**RICHARD S. PATTON**

***Animal Nutrition Consultant***  ***Adjunct Professor, 1992-2007***

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Over four decades of problem solving in animal nutrition, using technical concepts from the research laboratory for the consumer’s benefit and packaging experimental results for application in the market place. Expertise: communicating scientific concepts to end users and lay people.

Enjoy assignments with responsibility for advocating proper animal nutrition. Want to participate in a leadership role in the evaluation, design and execution of the new directions animal nutrition must consider.

Extracurricular: Anthropology; primitive horse travel, fox hunting, skiing,

Home is a small horse ranch 25 miles from Santa Fe, NM.

Married, two daughters. DOB: 9/9/46 (twin).

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| ***PROFESSIONAL EXPERIENCE*** | **delivering technology from the source to the beneficiary:**   * Combining gluconeogenic precursors and lipid as a feed for pariparturient cows dramatically improved performance. The concept, sold as “Metaxerol”, (U.S. Patent #5,660,852; co-inventor) was taken from idea to market profit in two years. * Completely computerized all diets at the zoos in Denver, San Antonio, Tyler (Tx), Tucson and New Orleans * Isomeric forms of vitamin E vary in bioavailability. As a leading proponent of the application of this insight, birth of endangered exotic species occurred at New Orleans (Gorilla and Orangutan, 1996), and Tyler, Texas (Black Rhino, 1993) and African elephant pregnancy confirmed (10/97) at Great Adventure Safari, New Jersey. |
|  | **resource development:**   * Manage own company. Generated all own funding, expenses and salary since 1981. * Achieved three years of funding for the Student Ambassador Program, an export enhancement project of FAS in Washington, DC. Conceived and manage this program, that reaches 24 Mexican universities each year and has over 60 graduates. Total Funding $210,000 by 1998. Program since copied and instituted in Turkey by same client. * Initiated projects in Mexico funded by FAS of the USDA; total funding $35,000. * Arranged research grants from industrial clients to universities: To Penn State for investigation of chelated minerals in ruminants; To Stephen F. Austin University for swine research of chelated minerals; Two to South Dakota State Univerity for transition cow health. * Secured foreign lectureships for American university professors that paid expenses plus honorarium. |
|  | **research efforts benefit clients, and frequently are not published.**   * One of the very first to investigate fishmeal (crabmeal) for ruminants. 1972. * First in the world to perform digestibility trials on Polar Bears. 1973. * Tested dry matter intake, via a dry diet, in eight species of exotic cats. 1974. * Researched propylene glycol preserved diets for soft billed birds. 1975. * Measured anabolic steroid effect on fecal metabolic nitrogen in horses. 1977. * Investigated response of lactating cows to Beta-Carotene. 1982. * Delineated benefit of RRR-alpha tocopherol for the rhino. 1988. * Studied high fat feed formulas for elite athlete horses. 1990. * Guided investigation of Beta-Carotene delivery to cows via bypass fat. 1991. * Compiled nationwide standard deviation of dried bakery analysis. 1993. * Studied chelated minerals in swine (1992) and dairy cows (1994). * Compared ruminant response to rice vs. barley protein. 1994. * Reduced blood ketones (P<.05) in cows fed propionate and fat. 1995. * Demonstrated enhanced immunocompetence in neonate calves fed chelates. 2000 * Showed advantage of propionate-fat blend supplement for birthing ruminants. 2004 * Demonstrated hemicellulose extract enhances fiber digestion in ruminants 2012. |

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| ***PROFESSIONAL EXPERIENCE*** | **foreign assignments:**   * International work since 1990 has required technology transfer via lecture and extension style delivery and sales marketing to 20 countries: Italy, Germany (West and ex-DDG), Holland, Denmark, Switzerland, Ireland, Australia, Singapore,Thailand, Hong Kong, Korea, Japan, Mexico, Canada, Egypt, Portugal, Spain, Austria, Check Republic, Arab Emerates. * Invited presentations in Egypt, Korea, Italy and Mexico published in these languages. * Spanish Language School program, Cuernavaca, Mexico. * Twelve assignments in Egypt in 1997-2002 for ACDIVOCA, teaching farmers about animal nutrition and training ACDI staff to do the same. | |
|  | **teaching experience and related land grant affiliations:**   * Adjunct professor, Penn State. Lecture on invited basis in department of Dairy and Animal Science. * Developed Creative Seminars, a forum for teaching teachers how to teach. * Doubled student enrollment in chemistry class as teacher at Sierra Nevada College, Lake Tahoe, Nevada. (1973). * Won graduate student paper presentation contest, joint ASAS ADSA annual meetings in Blacksburg, VA. 1972. * Enrollment or employment at four Land Grant Universities: Pennsylvania, Indiana, Virginia, Nevada. | |
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| ***EDUCATION*** | * B.S., Pennsylvania State University, 1968. Animal Science. * M.S., Purdue University, 1970. Reproductive Physiology. * Ph.D., Virginia Polytechnic Institute, 1972. Ruminant Nutrition. |  |
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| ***PROFESSIONAL AFFILIATIONS*** | * American Society of Animal Science * American Dairy Science Association * American Zoo and Aquariums Association * New Mexico Cattleman’s Association * American Registry of Professional Animal Scientists (PAS, dipl ACAN) * Council for Agricultural Science and Technology * Society for Range Management * Texas Animal Nutrition Council * Alpha Zeta * Gamma Sigma Delta * Phi Sigma Society | |

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| ***EMPLOYMENT*** | **1988-Present** Galisteo Land and Livestock, Ltd. Santa Fe, New Mexico. President of own consulting business that has a base of 20-25 clients that typically pay a monthly retainer plus expenses. Half are ruminant production units in 13 states, with 100 to 5,000 head. Industrial clients are in 10 states and four foreign countries, and range in size from Fortune 500 companies to family feed mills. The longest experience is in zoo and companion animal nutrition, but certain dairy clients have employed Patton for 30 years. Usual assignments: least cost rations, design rations, train sales force, present technical seminars, design and oversee field experiments, support sales personnel remotely and on site. Occasional publications. All animal production clients are seen on a regular basis, often monthly.  **1981-1988** Chandler and Associates. Dresden, TN. Paul Chandler was the Ph.D. advisor and a professional relationship was resumed when offered partnership status in this consulting group. Effort was invested with Agricultural Software Consultants in developing the Mixit-2+ computer nutrition program, to this day second to none in field application, versatility and simplicity.  **1976-1981** Dext Company. Los Angeles, CA., Marketing Manager. Dext recycled bakery waste into animal feed with plants in Los Angeles, San Jose, New York, Chicago and Dallas. Responsible for sales and marketing of $16,000,000 annually. This tenure in the world of business for five years was tantamount to an MBA, and invaluable insight for someone trained as a scientist to the exclusion of exposure to business.  **1974-1976** Mark Morris Associates. Topeka, KS. Director of Professional Education. Primary function to ghost write publications and lectures for Dr. Mark Morris, whose family pioneered dietary management of animal disease.  **1972-1974** Theracon. Topeka, KS. Director of Research. Responsible for animal nutrition research lab of 500 dogs, 200 cats and miscellaneous monkeys, horse and gerbils. Supervised staff of six. Designed and executed numerous experiments in animal nutrition and pet food technology as well as drug efficacy experiments for FDA approval. Theracon and Mark Morris Associates were closely related and both in place to support the Prescription Diets and Science Diet that the Morris family invented.  **1972** University of Nevada. Agricultural Aid. Valley Road Experiment Station.  **1966** Double Diamond Ranch. Reno, NV. Hired Hand. Registered Angus ranch. |

***PUBLICATIONS AND ARTICLES***

Chandler, P.T., C.E. Poland and R. S. Patton. 1972. Methionine Analog and Ruminal Metabolism. J. An. Sci. 31:238.

Patton, R.S., and P.T. Chandler. 1975. In Vivo Digestibility Evaluation of Chitinous Materials, J. Dairy Sci. 58:397.

Patton, R.S., P.T. Chandler and O.G. Gonzales. 1975. Nutritive Value of Crabmeal for Young Ruminating Calves. J. Dairy Sci. 58:404.

Patton, R.S. 1975. Digestibility Studies in Polar Bears. Proceeding of the 51st Annual Conference of the American Association of Zoological Parks and Aquariums. Calgary. Alberta. Canada.

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Erb, R.E., H.A. Garverick, C.J. Calahan, R.S. Patton, and E.L. Monk. 1976 Dietary Urea for Dairy Cattle III. Effect on Ovarian Activity. Theriogenology. 5:203.

Erb, R.E., H.A. Garverick, R.S. Patton, E.L. Monk, M. Udo-aka and C.J. Calahan. 1976. Dietary Urea for Dairy Cattle IV. Effect on Reproductive Hormones. Theriogenology. 5:213.

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Morris, M.L., Jr., R.S. Patton and S.M. Teeter. 1976. Low Sodium Diet in Heart Disease. VM/SAC. 71:225.

Morris, M.L., Jr., and R.S. Patton. 1976. Diet in Renal Disease. VM/SAC. 71:773.

Morris, M.L., Jr., R.S. Patton and C. LaRue. 1976. Evaluation of a Proprietary Diet Designed as the Sole Nutrition for Exotic Birds. J. Zoo. An. Med. 4:21

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Patton, R.S. 1980. Optimizing the Use of Vitamins and Mineral Supplements. Proceedings of the First Annual Dr. Scholl Nutrition Conference. Lincoln Park Zoological Society. Chicago, IL.

Patton, R.S. 1980. The Effect of Nutrition on Reproduction in Zoo Animals, in Current Therapy in Theriogenology. D.A. Marrow, Ed.. W.B. Saunders Co. p. 1126-30.

Patton, R.S. 1987. Feeding of High Fat Rations Requires Careful Management. *Feedstuffs*, Oct. 26.

Patton, R.S. 1989. New Developments in Vitamin E Explored. *Feedstuffs*. May 24.

Patton, S., and R.S. Patton, 1990. Genetic Polymorphism of PAS-I, the Mucin-like Glycoprotein of Bovine Milk Fat Globule Membrane. J. Dairy Sci. 73:3567-3574.

Patton, R.S. 1990. Chelated Minerals: What Are They. Do They Work? *Feedstuffs*, Feb. 26.

Patton, R.S. 1992. Current Concepts of Fat and Protein Nutrition for High Producing Dairy Cows. Annual Proceedings of the Korean Society of Animal Nutrition and Feedstuffs. Seoul, Korea.

Patton, R.S. 1994. The Complexities of Soluble Carbohydrate Nutrition in Ruminants. *Feedstuffs*. Feb. 14.

Patton, R.S., and G. Poley. 1996. Understanding Energy Status of Prepartum Cow Improves. *Feedstuffs*. June 10.

Leach, G.A., and R.S. Patton. 1997. Analysis Techniques for Chelated Minerals Evaluated. *Feedstuffs*. March 31.

Nocek, J.E., and R. S. Patton. 2002. Efffect of Chelated Trace Mineral Supplementation for Inorganic sources

on Production and Health of Holstein Cows. J. Dairy Sci. 85 (Suppl):107. (Abstr.)

Patton, R.S., C.E. Sorenson, and A.R. Hippen. 2004. Effects of Dietary Glucogenic Precursors and Fat on Feed

Intake and Carbohydrate Status of Transition Cows. J. Dairy Sci. 87:2122-2129.

DeFrain, J.M., A.R. Hippen, K.F. Kalscheur, and R.S. Patton. 2005. Effect of Feeding Propionate and Calcium Salts of Long Chain Fatty Acids on Transition Dairy cow performance. J. Dairy Sci. 88:983-993.

K. J. Herrick , A. R. Hippen , K. F. Kalscheur , J. L. Anderson , S. D. Ranathunga , R. S. Patton, and M. Abdullah. 2012. Lactation performance and digestibility of forages and diets in dairy cows fed a hemicellulose extract. J. Dairy Sci. 95:3342-3353.