nonstructural carbohydrates: From theory to practice.* Southwest Nutrition and Management Conference Proceedings, pp77-91. Phoenix, AZ., Feb.
- Varga, G. A.** 1999. *Importance of dry cow nutrition.* Elanco Technical Conference Proceedings, Haultulco, Mexico, May.
- Varga, G.A.** 1999. *Fiber needs of the lactating dairy cow.* International Lactating Cow Conference 2000, Delicias, Mexico, Sept.

Research, Creative Accomplishments and Scholarship, Varga, B-13

- Varga, G. A.** 1999. *Carbohydrate needs of the high producing dairy cow*. Advanced Dairy Nutrition, Cornell University, Ithaca, NY, Aug.
- Varga, G. A.** 1999. *Protein and energy needs of the up close dairy cow*. Minnesota Nutrition Conference, Bloomington, MN, Sept.
- Varga, G. A.** 1999. *Protein and energy needs of the transition cow*. Feed industry Seminar series, 4 locations in PA, Nov.
- Varga, G. A.** 2000. *Feedbunk Management*. NRAES Conference Proceedings. Camp Hill, PA, Feb.
- Varga, G. A.** 2000. *Update on Nutrient Requirements of Dairy Cattle*. Dairy Cattle Nutrition Workshop, Grantville, PA, Nov.
- Varga, G. A.** 2001. *The 2001 Dairy NRC: Energy and Protein Requirements*. NE Dairy Feed Conference, West Lebanon, NH, March.
- Varga, G. A.** 2001. *Applying the new NRC requirements to the transition cow*. Alltech 5th Ann. Intern. Dairy Short Course, Lexington, KY, October.
- Varga, G. A.** 2001. *The 2001 Dairy NRC: Energy and Protein Requirements*. NE Dairy Feed Conference, West Lebanon, NH, March.
- Varga, G. A.** 2002. *Feeding management strategies for dry cows*. Mid-South Nutrition Conference, Houston, TX.
- Varga, G. A.** 2002. *Dry cow feeding management: new strategies*. NE Bovine Practitioners Conference, Syracuse, NY.
- Varga, G.A.** 2002. *Energy levels in transition diets—enough but not too much*. Amer. Assoc. Bovine Pract., Madison, WI.
- Varga, G. A.** 2002. *Protein Balance*. Renaissance Technical Conference, Bucknell University. Lewistown, PA.
- Varga, G. A.** 2002. *New ideas in dry cow feeding management*. ShurGain Dairy Nutrition and Management Seminar, Stratford, Ontario, Canada.
- Varga, G. A.** 2002. *Estrategias para el manejo de la alimentacion de vacas secas*. 5^a. Reunion, Elanco, Ixtapa, Mexico. p. 1-20.
- Varga, G. A.** 2003. *Soluble carbohydrates for lactating dairy cattle*. Tri-State Dairy Nutrition Conference. Fort Wayne, Ind. p 59-74.
- Varga, G. A.** 2003. *Feeding various carbohydrate sources to dairy cattle and effects on performance and health*. Swedish Dairy Association Nutrition Proceedings, Kalmar, Sweden.

Research, Creative Accomplishments and Scholarship, Varga, B-14

- Varga, G. A.** 2003. *Effects of carbohydrates and physical structure in the dairy cow diet on fermentation, dry matter intake, yield and diseases.* Swedish Dairy Association Nutrition Proceedings, Kalmar, Sweden.
- Varga, G. A.** 2003. *Can manure evaluation diagnose areas for improvement in ration formulation, management and health?* Swedish Dairy Association Nutrition Proceedings, Kalmar, Sweden.
- Varga, G. A.** 2004. *Are two dry cow groups necessary?* Proc. Mid-Atlantic Nutr. Conf. Timonium, MD, pp 145-155.
- Varga, G. A.** 2004. *Role of carbohydrates in maximizing performance in dairy cows.* 9th International Congress on Bovine Medicine. Gijon, Spain.
- Varga, G. A.** 2004. *Role of protein sources in maximizing performance in dairy cows.* 9th International Congress on Bovine Medicine. Gijon, Spain.
- Varga, G. A.** 2004. *Feeding strategies for transitioning cows into lactation.* Dairy Nutrition Conference, Grantville, PA.
- Richard, T., E. Wheeler, and **G. A. Varga.** 2005. *Strategies for reducing gas emissions from dairy farms.* Dairy Nutrition Conference, Grantville, PA.
- Varga, G. A. and V. A. Ishler. 2007. Managing for optimal milk components. Mid-South Nutrition Conference, Houston, Texas.
- Varga, G. A. 2006. Things to look for to determine if you are doing a good job with emphasis on transition cow and early lactation. Feed Compounder, January.
- Ishler, V. I., G. A. Varga, and N. Brown. 2006. Adjusting silage based rations to improve nutrient efficiency. NRAES, Conference on Silage for Dairy Farms.
- Varga, G. A. and V.A. Ishler. 2007. Managing nutrition for optimal milk components. Large herd Dairy Conference. Reno, Nevada.

1e. Research and Scholarly Publications: Articles in in-house organs

- Yang, C.-M. J., and **G. A. Varga.** 1990. *Performance of dairy cows with and without rumen ciliate protozoa.* Penn State Dairy and Animal Science Report. Pages 24.
- Aldrich, J. M., L. D. Muller, **G. A. Varga,** and P. J. Hillard. 1990. *In situ evaluation of complete rations designed to vary in rates of protein and carbohydrate degradation.* Penn State Dairy and Animal Science Report. Pages 26.
- Canale, C. J., P. L. Burgess, L. D. Muller, and **G. A. Varga.** 1990. *Calcium salts of fatty acids in diets that differ in neutral detergent fiber: effect on lactation performance and nutrient digestibility.* Penn State Dairy and Animal Science Report. Pages 28.

Research, Creative Accomplishments and Scholarship, Varga, B-15

Varga, G. A., and T. J. Whitsel. 1990. *Effect of manipulation of diet composition on nutrient utilization by ruminal microorganisms*. Penn State Dairy and Animal Science Report. Pages 30.

Varga, G. A., K. Karunanandaa, and T. J. Whitsel. 1990. *Effect of a bacterial inoculant and enzyme treatment of a hay-crop silage on nutrient utilization during continuous culture*. Penn State Dairy and Animal Science Report. Pages 32.

Karunanandaa, K., S. L. Fales, **G. A. Varga**, and D. J. Royse. 1990. *Biodegradability of low quality forages by white-rot fungi*. Penn State Dairy and Animal Science Report. Pages 34.

Muller, L. D., and **G. A. Varga**. 1990. *Responses of dairy cows to supplemental rumen protected methionine and lysine*. Penn State Dairy and Animal Science Report. Pages 36.

Aldrich, J. M., L. D. Muller, and **G. A. Varga**. 1990. *Duodenal infusion of methionine and lysine with injection of bovine somatotropin for lactating dairy cows*. Penn State Dairy and Animal Science Report. Pages 44.

Swartz, L. A., A. J. Heinrichs, **G. A. Varga**, and L. D. Muller. 1990. *Varying dietary undegradable protein on feed intake, growth and body composition of Holstein calves*. Penn State Dairy and Animal Science Report. Pages 46.

Ziemer, C. J., A. J. Heinrichs, C. J. Canale, and **G. A. Varga**. 1990. *Alfalfa hay treated with chemical drying agents: effect on nutrient digestibility, lactational performance and plasma profile*. Penn State Dairy and Animal Science Report. Pages 48.

Ziemer, C. J., A. J. Heinrichs, C. J. Canale, and G. A. Varga. 1990. *Alfalfa treated with a chemical drying agent: effect on digestibility in situ*. Dairy and Animal Science Report. Pages. 50.

1f. Research and Scholarly Publications: Research reports to sponsor

Titles can be found in 3a, page B-11.

Varga, G. A. 1986. Final report to Agway, Inc.

Varga, G. A. 1987. Final report to Eastman Kodak. Progress report to Agway, Inc. Two Final reports to Agway, Inc. Final report to Nixon Griffis (NY Zoological Society)

Varga, G. A. 1988. Final report to the University of Maine

Varga, G. A. 1989 Final report to Upjohn, Co. Final report to Agway, Inc. Two Progress reports to Agway, Inc.

Varga, G. A. 1990. Progress report to Agway, Inc. Progress report to Cargill, Inc. Progress report to Rhone-Poulenc. Final Report to Agway, Inc.

Varga, G. A. 1991. Progress Report to Pioneer, Inc. Final Report to Cargill, Inc.

Research, Creative Accomplishments and Scholarship, Varga, B-16

Varga, G. A. 1992. Final Report to Pioneer, Inc.

Varga, G. A. 1993. Progress Report to Chr. Hansen's Inc.

Varga, G. A. 1994. Final Report to Chr. Hansen's Inc.

Varga, G. A. 1994. Progress Report to Cargill, Inc.

Varga, G. A. 1994. Progress Report to USDA-BARD

Varga, G. A. 1995. Progress Report to Cargill, Inc.

Varga, G. A. 1995. Progress Report to USDA-BARD

Varga, G. A. 1997. Final Report to USDA-BARD

Putnam, D. E. and G. A. Varga. 1997 Progress report to Monsanto, Inc.

Varga, G. A. and S. Komarneni. 1999. Progress Report to PDA

Varga, G. A. and S. Komarneni. 2000. Progress Report to PDA

Varga, G. A. and S. Komarneni. 2001. Progress Report to PDA

Varga, G. A. 2002. Final report to PDA

1g. Research and Scholarly Publications: Manuscripts accepted for publication

1j. Research and Scholarly Publications: Manuscripts in preparation

Lykos., T. and G. A. Varga. *Effects of ruminally degradable protein and carbohydrate on fermentation characteristics, N flow, and microbial efficiency during continuous culture.* J. Dairy Sci.

3a. Projects, grants, commissions, and contracts: Completed

Dr. Varga has been the principal investigator and wrote the proposal where listed first and provided a major contribution to all funded research projects where 2nd or 3rd contributor. Where Dr. Varga is 2nd or 3rd contributor to the proposal, she participated in the design of the experiment, critical evaluation of the proposal and was instrumental in carrying out the investigation.

On numerous occasions, Dr. Varga has been asked by private industry to conduct small trials and/or conduct laboratory analyses for support in the range of \$500-\$1000. These have not been included in this list.

Varga, G. A. 1985. *Effect of nonstructural to structural carbohydrate ratio on rate and extent of nutrient utilization in situ.* Agway, Inc., \$3,000.

Research, Creative Accomplishments and Scholarship, Varga, B-17

- Varga, G. A.**, and L. D. Muller. 1985. *Effect of rumen protected methionine and lysine on net nutrient absorption of amino acids by the portal drained viscera of cows in early lactation*. Eastman Kodak, \$20,000.
- Varga, G. A.** 1986. *Utilization of plant fiber by ruminal microorganisms during continuous culture fermentation*. Research Initiation Grant, Penn State University, \$5,000.
- Varga, G. A.** 1986. *Effect of composition of cell wall monosaccharides on nutrient utilization by ruminal microorganisms during continuous culture*. Agway, Inc., \$1,000.
- Varga, G. A.** 1986. *Colostrum, gross milk composition and suckling behavior of captive Blue duikers (*Cephalophus monticola*)*. Nixon Griffis, \$3,000.
- Muller, L. D., **G. A. Varga**, P. L. Burgess, and L. C. Griel, Jr. 1986. *Addition of bypass fat to diets varying in fiber content*. Agway, Inc., \$2,900. (Dr. Varga participated in the design of the experiment and preparation of the proposal.)
- Varga, G. A.**, and L. D. Muller. 1987. *Effect of feed-mate ruminant on ruminal fermentation characteristics during continuous culture*. Anchor, Inc., \$3,300.
- Varga, G. A.**, A. L. Richards, and L. D. Muller. 1987. *Effect of bovine somatotropin and glucose infusion on lactational performance, net portal absorption and hepatic flux of nutrients in early and mid lactation*. Agway, Inc., \$3,000.
- Stokes, M. R., and **G. A. Varga**. 1987. *Composition and ruminal digestion by lactating dairy cows of the hemicellulose monosaccharides of alfalfa and timothy silages made with cellulase and xylanase enzymes*. University of Maine, \$3,000. (Dr. Varga conducted this research at Penn State.)
- Muller, L. D., and **G. A. Varga**. 1988. *Infusions of methionine and lysine with somatotropin for lactating dairy cows*. Rhone-Poulenc, Inc., \$43,808. (Dr. Varga wrote the proposal and participated in the conduct of the experiment.)
- Muller, L. D., and **G. A. Varga**. 1988. *Infusions of methionine and lysine with somatotropin for lactating dairy cows*. Agway, Inc., \$4,000. (Dr. Varga wrote the proposal and participated in the conduct of the experiment.)
- Varga, G. A.** 1988. *Environmental, genotypic and chemical factors affecting plant cell wall utilization of ruminal microorganisms*. Agway, Inc., \$1,300.
- Aldrich, J., L. D. Muller, and **G. A. Varga**. 1989. *Effect of source of protein and carbohydrate on nutrient utilization and milk production*. Cargill, Inc., \$7,000. (Dr. Varga served on the doctoral committee of the first investigator and contributed to the design and preparation of the proposal.)
- Aldrich, J., L. D. Muller, and **G. A. Varga**. 1989. *In situ evaluation of diets designed to have varying rates of protein and carbohydrate degradation*. Cargill, Inc., \$7,500. (Dr.

Research, Creative Accomplishments and Scholarship, Varga, B-18

Varga served on the doctoral committee of the first investigator and contributed to the preparation of the proposal.)

Aldrich, J., L. D. Muller, and **G. A. Varga**. 1989. *In situ evaluation of diets designed to have varying rates of protein and carbohydrate degradation*. Agway, Inc., \$4,000. (Dr. Varga served on the doctoral committee of the first investigator and contributed to the conduct of the research as well as preparation of the proposal.)

Varga, G. A., and S. Fales. 1989. *Effect of bacterial inoculant and enzyme treatment of a hay crop silage on nutrient utilization during continuous culture*. Agway, Inc., \$2,500.

Varga, G. A. 1990. *Effect of protected fat, methionine and lysine on ruminal degradation*. Balanced Energy, Inc., \$1,300.

Varga, G. A. 1990. *Effect of silage inoculant on ruminal fermentation characteristics and nutrient digestibility by ruminal microorganisms*. Pioneer, Inc., \$8,000.

Varga, G. A. 1990. *Effect of silage inoculant as affected by length of silage storage on ruminal fermentation characteristics during continuous culture*. Agway, Inc., \$3,000.

Muller, L. D., and **G. A. Varga**. 1990. *Comparison of the in situ degradation of feeds incubated individually or as a part of total mixed diets*. Agway, Inc., \$2,000. (Dr. Varga was a main contributor to the research idea and oversaw conduct of the research.)

Muller, L. D., and **G. A. Varga**. 1991. *Dietary fat and ruminally protected amino acids for Jersey cows*. American Jersey Cattle Club, \$6,000. (Dr. Varga's graduate student carried out this experiment and both he and Dr. Varga were instrumental in the proposal preparation.)

Muller, L. D., and **G. A. Varga**. 1991. *Megalac supplementation for early post-partum cows varying in body condition*. Church and Dwight, Inc., \$5,000. (Dr. Varga served on the doctoral committee of the student conducting this research and was a major contributor to the research.)

Muller, L. D., and **G. A. Varga**. 1991. *Protein supplementation of lactating dairy cows rotationally grazed on pasture*. Fats and Proteins Res. Foundation, \$13,148. (Dr. Varga served on the doctoral committee of the student conducting this research and was involved in experiment design and preparation of the proposal.)

Varga, G. A. 1992. *Synchronization of protein and carbohydrate fractions of various feedstuffs for ration formulation*. Agway, Inc., \$3,000

Varga, G. A., and J. W. Comerford. 1992. *Probiotics for calves*. Chr. Hansen's Laboratory, \$11,280.

Varga, G. A., J. W. Comerford, and L. D. Muller. 1992. *Effect of probiotic supplementation on performance, health and blood metabolites*. Chr. Hansen's Laboratory, \$15,000.

Varga, G. A. 1992. *By-pass amino acids*. Nutribasics, Inc., \$490.

Research, Creative Accomplishments and Scholarship, Varga, B-19

Henning, W. R., **Varga, G. A.**, and H. W. Harpster. 1992. *Use of meat casings by rumen microorganisms in situ*. Viskase, Inc., \$3,000. (Dr. Varga developed the research idea and the research was coordinated and carried out by a senior graduate student in Dr. Varga's laboratory.)

Varga, G. A. 1993. *Bioremediation of lawn thatch by aerobic fungi*. Chr. Hansen's Lab. \$898

Varga, G. A. 1993. *Ruminal available amino acids and non structural carbohydrates on microbial protein synthesis*. Nutrena, Cargill, Inc., \$8,500.

Varga, G. A. 1993. *In situ available protein and carbohydrates*. Nutrena Cargill, Inc., \$8,800.

Varga, G. A. 1995. Young Scholars Program. PI: Robert Pangborn; Sponsor: National Science Foundation. \$225,753. (Dr. Varga was a co-investigator and received \$3,000.)

Varga, G. A., A. Arieli, and L. D. Muller. 1993-1996. *Effect of rumen available protein, amino acids and carbohydrates on microbial protein synthesis, amino acid flow and performance of high yielding dairy cows*. BARD, \$275,000. (Dr. Varga is the principal investigator and along with Dr. Arieli wrote the proposal and currently the main contributors to the research.)

Varga, G. A. 1994. *Rumen available protein and carbohydrates*. Nutrena Cargill, Inc., \$21,500.

Muller, L. D., L. A. Holden, and **G. A. Varga**. 1995. *Supplemental feeding strategies to maximize nutrient utilization and reduce nutrient excretion by lactating dairy cows on intensive grazing systems*. The Pennsylvania Department of Agriculture, \$70,675. (Dr. Varga co-investigator on this project and will conduct the continuous culture study portion of the experiment.)

Harpster, H. W., E. H. Cash, **G. A. Varga**, J. W. Comerford, L. Wilson, D. P. Buckmaster, and W. R. Henning. 1995. *Enhancing the use of agriculture and food processing wastes as livestock feeds*. The Pennsylvania Department of Agriculture, \$86,860. (Dr. Varga will be involved on a limited basis on these studies; less than 5% of her time.)

Holden, L. A. and **G. A. Varga**. 1995. *Effect of yeast cultures in dairy cattle rations*. Chr. Hansen's Inc. \$30,000. (Dr. Varga is co-investigator and has participated in the design and proposal writing of this experiment.)

Varga, G. A. and L. A. Holden. 1995. *Effect of yeast cultures on ruminal microbial metabolism*. Chr. Hansen's Inc. \$10,000.

Varga, G. A. 1996-1998. *Protein requirements of prepartum cows*. USDA/CREES, USDA Dairy, \$45,000.

Varga, G. A. 1997-1998. *Improving health status of dairy cows: impact of pre and postpartum nutritional strategies*. USDA/CREES, USDA Dairy, \$59,900.

Research, Creative Accomplishments and Scholarship, Varga, B-20

- Heinrichs, A. J., D. R. Buckmaster, **G. A. Varga** and G. W. Roth. 1997-1999. *Optimizing forage particle size for dairy cows from harvest through feeding*. USDA/CREES, USDA Dairy, \$70,000.
- Varga, G. A.** 1997-1998. *Effect of protected methionine on ruminal fermentation and microbial protein synthesis during continuous culture*. Novis International, \$14,700.
- Varga, G. A.** 1998. *Prepartum energy supply on postpartum dairy cattle performance and health*. USDA/CREES, USDA Dairy, \$78,000.
- Harpster, H. and **G. A. Varga**. 1998. *Enhancement of a companion animal care and nutrition course for resident and distance education*. Departmental program for enhancement. \$10,500.
- Varga, G. A.** 1999. *Effect of a slow release nitrogen product on microbial protein synthesis and nutrient digestibility*. CPG Nutrients. \$10,000.
- Varga, G. A.** and V. Ishler. 1999. *Effect of a complete feed for the transition cow*. Agway. \$23,000.
- Varga, G. A.** and S. Komareni. 2000-2001. *A novel method for manure reduction and odor*. PA Department of Agriculture. \$77,000.
- Varga, G. A.** 2000. *Effect of two doses of Alimet on ruminal fermentation during continuous culture*. Novus International, \$7,000.
- Varga, G. A.** 2000. *Interaction of nutrition and immune status on health and performance of periparturient dairy cows*. PA Dept of Agriculture, \$98,207.
- Varga, G. A.** and X. Markantonatos. 2001. *Effect of dry cow rations on immune function*. Agway Inc., \$5,000.
- Varga, G. A.**, M. Pickett and H. Springer. 2002. *Effect of dry cow rations on immune function (Continuation)*. Agway Inc., \$5,000.
- Varga, G. A.** 2002. *Effect of CRINA on nutrient utilization and microbial protein synthesis during continuous culture*, Azko Nobel, \$6,000.
- Varga, G. A.** 2002. *Effect of a dry propylene product on health of postpartum dairy cows*. Bioproducts, Inc. \$4,000.
- Tozer, P., **G. A. Varga** and R. Van Saun. 2002. Identification and reduction of the impact of metabolic diseases in dairy herds. USDA Improved Dairy Management Practices, \$148,402.
- Varga, G. A.** and V. Ishler. 2003. *Strategic use of forage source, grain processing and diet nitrogen can reduce total nitrogen load on the farm*. USDA Improved Dairy Management Practices, \$123,000.

Research, Creative Accomplishments and Scholarship, Varga, B-21

- Varga, G. A. 2003. *Use of a dry propylene product for dry cow rations*. Bio-Products, Ins. \$6500.
- Varga, G. A. 2003. *Strategies to enhance the bioavailability of glutamine on milk protein synthesis, efficiency of nitrogen utilization, and immune function in early lactation dairy cows*. College Seed grant, \$15,000.
- Varga, G. A. 2004. *The role of methyl donors and glucogenic precursors in periparturient dairy cows on liver function and health*. College Seed grant, \$13,800.
- Varga, G. A. 2004. *Reducing Ammonia Emissions from Dairy Farms Evaluating Whole Farm Strategies*. USDA Improved Dairy Management Practices, \$331,522.
- Roth, G. and G. A. Varga. 2004 *Improving the Competitiveness of Dairy Production in Northwest Pennsylvania*. PA Dept of Agric., \$50,500.
- Varga, G. A. 2004. *Effect of methyl donors on liver function*. Probiotech, Inc., \$28,000.
- Bailey, K., G. A. Varga, and J. Heinrichs. 2005. *Economic impact of feeding strategies and market supply and demand for milk components on Pennsylvania farm profitability*. USDA Improved Dairy Management Practices, \$315,303.
- Bionez, M. and G. A. Varga. 2005. *PPARs activation to reduce liver lipidosis and increase welfare in transition dairy*, \$15,000. Church and Dwight, Inc.
- Richard, T. L., E. F. Wheeler, G. A. Varga, M. Bruns, J. P. Kaye. 2005. **Integrated strategies for reducing gas emissions from dairy farms**. USDA Improved Dairy Management Practices, \$326,727.
- Richard, T. L., E.F. Wheeler, R. E. Graves, G. A. Varga, and M. Bruns. 2005. *Gas and odor emissions from dairy manure storages*. PA Dept. of Agric. \$155,211.
- Varga, G. A. and V. A. Ishler. 2005. *A Novel method to deliver nutrients for prevention of and for cows with ketosis*. PA Dept. of Agric., \$72,000.
- Varga, G. A. 2006. *Effect of feeding glycerol to dairy cows*. NutriLinx Co., \$10,000
- Ishler, V. A. and G. A. Varga. 2006. *Profitability Assessment Dairy Tool*. NE Risk Management , \$30,000.
- Ishler, V. A. and G. A. Varga. 2007. *Profitability Assessment Dairy Tool: Drill downs*. NE Risk Management , \$30,000.

3c. Projects, grants, commissions, and contracts: Not Funded

- Varga, G. A. and C. J. Yang. 1986. *Effect of turnover rate and forage particle size on the protozoal population, outflow of protozoa and digestion of cell wall during continuous culture*. Agway, Inc., \$5,860.

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- Varga, G. A. 1986. *Nursing and feeding behavior of monticola in captivity*. Whitehall Foundation, \$7,850 (year 1), \$8,770 (year 2).
- Varga, G. A. 1987. *Forage chemical components that enhance plant fiber digestion by ruminal microorganisms during continuous culture fermentations*. Research Initiation Grant, Penn State University, \$5,553.
- Heinrichs, A. J., and G. A. Varga. 1987. *Dietary protein for adequate growth and future performance of Holstein heifers*. Pennsylvania Department of Agriculture, \$60,685. (Dr. Varga served on the student's masters committee, and assisted in preparation of the proposal.)
- Varga, G. A., A. L. Richard, and L. D. Muller. 1987. *Effect of bovine somatotropin and glucose infusion on lactational performance, net portal absorption and hepatic flux of nutrients in early and mid lactation*. Upjohn Co. and Agway, Inc., \$7,000.
- Varga, G. A. 1987. *Continuation of Agway 1986 proposal DL-179*. Agway, Inc., \$1,585.
- Varga, G. A., and L. D. Muller. 1987. *Effect of carbohydrate source on of protected amino acids by the portal drained viscera and nutrient disappearance from the duodenum*. Eastman Kodak, \$11,500.
- Roeder, B., and G. A. Varga. 1987. *Effect of varied ratios of dietary calcium and phosphorous on serum urinary chemistry selected renal functions, and balance in blue duiker antelope, Cephalophus monticola bicolor*. Nixon Griffis Fund, \$3,000. (Dr. Varga was co-chair of the student's doctoral committee and participated in preparation of the proposal.)
- Varga, G. A. 1987. *Exogenous bST and glucose on portal and hepatic nutrient flux during lactation*. United States Department of Agriculture, \$154,470.
- Varga, G. A. 1988. *The need for varying nutrient density rations with lactating dairy cows administered recombinant bovine somatotropin*. Pennsylvania Department of Agriculture, \$86,654 (2 years).
- Varga, G. A. 1988. *Exogenous bST and glucose on portal and hepatic nutrient flux during lactation*. United States Department of Agriculture, \$180,770 (2 years).
- Varga, G. A. 1990. *Effect of altering rate of carbohydrate and protein source in diets for lactating cows*. Fats and Protein, \$7,900.
- Muller, L. D., and G. A. Varga. 1990. *Rotational grazing for lactating dairy cows: Study of protein nutrition and characterization of pasture and harvested forage composition*. Agway, Inc., \$9,500. (Dr. Varga was co-investigator in the design and preparation of the proposal.)
- Varga, G. A. 1991. *Synchronization of corn structural and nonstructural fractions with various protein sources in diets for dairy cattle*. National Corn Growers Association,

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\$10,200.

- Varga, G. A.,** R. S. Adams, D. R. Buckmaster, and H. W. Harpster. 1991. *Enhancing profitability of Pennsylvania dairy industry through the utilization of Agriculture by-product wastes*. Pennsylvania Department of Agriculture, \$85,750.
- Varga, G. A.,** and L. D. Muller. 1991. *Synchronization of protein and carbohydrate fractions of various feedstuffs for ration formulation*. American Soybean Association, \$59,500.
- Varga, G. A.** 1991. *Maximizing productivity and efficiency of dairy cows through optimization of rumen microbial protein synthesis and efficiency via dietary manipulation*. BARD-USDA, \$299,000.
- Varga, G. A.** 1992. *Evaluation of the use of steam flaked corn in rations for dairy cows*. National Corn Growers Association, \$9,600.
- Varga, G. A.** 1993. *Bioremediation of grass clippings*. Pennsylvania Department of Agriculture, \$45,000.
- Varga, G. A.** 1994. *Effects of processing on utilization of soybeans by ruminal microorganisms*. Pennsylvania Soybean Assoc. \$6,000.
- Holden, L. A., L. D. Muller, and **G. A. Varga.** 1995. *Dairy feeding strategies that minimize negative environmental impact*. The Pennsylvania Department of Agriculture, \$78,540. (Dr. Varga participated in the writing of the proposal and providing ideas and concepts for justification.)
- Varga, G. A.** 1995. *Effect of protein level in the diet of the dry cow on environmental impact*. Cornell Environment Foundation, \$10,000.
- Varga, G. A.** and D. A. Putnum. *Protein requirements for cows prepartum*. West Central Soya \$19,000.
- Varga, G. A.** 1996. *Nutritional strategies during the transition period*. PDA Animal Health, \$45,000.
- Varga, G. A.** and S. Komareni. 1998. *Animal waste and feed management using novel absorbents*. USDA/CREES Fund for Rural America, \$478,050.
- Varga, G. A.** and S. Komareni. 2000. *Animal waste and feed management using novel composite adsorbents*. IFAFS-Animal Manure Management, \$431,154.
- Varga, G. A.** and A. Arieli. 2000-2003. *Dietary strategies for improving energy and protein supply to the late gestation dairy cow: effects on prepartum metabolites and postpartum production and health*. USDA/BARD. \$198,000.
- Donkin, S. S. and **G. A. Varga.** 2003. *Nutritional priming of metabolism at parturition*. USDA- NRICP- Animal Growth and Nutrient Utilization. \$133,903.

3d. Projects, grants, commissions, and contracts: Proposed

4. Supervision of graduate dissertations, theses, monographs, performances, productions, and exhibitions required for graduate degrees; types of degrees and years granted; undergraduate honor theses supervised.

1986: Abaye, A., M.S. in Animal Science

Environmental factors affecting the carbohydrate composition and content of tropical and temperate forages. Current position: Associate Professor of Weed Science, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

1987: Donkin, S., M.S. in Animal Science

Effects on rumen lysine on plasma amino acids, nitrogen status, milk production, and composition in lactating dairy cattle. Current position: Assistant Professor of Animal Science, Purdue University

1989: Roeder, B., Ph.D. in Veterinary Science

Effect of varied ratios of dietary calcium and phosphorous on serum urinary chemistry, selected renal functions, and acid-base balance in blue duiker antelope. Current position: Assistant Professor of Veterinary Science, Brigham Young University, Provo, Utah.

1990: Yang, C.-M., Ph.D. in Animal Science

The role of protozoa in the lactating dairy cow. Current position: Assistant Professor of Animal Science, National I-Lan Institute of Agriculture and Technology, Taiwan.

1990: Waybright, T., Ph.D. in Animal Science

Effect of placing water-filled balloons into the rumen on digesta turnover, rumen parameters, and digestibility of nutrients in sheep. Current position: Veterinarian, Lancaster, Pennsylvania.

1994: Karunanandaa, K., Ph.D. in Animal Science

*Colonization of rice straw (*Oriza sativa* L.) by white-rot fungi: effects on structure, chemical composition, cell wall components and nutrient digestibility in vitro.* Current position: Senior Researcher, Monsanto Co., St. Louis, MO

1995: Lykos, T., Ph.D. in Animal Science

Effect of ruminal protein and carbohydrate availability on microbial nutrient utilization, milk production and milk protein synthesis. Current position: Independent nutritional consultant, Fresno, California

1997: Putnam, D., Ph.D. in Animal Science

Metabolism and management of late gestation dairy cows as influenced by dietary protein and somatotrophin. Current position: Technical support, Balchem Co.

1997: Dann, H. M., M.S. in Animal Science

Improving energy supply to late gestation and early postpartum dairy cows.
Currently in PhD program in Dairy Science the University of Illinois

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2000: Vallimont, J., M.S. in Animal Science
Singular and combined effects of prepartum somatotropin and monensin on metabolism and production of periparturient Holstein dairy cows. Current position: Computer assistant for Dr. Gary Rogers, PSU.

2001: Ordway, R., M.S. in Animal Science
Effect of various carbohydrate sources on dry matter intake, milk production, and blood metabolites in periparturient Holstein dairy cows. Current position: PhD student in Dairy Science at the University of New Hampshire.

2006: Markantonatos, X., PhD. in Animal Science
Effects of monensin on VFA and glucose metabolism in periparturient dairy cows: An integrated model. Administrator in Ministry of agriculture, Athens Greece

2007: Chung, Y. H, PhD in Animal Science
The role of gluconeogenic precursors and methyl donors in periparturient holstein dairy cows on milk yield and metabolic profiles

2007: Brown, Neil, PhD in Animal Science
Development of instrumentation to measure ammonia volatilization from manure: evaluation of dietary strategies to increase nitrogen utilization and reduce ammonia emissions from manure of lactating dairy cows

2007: Martinez, Claudia, M.S. in Animal Science
Effects of varying the level of forage dry matter with or without monensin to Holstein dairy cows on animal performance

4a. Undergraduate honors thesis supervised

1994: P. Crawford, B.S. in Animal Bioscience

1995: P. Krantz, B.S. in Animal Bioscience

1997: J. McCrea, B. S. in Animal Bioscience

2001-2002: A. Todd, B. S. Animal BioScience

2001: B. Orr, B. S. Animal BioScience

2001-2002: C. Roberts. B. S. Animal BioScience

2002-2003: Hayley Springer. B. S. Animal BioScience

5. Membership on graduate degree candidate's committee

1988: Taylor, B., M.S. in Animal Science

1988: Meinert, R., M.S. in Animal Science

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- 1989: Canale, C., Ph.D. in Animal Science
- 1989: Bohn, P., Ph.D. in Agronomy
- 1989: Swartz, L., M.S. in Animal Science
- 1990: Ziemer, C., M.S. in Animal Science
- 1990: McNutt, T., Ph.D. in Physiology
- 1991: Aldrich, J., Ph.D. in Animal Science
- 1991: Karunanandaa, K., M.S. in Agronomy
- 1991: Hoffman, K., M.S. in Animal Science
- 1992: Vasquez-Anon, M., M.S. in Animal Science
- 1993: Chen, J., M.S. in Agronomy
- 1993: Holden, L., Ph.D. in Animal Science
- 1994: Swartz, D., M.S. in Animal Science
- 1994: Ross, T., M.S. in Wild Life Sciences
- 1994: Shahab, M., Ph.D. in Animal Science
- 1995: Rippel, C., M.S. in Animal Science
- 1995: Hongerholt, D., Ph.D. in Animal Science
- 1996: Couillard, A.-A., M.S. in Agronomy
- 1996: Kolver, E., Ph.D. in Animal Science
- 1997: Lammers, B., Ph.D. in Animal Science
- 1999: Staros, A., Ph.D. in Animal Science
- 1999: Soder, K., Ph.D. in Animal Science
- 2002: Goulash, C., Ph.D. in Animal Science
- 2002: Bargo, F., Ph.D. in Animal Science
- 2002: Kononoff, P., Ph.D. in Animal Science
- 2002: Debrevieux, M., Ph.D. in Agronomy

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2003: Leismaster, K. Ph. D. in Animal Science

2003: Edwards, J. M.S. in Animal Science

2003: Landis, E. M. S. in Animal Science

2003: Groff, E. M. S. Animal Science

2004: Lin, J. M. Ag. Animal Science

2005: Zimmerman, M. Ag. Animal Science

In Progress: Zanton, G. Ph.D. Animal Science

2005: Lin, J, M. Ag. Animal Science

2006: Keogh, S. Ph.D. Animal Science

2007: Campbell, J., M. S. Soil and Crop Science

2006: Elizando, J. M.S. Animal Science

2006: Gustavo Luscano, M. S. Animal Science

6. Other evidence of research or creative accomplishment

1985; Dr. Christopher Reynolds - USDA ARS, Beltsville, MD. This scientist worked with the candidate and the university veterinarian to demonstrate surgical techniques for catheterization of the portal, hepatic and mesenteric veins in lactating dairy cows. Dr. Reynolds made three visits to Penn State for this purpose and to share results of experiments.

1987; Dr. Martin Stokes, University of Maine, Orono. A cooperative study was discussed between the candidate and Dr. Stokes on the use of enzyme treated silages. A continuous culture study was conducted using these silages and future experiments are currently being planned.

1988; Dr. Barbara Glenn, USDA, ARS, Beltsville, MD. This scientist worked with the candidate and the university veterinarian to demonstrate surgical techniques for cannulation of the duodenum in lactating dairy cows.

1989; Dr. Vivian Wilson, Zimbabwe, Africa. Dr. Wilson is from the Chimpangli Wildlife Organization and has been very instrumental in working with duikers in Africa. He visited Penn State to discuss future cooperative research with Blue Duikers.

1990; Dr. Burt Dehority, The Ohio State University, Wooster. Dr. Dehority and the candidate carried out a cooperative project with Blue Duikers in Dr. Varga's laboratory.

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1992-1994; Dr. Jerry Jung, Pasture Laboratory. The Pennsylvania State University.
Collaboration in the area of new forages as a source of pasture for ruminants.

1993; Dr. David Casper, United States Department of Agriculture, Beltsville, MD. A joint project has been planned and is in progress.

1994; Dr. Eddie Deauville visiting scientist from Warwickshire, England.

1994; Collaboration has begun with Dr. Dave Casper from Cargill, Inc. in the area of carbohydrate nutrition.

1994-1995; Collaboration with Dr. Beverly Roeder, Brigham Young University, hypotonic solutions for downer cows.

1995; Requested through American Soybean Association to provide seminars to dairy producers, feed industry, and veterinarians in Japan (9/3/95-9/15/95): declined.

1995; A graduate student, Z. Shabi from Israel visited for two months in Dr. Varga's laboratory to conduct a continuous culture fermenter study in Dr. Varga's laboratory.

1996; Hosted Dr. Sandor Fekete from the department of Animal Breeding and Nutrition

1996; Hosted Dr. Ami Arieli from The Faculty of Agriculture, Jerusalem University.

1996; Conducted external review of Department of Animal and Veterinary Science at Brigham Young University.

1997: PSU Invention Disclosure No. 97-1762. A method to prevent metabolic diseases and stimulate feed intake and performance in ruminant animals. D. E. Putnam and **G. A. Varga**

1998: External reviewer for dairy research programs at Monsanto, Inc.

1998: US Patent Application 1762. *A method to prevent metabolic diseases and to stimulate feed intake and performance in dairy cows*. Filed June 3rd, 1998.

1998-1999: Hosted Dr. Ami Arieli from Jerusalem University, Rehovot, Israel. Dr. Arieli spent one year on sabbatical leave in Dr. Varga's laboratory.

2006: US Patent. *Postpartum ketosis preventative feed supplement and method*.

8a. Record of participation in seminars and workshops: Seminar presentations

December 12, 1985: *Experience Sharing* luncheon. The purpose was to share mentoring experiences through two half-hour panel discussions, one by new instructors and the other by mentors.

Fall 1985 - every Semester to 1992: presented overview of research program to students and

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faculty in the Intercollege Program in Nutrition.

Spring 1986 to present: *Dairy Production Colloquium*. Mentor to at least one student in this seminar series.

June 30-July 18, 1987: Pennsylvania Governor's School for Agriculture. Conducted lectures and laboratory for a six week period with Dr. Paul Shellenberger for high school students interested in agriculture.

October 7, 1987: Dairy Science Club, *Current Research in Dairy Nutrition*, Pennsylvania State University.

Fall and Spring, 1993: *My career path*, presentation to Sigma Alpha.

Fall and Spring, 1994: *What I do in my job*, presentation to Sigma Alpha.

Spring, 1995: *My trip to Israel*, presentation to Sigma Alpha.

Spring, 1995: *Current Research in Dairy Nutrition*, presentation to Dairy Science Club

Fall 1996: *Promotion to full professor*. College of Agricultural Sciences Promotion and Tenure Workshop.

Spring, 1997: *Promotion and Tenure*, Challenges and Achievements VII: A conference for women in the science and engineering.

Summer, 1997: *What's in store after graduate school?* Graduate Women in Science and Seminar Series.

Fall, 1997: *Promotion to full professor*. College of Agricultural Sciences Promotion and Tenure Workshop.

Fall, 2000: *Promotion and Tenure Workshop*. College of Agricultural Sciences.

Fall, 2002: *Promotion and Tenure Workshop*. College of Agricultural Sciences.

8c. Record of participation in seminars and workshops: Seminars and workshops without presentations

October 22, 1985: *Grantsmanship Workshop*, College of Agricultural Sciences seminar.

March 12, 1986: *Grants Proposal Workshop*, College of Agricultural Sciences seminar.

October 11, 1985: *New Biotechnology Institute*, participated in seminar presented by Dr. J. Brenchley, Pennsylvania State University.

October 17, 1985: *Get Acquainted*, indoor picnic for new instructors and mentors. The purposes were to: (a) explore the roles of new instructors and mentors, and suggest some

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activities and goals, (b) suggest some activities for new instructors and (c) provide informational material on I.D.P. services, Instructional Services Resources, Audio-Visual Services, and Ag/Ext Ed Services. The Pennsylvania State University.

October 17, 1985: *Mentoring Workshop*. The purpose was to guide mentors in their interactions with new instructors, with suggestions for helpful readings, workshops, videotapes, class visits, and establishment of a trusting relationship.

November 5, 1985: participated in Biotechnology Instrument survey and panel discussion.

February 5, 1986: Biotechnology seminar series. Topic related to enzymes used for lignin degradation by fungal organisms.

February 12, 1986: Tactics for asking and answering questions in class were discussed. Instructional Development Workshop.

May 21, 1987: Teaching Seminar: Myers-Briggs Personality. (Learned personality types and styles, need for teaching)

Fall, 1990 and Spring, 1992: Participated in Promotion and Tenure Workshop. Overview of HR-23 provided by current college P&T faculty.

Spring, 1992: Faculty/Graduate Student Mentoring Workshop. Provided unique faculty insights into the mentoring of graduate students for faculty.

Summer 1994: IDP Teaching Class. Enrolled for 6 weeks to gain better knowledge on instructional development and use of different teaching methods for the classroom.

Spring, 1995: WISE Promotion and Tenure Workshop. Unique overviews of the P&T system from the perspective of department heads, faculty and those serving or who have served on college and university P&T committees from a woman's perspective.

Spring, 1995: Communications skills for women. National Business Women's seminar representing skills in communication for women.

Summer, 1996: Teaching Research Ethics workshop, Indiana University June 23-28.

9. **Papers presented at technical and professional meetings with published abstracts** (listed chronologically by primary author, secondary author, etc.; *indicates candidate presented the paper. When first author, Dr. Varga was the principal investigator and responsible for all phases of the research. For presentations where Dr. Varga was 2nd, 3rd, or 4th author a major contribution was to all aspects of the research experiments involved).

Hinkson, R. S., Jr., **G. A. Varga**, C. K. Davies, and H. G. Gray. 1975. *Effects of feeding organiformed manure*. J. Anim. Sci. 41:241.

***Varga, G. A.**, R. S. Hinkson, Jr., C. K. Davies, and H. G. Gray. 1975. *The use of organiformed manure in the artificial rumen*. J. Anim. Sci. 41:434.

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- ***Varga, G. A.**, L. L. Slyter, L. W. Smith, and E. C. Leffel. 1978. *The utilization of urea, uric acid and caged layer waste by rumen microorganisms continuously cultured in vitro*. Proc. 70th Meeting, Amer. Soc. Anim. Sci., University of Massachusetts, Amherst. P26.
- ***Varga, G. A.**, L. L. Slyter, L. W. Smith, and E. C. Leffel. 1979. *Microbial protein production of ruminal cultures supplied urea, uric acid or caged layer waste*. Proc. 71st Meeting, Amer. Soc. Anim. Sci., West Virginia University, P34A.
- Prigge, E. C., **G. A. Varga**, J. L. Vicini, and R. L. Reid. 1980. *An evaluation of markers and procedures for use in determining digestibility on pasture*. Proc. 72nd Meeting, Am. Soc. Anim. Sci., Cornell University, Ithaca, NY, P246.
- ***Varga, G. A.**, and E. C. Prigge. 1980. *Level of intake and forage species on ruminal; turnover rates in sheep*. Proc. 72nd Meeting, Amer. Soc. Anim. Sci., Cornell University, Ithaca, NY, P403.
- Vicini, J. L., E. C. Prigge, W. B. Bryan, and **G. A. Varga**. 1980. *Cow-calf production as influenced by creep grazing and forage species*. Proc. 72nd Meeting, Amer. Soc. Anim. Sci., Cornell Univ, Ithaca, NY, P250.
- Lough, D. S., E. C. Prigge, W. H. Hoover, and **G. A. Varga**. 1981. *The utilization of ruminally infused acetate or propionate and abomasally infused casein in lactating goats*. Proc. 73rd Ann. Meeting, Amer. Soc. Anim. Sci., Raleigh, NC, P702.
- Prigge, E. C., M. J. Baker, **G. A. Varga**, and R. L. Reid. 1981. *Comparison of steers and wethers in digestibility and ruminal turnover rates as affected by forage quality and level of intake*. Proc. 73rd Ann. Meeting, Amer. Soc. Anim. Sci., Raleigh, NC, P727.
- ***Varga, G. A.**, and W. H. Hoover. 1981. *Rate and extent of fiber degradation of various feedstuffs in situ*. Proc. Rumen Function Conference, Chicago, IL.
- Vona, L. C., R. L. Reid, **G. A. Varga**, and E. C. Prigge. 1981. *Factors influencing in vitro digestibility of cool season and warm season grass hays*. Proc. 73rd Ann. Meeting, Amer. Soc. Anim. Sci., Raleigh, NC, P389.
- Coleman, D. A., **G. A. Varga**, and R. A. Dailey. 1982. *Current management of dairy farms in West Virginia*. Proc. Amer. Dairy Sci. Assoc. Northeast meeting, Burlington, VT, P7D.
- Crawford, R. J., Jr., B. J. Shriver, **G. A. Varga**, and W. H. Hoover. 1982. *Buffer requirements for maintenance of rumen fluid pH during fermentation of individual feeds*. Proc. 77th Meeting, Amer. Dairy Sci. Assoc., Pennsylvania State University, University Park, P27.
- ***Varga, G. A.**, W. H. Hoover, and R. A. Dailey. 1982. *Survey of nutritional management practices and metabolic disorders in West Virginia dairy herds*. Proc. 77th Meeting, Amer. Dairy Sci. Assoc., Pennsylvania State University, University Park, P177.
- ***Varga, G. A.**, W. H. Hoover, L. L. Junkins, and B. J. Shriver. 1982. *Effects of urea and isoacids on in vitro fermentation of diets containing formaldehyde treated soybean meal*. Proc. 77th Meeting, Am. Dairy Sci. Assoc., Pennsylvania State University, University

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Park, P98.

***Varga, G. A.**, G. L. Haaland, and H. F. Tyrrell. 1983. *The influence of corn:corn silage ratio, corn silage maturity and intake on energy utilization for growth in Hereford heifers.* Proc. 75th Diamond Jubilee meeting, Amer. Soc. Anim. Sci., Pullman, WA, P827.

***Varga, G. A.**, and W. H. Hoover. 1983. *Effect of low and high fill diets on intake and production during early lactation in dairy cattle.* Proc. 78th Meeting, Amer. Dairy Sci. Assoc., University of Wisconsin, Madison, P206.

Hammond, A. C., T. S. Rumsey, G. L. Haaland, and **G. A. Varga.** 1984. *Comparison of urea space estimation of empty body fat to direct chemical measurement of empty body fat in steers.* J. Anim. Sci. 59:(Suppl. 1):166.

Eisemann, J. H., H. F. Tyrrell, A. C. Hammond, P. J. Reynolds, D. E. Bauman, G. L. Haaland, and **G. A. Varga.** 1984. *Influence of bovine growth hormone on energy and nitrogen balance in Hereford heifers.* J. Anim. Sci. 59(Suppl. 1):182.

Tyrrell, H. F., and **G. A. Varga.** 1984. *Energy value of ear vs shelled corn either dry or ensiled at high moisture.* J. Anim. Sci. 59(Suppl. 1):131.

***Varga, G. A.**, G. L. Haaland, and H. F. Tyrrell. 1984. *Effect of previous energy intake on subsequent growth rate of Angus steers.* J. Anim. Sci. 59(Suppl. 1):733.

***Varga, G. A.**, G. L. Haaland, and H. F. Tyrrell. 1984. *Effect of previous energy intake on subsequent growth rate of Charolais steers.* J. Anim. Sci. 61(Suppl. 1):447.

***Varga, G. A.**, H. F. Tyrrell, G. B. Huntington, D. R. Waldo, and B. P. Glenn. 1985. *Effect of alfalfa and orchardgrass silages on utilization of nitrogen and energy for growth by Holstein steers.* J. Anim. Sci. 61(Suppl. 1):448.

***Varga, G. A.**, A. C. Hammond, M. B. Solomon, and T. S. Rumsey. 1985. *Influence of corn:corn silage ration and corn silage maturity on growth rate and carcass composition of Hereford steers.* J. Anim. Sci. 61(Suppl. 1):472.

Rumsey, T. S., **G. A. Varga**, S. Kahl, A. C. Hammond, and J. Bitman. 1985. *Thyroxine status and tissue gain in beef steers for corn silage diets.* J. Anim. Sci. 61(Suppl. 1):472.

Waldo, D. R., **G. A. Varga**, G. B. Huntington, B. P. Glenn, and H. F. Tyrrell. 1985. *Utilization of alfalfa and orchardgrass for growth: objectives, animals and silages.* J. Anim. Sci. 61(Suppl. 1):446.

Huntington, G., **G. A. Varga**, D. Waldo, and B. Glenn. 1985. *Oxygen consumption by portal-drained viscera and whole body of Holstein steers fed alfalfa or orchardgrass silage at two intakes.* J. Anim. Sci. 61(Suppl. 1):446.

Smith, L. W., **G. A. Varga**, and D. R. Waldo. 1985. *Cell wall particle size distributions in silages, six segments of digestive tract and feces of Holstein steers fed alfalfa or orchardgrass.* J. Anim. Sci. 61(Suppl. 1):449.

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- Huntington, G., **G. A. Varga**, D. Waldo, and B. Glenn. 1985. *Forage and intake affect nitrogen dynamics in Holstein steers*. Fed. Amer. Soc. Exp. Biol. April.
- Tyrrell, H. F., T. W. Boutton, M. N. Nelson, **G. A. Varga**, and P. O. Klein. 1985. *Turnover of carbon in milk from Holstein cows in late lactation*. J. Anim. Sci. 61(Suppl. 1):454.
- ***Varga, G. A.** 1985. *Effect of rate of gain and end weight on visceral organ mass*. Rumen Function Conference, November 13-14, Chicago, IL.
- ***Varga, G. A.**, and H. F. Tyrrell. 1986. *Effect of prior rate of gain and end weight on energy balance and carcass composition of Angus x Hereford steers*. J. Anim. Sci. 63(Suppl. 1):434.
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Martinez, C. M., Y. H. Chung, T. W., Cassidy, V., Ishler, K., Heyler and G. A. Varga. 2007. Effect of feeding two forages at two levels with and without Rumensin to high producing Holstein cows on animal performance. *J. Dairy Sci.*

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Y.-H. Chung, C. M. Martinez, N. E. Brown, T. W. Cassidy and G. A. Varga. 2007. Responses of rumen and blood metabolites of Holstein dairy cows to propylene glycol during frequent feeding. *J. Dairy Sci.*

B. House*¹, L. Holden¹, T.K. Miller-Webster², G. A. Varga, T. LaButta³ and W. H. Hoover²,
Effects of Bovazymetm on microbial efficiency and metabolism in continuous culture of rumen contents. *J. dairy Sci.*

10a. Description of speaking engagements or other activities in which there was significant use of candidate's expertise: Invited speaking engagements (listed chronologically; *indicates national or international audience/event. Presentations also include invited talks in the extension area and also listed in A-1.)

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- November 20-22, 1986: *Factors which affect estimation of lag time in the rumen.* International Feed Intake Symposium, Oklahoma City, Oklahoma.
- July 23, 1987: *Effect of protected amino acids on net nutrient absorption by the portal drained viscera in early lactation.* Eastman Kodak, Kingsport, TN.
- December 11, 1988: *Effect of monosaccharide composition of the hemicellulosic fraction of feedstuffs on utilization by ruminal microorganisms.* University of Maine, Orono.
- March 4, 1988: *An update on the amino acid requirements for dairy cattle,* Intercollegiate Program in Nutrition, Penn State University.
- September 18-22, 1988: *Effect of prior rate of gain and end weight on energy metabolism, visceral organ mass and body composition of Angus x Hereford steers.* European Association for Animal Production. 11th Symposium on Energy Metabolism in Farm Animals, Lunteren, The Netherlands.
- December 8, 1990: *Use of chemical and biological methods to alter fiber utilization by ruminal microorganisms.* Department of Dairy and Animal Science, The Pennsylvania State University.
- October 14, 1990: *Use of enzymes and inoculants for silages.* University of Minnesota, Minneapolis, St. Paul.
- October 26-27, 1992: *Rumen environment factors affecting variation in microbial protein synthesis, Methods to measure microbial protein synthesis.* Mini symposium at NC-185 meeting, Baltimore, MD.
- December 1-3, 1992: *Data: Type, Source, Quality.* Building a National Feed Composition Data Base. Discussant and Chair, National Academy of Sciences, Washington, DC.
- February 23-25, 1993: *Nutritionist Roundtable.* Silage Production from Seed to Animal. Discussant and Chair, Syracuse, NY.
- January 18-28, 1993: Two talks: *Nonstructural carbohydrate and degradable intake protein: application of the concept, Silage additives: when and if to use an additive.* Northeast Dairy Extension seminars in cooperation with Cornell University (approximately 180 in attendance). Two-day seminars at five locations in New York and New England.
- March 12, 1993: *Use of forage additives.* Presentation to Baltic Scientists at Pasture Systems and Watershed Management Research Unit.
- May 1994: *Carbohydrates for lactating cows,* Dairy Production Medicine Program, The Pennsylvania State University.
- June 1994: *Overview of dairy nutrition,* presented to Purina sales and technical group.
- September 28, 1994: *Ecology and Biotechnology: Biotechnology in the Dairy Industry,*

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Millersville University, Millersville, PA

October 26, 1994: *Rumen microbial metabolism*, Faculty of Agriculture, Hebrew University, Israel.

November 15 and 16, 1994: *Structural and nonstructural carbohydrates*, Nutrition Workshop for Feed Industry Professionals, The Pennsylvania State University

November 17, 1994: *Gut size and rate of passage*, Conference on Intake by Feedlot Cattle, Oklahoma State University, Tulsa, OK.

December 1, 1994: *Nonstructural carbohydrates and proteins*, Cargill Animal Nutrition Center.

April 24, 1995: *Rumen available carbohydrate and protein affects microbial protein synthesis and amino acid flow to the small intestine*. Pfizer Nutrition Conference, Indianapolis, IN.

April 24, 1995: *Using carbohydrate fractions for balancing rations for dairy cows*. American Feed Manufacturers Conference, Indianapolis, IN.

September 26, 1995: *Alternate by-products for cows on pasture*. International Feed By-Product Symposium, St. Louis, MO (declined).

December 8, 1995: *Carbohydrate Management for Dairy Cows*. Managing Dairy Farms into the 21st Century. Dairy Management Symposium, Hershey, PA.

April 21, 1996: *Microbial interactions affecting intake in ruminant animals*. Fed. Amer. Soc. Exp. Biol. meeting, Washington, D.C.

June, 1997: *Rumen microbiology*. Cargill Dairy Technical Conference, Bucknell University.

July, 1997. *Use of fiber in ration formulation*. American Dairy Science meeting, University of Guelph.

October, 1997. *Fiber in the ration: how effective should it be?* Cornell Nutrition Conference, Rochester, NY.

January, 1999. *Carbohydrate nutrition in lactating cattle*. Ruminant Health Nutrition Conference, Liverpool, NY.

February, 1999. *Dairy rationing using structural and nonstructural carbohydrates: From theory to practice*. Southwest Nutrition Conference, Phoenix, AZ.

March, 1999. *Effects of diet on foot health*. Penn State Meats Lab.

April, 1999. *Nutrient needs of the fresh cow*. Manes Dairy.

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- May, 1999. *Carbohydrate needs of the high producing cow*. Agway Technical Conference, State College, PA
- May, 1999. *Importance of dry cow nutrition*. Elanco Technical Conference Proceedings, Haultulco, Mexico.
- September, 1999. *Fiber needs of the lactating dairy cow*. International Lactating Cow Conference 2000, Delicias, Mexico.
- August, 1999. *Carbohydrate needs of the high producing dairy cow*. Advanced Dairy Nutrition, Cornell University, Ithaca, NY.
- September, 1999. *Protein and energy needs of the up close dairy cow*. Minnesota Nutrition Conference, Bloomington, MN.
- November, 1999. *Protein and energy needs of the transition cow*. Feed industry Seminar series, 4 locations in PA.
- February 2000. *Close up nutrition of the dry cow*. UC Davis, Tulare, CA.
- February 2000. *Feedbunk management*. Dairy Housing and Equipment Systems Proceedings, Harrisburg, PA.
- March, 2000. *Carbohydrate nutrition for the high producing dairy cow*. Dairy Production Medicine Program. Penn State University.
- April, 2000. *Prepartum nutrition and health*. Graduate Program in Human Nutrition. Penn State University.
- May, 2000. *Energy and protein balance in the transition cow*. University of Guelph. Conference on directions for research on the metabolism of transition dairy cows.
- September, 2000. *Role of monensin in dry cow feeding*. Elanco, Indianapolis, IN
- October, 2000. *Protein and Energy Needs of the Dry Cow*. Purina Farm Consultants Meeting, Harrisburg.
- November, 2000. *Effects of carbohydrate sources, processing and digestibility on dry matter intake and milk yield*. Dairy Production Medicine Program, Penn State University.
- January, 2001. *Carbohydrates: What's different in the new NRC*. NRC Satellite Conference, Des Moines, IA
- February, 2001. *Effect of carbohydrate sources on dry matter intake during the prepartum period*. Conference for Researchers on Transition Cows, University of Guelph, Canada.
- March, 2001. *Review of the new NRC*. Western Canadian Dairy Conference, Red Deer, Alberta.

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March, 2001. *Protein and Energy Needs of the Transition Cow*. Western Canadian Dairy Conference, Red Deer, Canada.

March, 2001. *The 2001 Dairy NRC: Energy and Protein Requirements*. NE Dairy Feed Conference, West Lebanon, NH

May, 2001. *Recent Advances in Transition Cow Research*. American Feed Industry Association Meeting, Indianapolis, IN.

June, 2001. *The 2001 Dairy NRC: Energy and Protein Requirements*. Diamond V and Kemin Technical Conference, 1000 Islands, NY.

October, 2001. *Applying the new NRC requirements to the transition cow*. Alltech 5th Annual International Dairy Short Course, Lexington, KY.

February, 2002. *Rumen effects on dry matter intake in dry cows*. University of Guelph. Transition Cow Conference.

April, 2002. *Strategies for feeding the transition cow*. Southwest Nutrition Conference, Houston, TX.

April, 2002. *Dry cow feeding management: new strategies*. NE Bovine Practitioners Conference, Syracuse, NY.

April, 2002. *Monensin feeding to dry cows: effects on VFA production rates in the rumen*. Elanco International Summit Mtg, Niagra, NY.

August, 2002. *Nitrogen metabolism*. Agway Summer Conference. Canandaigua, NY.

September, 2002. *Energy levels in transition diets—enough but not too much*. Amer. Assoc. Bovine Pract., Madison, WI.

November, 2002. *Manure scoring- the proof is in the patties*. Forages & Feeding Symposium. Lebanon, PA.

December, 2002. *Are two dry cow groups necessary?* Shur Gain technical dairy conference, Stratford, Canada.

December, 2002. *Carbohydrate nutrition for high producing dairy cows*. Agribasics Technical Conference. New Holland, PA.

January and February, 2003. *Carbohydrate nutrition for lactating dairy cows.. Manure evaluation*. Pennfield Feed Co. Martinsburg, Clintondale, and Tunkhannock, PA

January 2003. *Protein Nutrition. Fat nutrition. Dry Cow Nutrition. Anionic salts for dairy cattle. Ration balancing programs for dairy cows*. Dairy Production Medicine Program. Univ. of Guelph, Veterinary School.

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March, 2003. *Practical Ration Evaluation: What you should know about nutrition.* Western Canadian Dairy Conference, Red Deer, Alberta, Canada

March, 2003. *Can we feed a one group dry cow feeding program?* Western Canadian Dairy Conference, Red Deer, Alberta, Canada. (Key note)

March, 2003. *One group dry cow feeding programs.* Big Gain Feed Company Dairy Nutrition conference. Three locations: Minn and Wisc.

April, 2003. *Soluble carbohydrates for lactating dairy cattle.* TriState Nutrition Conference. Fort Wayne, Ind.

May, 2003. *Dry and transition cow nutrition and management.* Renaissance Nutrition regional meeting. Carlisle, PA.

June, 2003. *Carbohydrate nutrition for high production. Using manure evaluation to enhance dairy cattle nutrition.* 3rd Annual Dairy Nutrition and Management Seminar, Diamond V Co. Collinsville, Ill.

August, 2003. *Feeding various carbohydrate sources to dairy cattle and effects on performance and health. Trouble shooting rations for high yielding dairy cattle – signs you should pay attention to.* Djurhalso- Utfodrings Konferens, Kalmar, Sweden.

January, 2004. *One group dry cow rations.* ABPA/Feed Industry Joint Conf. Moncton, New Brunswick, Canada.

January, 2004. *Fibrous feeds for dairy cows.* ABPA/Feed Industry Joint Conf. Moncton, New Brunswick, Canada.

March, 2004. *Do we need two dry cow groups?* 2nd Mid-Atlantic Nutrition Conference. Timonium, MD.

March, 2004. *Measurement of forage particle size.* 2nd Annual Dairy Nutrition Seminar. Piacenza, Italy.

May, 2004. *Setting up for high performance. Protein needs of dairy cows for high performance. Carbohydrate needs of dairy cows for high performance.* Pennfield Nutrition Seminar. State College, PA.

May, 2004. *Role of carbohydrates in maximizing performance in dairy cows. Role of protein sources in maximizing performance in dairy cows.* 9th International Congress on Bovine Medicine. Gijon, Spain.

Sept., 2004. *Transition cow feeding and management.* Am. Assoc. Bovine Pract., Fort Worth, TX.

Sept. 2004. *Feeding the dry cow: protein and energy.* Am. Assoc. Bovine Pract., Fort Worth, TX.

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- October, 2004. *Feeding strategies for transiting cows into lactation*. Dairy Nutrition Workshop, Grantville, PA.
- March, 2005. *Dietary strategies to reduce ammonia emissions*. 2005 Agricultural Summit, Grantville, PA.
- March, 2005. *High forage diets*. Renaissance Dairy Nutrition seminar, Lancaster
- April, 2005. *Feeding management strategies for transitioning cows into lactation*. 16th Annual Invited Speaker Event, North Carolina State University Animal Science Speaker Series.
- April, 2005. *Assessment of the job the nutrition advisor is doing on the farm and impact of a single dry period on productivity and health of dairy cows*. Ontario Agribusiness Association and the Ontario Association of Bovine Practitioners, Guelph, Ontario.
- June, 2005. Seven invited talks. CORFILAC Dairy conference, Ragusa, Sicily.
- July, 2005. *Protein and carbohydrate synchronization to maximize rumen microbial protein synthesis*. Renaissance Bucknell Nutrition Conference.
- August, 2005. *Discover Conference on Amino Acids: Perspectives and recommendations*. Discover Conference on amino Acids, Bloomington, IN.
- August, 2005. *Forages and fiber for high producing dairy cows and Protein nutrition*. Ohio State University Dairy Production Medicine program.
- October, 2005. *Things to look for to determine if you are doing a good job with emphasis on transition cow and early lactation and A new approach to optimize milk composition and reduced ammonia emission*. Meetings in Geneva, Copenhagen and Nantes. Sponsored by CRINA.
- January, 2006. *Carbohydrate utilization by high producing dairy cows*. Cargill Mid-Atlantic Sales conference, State College, PA.
- November, 2006. *Transitioning cows into lactation*. Iowa State University
- March, 2007. *Managing milk components*. Large Herd Dairy Conference, Reno NV
- June, 2007. *Strategies for feeding transition dairy cows*. Land O' Lakes Nutrition conference. Madison, WI.

10b. Description of speaking engagements or other activities in which there was significant use of candidate's expertise: Other activities (listed chronologically; *indicates national or international audience/event. The following are presentations made during regional meetings held in the north central part of the US. The candidate is leader for this regional project.)

October 17-18, 1986: Participated in meeting held at Michigan State University to rewrite regional North Central 171 project (currently NC-185). Presented short seminar on

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results and summarized projected research.

January 6-7, 1987: Participated in meeting held at USDA Pasture Lab, University Park. To rewrite objectives of Northeast 108. Presented short seminar outlining research objectives.

October 19-20, 1987: Participated in meeting held at University of Illinois for North Central 171 and new North Central 185 discussions. Presented short seminar on results and summarized projected research.

October 24-25, 1988: Participated in meeting held at University of Wisconsin for North Central 185 discussions. Presented short seminar on results and summarized new projects.

October 22-24, 1989: Participated in meeting held at Ohio State University for North Central 185 discussions. Presented short seminar on results and summarized new projects.

October, 1990: Participated in meeting held in USDA Dairy and Forage Center, Madison, Wisconsin for North Central 185 discussions. Presented research results.

October, 1991: Participated and led discussions at meeting held in St. Paul, MN for North Central 185 projects. Presented research results.

October, 1992: Participated and was co-chair for meeting held in Baltimore, MD for North Central 185 project. Presented research results.

October, 1993: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results.

October, 1995: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results.

October, 1996: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results.

October, 1997: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results.

October, 1998: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results.

October, 1999: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results

November 2000: Participated in meeting held in Indianapolis, for North Central 185 project. Presented research results

November 2001: Participated in meeting held in Indianapolis, for North Central 185

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project. Presented research results

November 2002: Participated in meeting held in Salt Lake City, for North Central 185 project. Presented research results

October 2003: Participated in meeting held in Kansa City, for North Central 1009 project. Presented research results

10c. Description of speaking engagements or other activities in which there was significant use of candidate's expertise: Manuscript reviews which required significant use of candidate's expertise.

1985: Journal of Animal Science (2)

1986: Journal of Animal Science (3)

1986: In-house reviews

Journal of Dairy Science (3)

Journal of Animal Science (1)

1986: Ad hoc reviewer for USDA Competitive Grant Program (1)

1987: Ad hoc reviewer for USDA Competitive Grant Program (2)

1987: USDA external reviewer (7)

1988: Journal of Animal Science (3)

1989: South African Journal (1)

1989: Canadian Journal of Animal Science (1)

1989: Journal of Animal Science (11)

1989: Ad hoc reviewer for USDA Competitive Grant Program (3)

1989: USDA Merit Review (1)

1989: USDA External Reviewer (2)

1990: Journal of Animal Science (10)

1990: Small Ruminant Research Journal (1)

1990: Journal of Dairy Science (1)

1990: South African Journal (2)

1990: USDA Review (1)

1990: BARD proposal reviewer (1)

1990: Ad hoc reviewer for USDA Competitive Grant Program (1)

1991: Journal of Dairy Science (3)

1991: USDA review (5)

1991: Crop Science (1)

1991: External University of Maine (1)

1991: Journal of Animal Science (1)

1991: Ad hoc reviewer for USDA Competitive Grant Program (3)-declined

1992: Journal of Dairy Science (2)

1992: Journal of Animal Science (1)

1992: USDA review (2)

1992: Panel member for USDA Small Business Innovation Research Program (14)

1993: Journal of Animal Science (5)

1993: Journal of Dairy Science (3)

1993: USDA review (3)

1993: Small Business USDA (1)

1993: South African Journal (1)

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1993: Ad hoc reviewer for USDA Small Business Innovation Research Program (1)
1994: Reviewer for BARD-USDA competitive grant program
1994: Journal of Animal Science (5)
1994: Small Ruminant Nutrition (1)
1994: Journal of Dairy Science (4)
1995: Journal of Animal Science (4)
1995: Small Ruminant Nutrition (1)
1995: Journal of Dairy Science (4)
1995: Reviewer for BARD-USDA competitive grant program
1996: Journal of Animal Science (3)
1996: Journal of Dairy Science (6)
1997: Journal of Animal Science (4)
1998: Journal of Dairy Science (8): Editorial Board 1998-2001
1998: Journal of Animal Science (3)
1998: Journal of Dairy Science (10)
1999: Journal of Dairy Science (6); Journal of Animal Science (2)
2000: Egyptian Journal of Animal Science: Editorial Board
2000: Journal of Dairy Science: (6)
2000: Journal of Animal Science: (3)
2000: Canadian Journal of Animal Science: (1)
2001: Journal of Dairy Science: (8)
2001: Journal of Animal Science: (2)
2001: USDA Review Panel for Animal Growth and Nutrient Utilization
2002: Journal of Dairy Science (10)
2002: Journal of Animal Science (4)
2002: Dairy Farmer's of Canada (2)
2003: Journal of Dairy Science (6)
2003: Journal of Animal Science (2)
2003: USDA Ad Hoc review (3)
2003: Canadian Dairy Farmers research project review (2)
2004: Journal of Dairy Science (3)
2004: Canadian Dairy Farmers research project review (1)
2005: Journal of Dairy Science (2)
2005: Journal of Animal Science (1)
2005: Canadian Dairy Farmers research project review (2)

11. New courses developed and/or restructured

1987; Animal Science 310 (Dairy Cattle Production) - This course was extensively revised for the candidate's second term teaching this course. Considerable information has been added to this course regarding feeding, care, health and general management of the calf and heifer.

1987; Animal Science 506 (Ruminology) - This course was revised during the candidate's second and third terms teaching this course. The course is now taught by one instructor; subject matter is covered in more depth and greater breadth. A new requirement for this course is the preparation of a small grant proposal. This provides a student with a better awareness of how to write a grant proposal (including a budget) as well as enable them to think through a research problem they are interested in and currently is being discussed in

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the scientific literature.

1988-present; Animal Science 596 (Special Topics) - Developed by the instructor and organized to stimulate discussion by graduate students through specific lecture topics.

1989; 1993- 1994; Animal Science 491 (Senior Seminar-Dairy) - Introduced a debate format as part of the seminar requirement. This was done to promote better communication skills of students.

1993; Animal Science 506 - Four laboratories and mini experiments were incorporated into this course. Students are responsible for learning new methodologies and applying these to experiments conducted during the duration of the course.

1994; Animal Science 310 - Problem solving and decision making exercises have been incorporated into the course. Currently, six different cases have been developed and used in group sessions. Students are responsible for critiquing the problem, asking questions and providing answers during role playing scenarios. Students individual provide written and oral decision-making summaries.

1995; Animal Science 510- New sections on methodology in animal nutrition. In vivo digestibility as well as laboratory techniques are taught.

1997: Animal Science 297A- Developed new course in companion animals with Harold Harpster. (50% responsibility for course).

1998: Animal Science 310- Developed new course in Dairy Management with Gary Rogers and Mike O'Connor. (40% responsibility for course).

2000: Animal Science 305 (previously 297A)- developed 3 laboratories for the course to encompass animal care, management, first aid, and health.

2001: Animal Science 310. Six new labs will be developed to provide students more hands on interaction in dairy management.

2002: Animal Science 397A (1 credit) Decision based learning and problem solving in integrated dairy management. Team taught.

2003: Animal Science 410 (4 credits) Advanced Dairy Herd Management.

14. List of honors and awards for scholarship or professional activity

1975; Third place. American Society of Animal Science, Northeast Section, Graduate Student Scientific Paper Awards Competition, Maine.

1978; Third place. American Society of Animal Science, Northeast Section, Graduate Student Scientific Paper Awards Competition, Massachusetts.

1975-1978; Selected to participate in University of Maryland and USDA Cooperative Research Program for doctoral training.

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1981-1983; Who's Who of American Women.

1978-1988; Sigma Xi

1982 to present; Gamma Sigma Delta

1988; Nominated Northeast American Dairy Science Association/American Society of Animal Science Young Scientist.

1989; Nominated Northeast American Dairy Science Association/American Society of Animal Science Young Scientist.

1991; Nominated Northeast American Dairy Science Association/American Society of Animal Science Young Scientist.

1991: Nominated as Historian, Gamma Sigma Delta.

1993: Panel member for USDA Competitive Small Business Innovation Research Program. The SBIR program allows collaboration between industry and university personnel to submit proposals for seed money projects. The candidate was on a panel of 6 reviewing over 44 proposals and did the major reporting on 8 of these.

1998: Nominated for University Advising Award.

1998: Nominated for AFIA Ruminant Nutrition Award, American Dairy Science Association

1999: Nominated for President of American Association of Animal Science (declined)

2000: Received AFIA Ruminant Nutrition Award, American Dairy Science Association

2000: Nominated for University Advising Award.

2002: University Distinguished Professor

2005: Nesbitt Award

2005: College Outstanding Research Partners award

15b. Record of membership and active participation in professional and learned societies; Meeting attendance and participation

American Society of Animal Science
American Dairy Science Association

1985; American Society of Animal Science, Athens, GA

1985; 10th European Association for Animal Production International Energy Symposium, Airlie, VA

1985; Agway Dairy Conference, NY

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- 1985; Rumen Function Conference, Chicago, IL
- 1986; Comparative Aspects of Digestion in Ruminants. Ithaca, NY
- 1986; American Society of Animal Science, Manhattan, KS
- 1986; International Feed Intake Symposium, Oklahoma City, OK
- 1987; American Dairy Science Assoc. Columbia, MO
- 1988; American Society of Animal Science, New Brunswick, NJ
- 1988; EAAP, Energy Symposium on Farm Animals, Lunteren, The Netherlands
- 1989; Northeast regional American Dairy Science Association/American Society of Animal Science, University of Maine, Orono
- 1989; American Society of Animal Science and American Dairy Science Association, Lexington, KY
- 1989; Agway Dairy Conference, NY
- 1989; Rumen Function Conference, Chicago, IL
- 1990; Dairy Feeding Conference, Harrisburg, PA
- 1990; Northeast American Society of Animal Science/American Association of Dairy Science, Chazy, NY
- 1991; Holstein Beef Production Conference, Harrisburg, PA
- 1991; Northeast Regional ADSA/ASAS meeting at the University of MD
- 1991; American Society of Animal Science, Laramie, WY
- 1991; American Dairy Science Association, Logan, UT
- 1992; American Society of Animal Science, Pittsburgh, PA
- 1992; American Dairy Science Association, Columbus, OH
- 1992; Building a National Feed Data Base, Washington, DC
- 1993; American Dairy Science Association, College Park, MD
- 1993; Technical Workshop-Parallels in Dairy Grazing in New Zealand and the Midwest, Madison, WI
- 1994; American Society of Animal Science and American Dairy Science Association, Minneapolis, MN
- 1995; American Society of Animal Science, Orlando, FL, July
- 1995; Cornell Nutrition Conference, Rochester, NY
- 1996; American Dairy Science Association, Oregon State University, July
- 1997; American Dairy Science Association, Guelph University, July
- 1998; American Society of Animal Science and American Dairy Science Association, Denver, CO
- 1999; American Society of Animal Science and American Dairy Science Association, MI
- 1999; Discover Conference: The Transition Cow. Nashville, IN
- 2000; American Society of Animal Science and American Dairy Science Association, Baltimore, MD
- 2001; American Society of Animal Science and American Dairy Science Association, Indianapolis, IN
- 2002; American Society of Animal Science and American Dairy Science Association, Quebec, Canada.
- 2003; American Society of Animal Science and American Dairy Science Association, Phoenix, AZ.
- 2004; American Society of Animal Science and American Dairy Science Association, St. Louis, MO.
- 2005; American Society of Animal Science and American Dairy Science Association, Cincinnati, OH.

15c. Record of membership and active participation in professional and learned societies; Committees and offices held

1988; Judge, Northeast American Dairy Science Association and American Society of Animal Science Graduate Student Competition.

1988-1989; Chair. Graduate Student Paper Competition Committee of the Northeast American Dairy Science Association and American Society of Animal Science.

1989-1990; Secretary. Northeast American Society of Animal Science.

1990-1991; Vice-President. Northeast American Society of Animal Science.

1989-1992; Graduate Student Competition Committee of the National American Dairy Science Association.

1990; Chair. Nominating Committee for Northeast American Dairy Science Association

1990; Chair. Program Committee for Northeast American Dairy Science Association and American Society of Animal Science.

1990; Requested to Chair session for National American Society of Animal Science Meetings, Ames, Iowa. (declined)

1990-1993; Board of Directors, American Society of Animal Science.

1991; Publications Committee - American Society of Animal Science.

1991; Chair. Session for National American Dairy Science Association Meetings, Logan, Utah.

1991-1992; President Northeast American Society of Animal Science.

1991; Chair. Distinguished Service Award Committee, for Northeast American Dairy Science Association and American Society of Animal Science.

1991; Chair. International Agricultural Award Committee, National American Society of Animal Science.

1991; Chair. Writing Committee, North Central-185 regional project.

1991-1992; Chair. Visual aids and room assignments, American Society of Animal Science (organized all sessions for visual aid needs as well as all individuals to run slide projectors).

1991; Chaired session for American Society of Animal Science Annual Meeting, Laramie, Wyoming.

1991; Judge. Graduate Student Competition Committee. American Dairy Science Association, Logan, Utah.

1991-1992; Long range planning committee, American Society of Animal Science.

1991-1992; Membership Committee, American Society of Animal Science.

1991-1992; Chair. AFIA Ruminant Nutrition Award Committee, American Society of Animal Science.

1991-1992; Necrology Committee, American Society of Animal Science.

1991-1995; Selection Committee American Feed Industry Awards, American Dairy Science Association

1991-1992; Chair. Graduate Student Committee, American Dairy Science Association.

1993-1994; Chair. AFIA Award, American Dairy Science Association.

1992-1993; Historian. Gamma Sigma Delta. The Pennsylvania State University Chapter

1993-1994; Vice President. Gamma Sigma Delta. The Pennsylvania State University Chapter

1993-1994; President. Gamma Sigma Delta. The Pennsylvania State University Chapter

1994-1995; American Dairy Science Association representative to the American Forage and Grassland Council

1994; Ad Hoc Committee on Sections, American Society of Animal Science.

1994-1995; Exhibit Advisory Committee, American Society of Animal Science.

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1995-1996; Woman in Animal Science Program Committee, American Society of Animal Science

1996-1997; American Dairy Science Association, Morrison Feed Industry Award Committee

1997-1999; American Dairy Science Association, Editorial Board

1997; Nominating Committee, American Society of Animal Science

1997-1998; Research Committee, American Dairy Science Association

1997-1998; Agway Inc. Young Scientist Award Committee, American Dairy Science Association

1997-2000; National Research Council Committee: Nutrient Requirements for Dairy Cattle

2000; Chair, Agway Inc. Young Scientist Award Committee, American Dairy Science Association.

2001-2003; American Feed Industry Association Award Committee, American Dairy Science Association.

2003; American Feed Industry Association Award Committee, Chair, American Dairy Science Association.

2002-2004; Graduate student competition paper judge. American Dairy Science Association.

2005: Discover conference on Amino Acids, program committee