TEXAS STATE VITA

# Academic/Professional Background

1. Name: Carl R. Richardson Title: Professor
2. Educational Background

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| **Degree** | **Year** | **University** | **Major** | **Thesis/Dissertation** |
| Ph. D | 1976 | University of Illinois Urbana-Champaign | Ruminant Nutrition | Limiting Amino Acids in Growing Ruminants. |
| M.S. | 1973 | University of Kentucky-Lexington | Ruminant Nutrition | The Effects of Amino Acids Abomasumally Infused inGrowing Lambs. |
| B.S. | 1971 | University of Kentucky-Lexington | Agriculture/Animal Science |  |

1. University Experience

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| **Position** | **University** | **Dates** |
| Professor | Texas State University | 2006-present |
| Professor and Department Chair | Texas State University | 2006-2011 |
| Professor | Department of Animal Science Texas Tech University | 1988-2006 |
| Associate Professor | Department of Animal Science, Texas Tech University | 1981-1988 |
| Assistant Professor | Department of Animal Science Texas Tech University | 1976 -1981 |
| Postdoctoral Research Associate | Department of Animal Science University of Illinois, Urbana Champaign | April - Sept 1976 |

1. Relevant Professional Experience

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| **Position** | **Entity** | **Dates** |
| Interim Associate Dean Research | College of Agricultural Sciences & Natural Resources-Texas Tech University | Jan – Aug 1997 |
| Interim Chairperson | Department of Animal Science Texas Tech University | Jan – May 1992Sept 1995 – Jan 1996 |
| Director | Center for Feed Industry Research and Education, Texas Tech University | 1995-2006 |
| Assistant to the Vice President | Academic Affairs and Research Texas Tech University | 1984-1985 |

# TEACHING

1. Teaching Honors and Awards:
	* College of Agricultural Sciences and Natural Resources nominee for the President’s Academic Achievement Award (1999 – 2000)
	* Recognized as one of the five outstanding faculty members at Texas Tech University for 1998. Sponsored by Mortar Board and Omicron Delta Kappa
	* Outstanding Researcher Award, College of Agricultural Sciences, Texas Tech University, 1981

– 1982

1. Courses Taught:

# 2006 – present: Department of Agriculture, and Department of Agricultural Sciences at Texas State University. Taught both undergraduate and graduate courses.

* Undergraduate and Graduate Courses Taught: AG 1110 Careers in Agriculture; AG 2345 Horse Management; AG 3321 Range Management; AG 3341 Animal Health and Disease Control; AG 3325 Animal Nutrition; AG 3330 Applied Wildlife Nutrition; AG 4185 Current Problems Technical Agriculture; AG 4307 Professional Development in Agriculture; AG 4310 Internship; AG 4325 Feeds and Feeding; AG 4326 Advanced Animal Science – Ruminants; AG 4328 Advanced Animal Science – Poultry and Swine; AG 4330 Food Technology: Processing Meats; AG 5100 Professional Development; AG 5314 Problems in Technical Agriculture; AG 5360 Protein and Energy Utilization; AG 5361 Food Technology and Processing Meats; AG 5362 Minerals and Vitamins in Animal Nutrition; AG 5365 Role of Animal Science in Society; AG 5399 A & B – Thesis.

1976 – 2006: Department of Animal and Food Sciences at Texas Tech University. Taught both undergraduate and graduate courses every year.

* + Undergraduate and Graduate Courses Taught: ANSC 1101 General Animal Science Laboratory; ANSC 1201 General Animal Science; ANSC 3102 Livestock Rations; ANSC 3301 Principles of Nutrition; ANSC 3305 Applied Animal Nutrition; ANSC 3307 Feeds and Feeding; ANSC 3308 Quality Control and Management of Feed Manufacturing; ANSC 4100 Animal Science Seminar; ANSC 4301 Special Problems in Animal Science; ANSC 4303 Feed Mill Operation and Management; ANSC 4307 Animal Nutrition; ANSC 5001 Problems in Animal Science; ANSC 5100 Graduate Seminar; ANSC 5308 Minerals and Vitamins in Animal Nutrition; ANSC 5310 Advanced Quality Control and Management in Feed Manufacturing; ANSC 5311 Ruminant Nutrition; ANSC 5314 Animal Energy and Protein Utilization; ANSC 7000 Research in Animal Science; ANSC 6000 Master’s Thesis; ANSC 8000 Doctor’s Dissertation.
1. Graduate Theses/Dissertations or Exit Committees (if supervisor, please indicate):

Thesis

* Supervisor for:
	+ 39 M.S. students
	+ 11 M.Ag. students
	+ 20 Ph.D. students
* Information about graduate students supervised in animal nutrition and feed utilization:

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| **Name** | **Degree Sought** | **Degree Status** | **Research Topic** | **First Employment** |
| R. N. Beville | M.S. | Awarded, 1979 | Sunflower meal | Hi Pro Feeds, TX |
| J. M. Horton | M.S. | Awarded, 1979 | Amino acids | Ben Gay Feedyard, NM |
| R. M. Ranne | M.Ag. | Awarded, 1979 | N/A | First Nat'l Bank, Brady, TX |
| D. L. Arndt | Ph.D. | Awarded, 1980 | Low quality roughages | Ralston Purina, MO |
| D. B. McCarthy | M.S. | Awarded, 1980 | Low quality roughages | AID, Peace Corp, Africa |
| M. D. Miller | M.S. | Awarded, 1981 | Cotton by-products | Extension Service, OK |
| M. M. Owsley | M.S. | Awarded, 1982 | Grain conditioning | USDA, Athens, GA |
| G. D. Anderson | Ph.D. | Not awarded, 1982 | Starch availability | Dekalb Feeds, IL |
| L. D. Bunting | M.S. | Awarded, 1982 | Low quality roughages | Graduate School, U. of KY |
| J. M. Horton | Ph.D. | Awarded, 1983 | Calcium availability | Hi Pro Feeds, TX |
| B. F. Sullivan | M.S. | Awarded, 1984 | Whole cottonseed | Nutrition Consultant, WA |
| K. M. Edlin | M.S. | Awarded, 1984 | Ionophores | Graduate School, U. of KY |
| B. D. Clements | M.S. | Awarded, 1984 | Low grade corn | Graduate School, Texas A&M |
| M. C. Conner | Ph.D. | Awarded, 1985 | Low quality roughages | Eastman Kodak, TN |
| K. R. McLeod | M.S. | Awarded, 1987 | Grain processing | Graduate School, U of KY |
| R. L. Kennedy | M.S. | Awarded, 1987 | Silage fermentation | Hoffman, LA Roche, OK |
| C. E. Heddins | M.S. | Awarded, 1987 | Urea impregnation | Graduate School, Texas A&M |
| M. D. Miller | Ph.D. | Awarded, 1989 | Heat stress/ionophores | Purina Mills, TX |
| R. E. Castlebury | M.S. | Awarded, 1989 | Supplemental fat | Graduate School, Texas Tech |
| O. G. Krause | M.S. | Awarded, 1989 | Grain specific enzymes | Houston Zoo, TX |
| L. A. Jungen | M.S. | Not awarded, 1989 | Heat stress/thyroxine | Nursing School, Texas Tech |
| D.  A. Lomax | M.S. | Awarded, 1990 | Manganese  | Micro Chemical, TX  |
| D. W. Boyles | M.S. | Awarded, 1990 | Shipping stress | Graduate School, Texas Tech |
| K. D. Robinson | M.S. | Awarded, 1991 | Sorghum varieties  | Private Business, TX |
| J. R. Stone | M.S. | Awarded, 1991 | Low quality roughages  | Graduate School, LA State Univ.  |
| S. Demeke | N/A | N/A, had M.S. | Coffee bean pulp | N/A, Fulbright Scholar, Ethiopia  |
| P. T. Modesitt (Co-Advisor) | Ph.D. | Awarded, 1993 | In vitro fertilization  | Panhandle State Univ., OK  |
| D. W. Boyles | Ph.D. | Awarded, 1993 | Sorbitol  | Nutrition Services, TX |
| J. L. Cass | M.S. | Awarded, 1994 | Urea/calcium | Farr Better Feeds, TX  |
| R. B. Blackwood | Ph.D. | Awarded, 1994 | Grain sorghum and corn  | Lubbock Christian Univ., TX  |
| J.  B. Duggan | M.S. | Awarded, 1994 | Vitamin A | Vigortone, TX |
| K.  J. Smith | Ph.D. | Awarded, 1995 | Steam-flaking  | Purina Mills, FL  |
| L.  A. Matulka | M.Ag. |  Awarded, 1995 | N/A  | Acco Feeds, TX |
| G. V. Pollard | M.S. | Awarded, 1996 | Leucaena | Graduate School, Texas A&M  |
| T. D. Slaton | M.S. | Awarded, 1996 | RADEX | Graduate School, U. of WY  |
| S. D. Carter | M.S. | Awarded, 1996 | Chelated minerals  | Private Business, TX  |
| S. M. Swift | M.S. | Awarded, 1997 | Corn hybrids  | Evergreen Feeds, TX  |
| D. L. Holthaus | Ph.D. | Awarded, 1997 | Amino acids  | Farmland Industries, KA  |
| K. J. Sanders | Ph.D. | Awarded, 1998 | Protein/extruding  | Purina Mills, TX |
| H. H. Titi | Ph.D. | Awarded, 1998 | Fiber utilization  | Univ. of Jordan |
| G. B. Salyer | M.S. | Awarded, 1998 | Corn hybrids  | Graduate School, Texas Tech  |
| D. M. Sherwood (Co-Advisor) | M.S. | Awarded, 1998 | Extruding | Univ. of MN |
| C. P. Bowen | M.S. | Awarded, 1998  | Copper  | Microingredients, Inc., TX |
| K. W. Schuepbach | M. Ag. | Awarded, 1998 | N/A | Graduate School, Texas Tech  |
| C. L. Howard | M.S. | Awarded, 1998 | Chelated minerals | Purina Mills, TX |
| B. S. Clyburn | M.S. | Awarded, 1999 | Probiotics  | Graduate School, Texas Tech  |
| K. F. Wilson | M.S. | Awarded, 1999 | Corn hybrids | Graduate School, Texas Tech  |
| G. V. Pollard  | Ph.D. | Awarded, 2000 | Minerals | Surefed Feeds, TX |
| M. A. Johnson  | M.S. | Awarded, 2000 | Extruded feed products | Graduate School, Texas Tech |
| G. M. Abdelrahim (Co-Advisor) | Ph.D. | Awarded, 2000 | Ergot/sorghum silage | T Bone Steaks, TX |
| T. C. Bramble  | Ph.D. | Awarded, 2001 | High oil corn  | Alltech, NH |
|  K. F. Wilson | Ph.D. | Awarded, 2001 | Grain processing  | Loveland Industries, TX  |
| B. S. Clyburn | Ph.D. | Awarded, 2002 | Selenium | Gore Bros Feeds, TX  |
| W. T. Wright | M.S. | Awarded, 2002 | Cattle hides  | Gore Bros Feeds, TX  |
| M. A. Bonds | M. Ag. | Awarded, 2003 | N/A | Family Ranch, TX |
| A. Gueye | Ph.D. | Awarded, 2003 | Nitrogen/phosphorus  | Mount Ida College, MA  |
| L. L. Burnham | Ph.D. | Awarded, 2004 | Probiotics  | Natur’s Way, Inc., KS  |
| J. H. Mikus | Ph.D. | Awarded, 2004 | Sulfates/drinking water | Monsanto, TX |
| A.T. Moore | M.S. | Awarded, 2007 | Steam-flaking corn | Westway Feed Products, TX |
| C. B. Hoitt | M. Ag. | Awarded, 2015 | Biomass Utilization | Texas State University |
| S. B. Riggs | M. Ag. | Awarded, 2015 | N/A | Self-employed |
| S. P. Martinez | M. Ag. | Awarded, 2017 | Forms of Water in Beef | Food Industry |
| R. G. Coombs | M. Ag. | Awarded, 2017 | Tenderness of Beef  | Texas State University  |
| J. A. Rickman  | M. Ag. | Awarded, 2018 | N/A | University of Idaho  |
| M. S. Ramkumar | M. Ag. | Awarded, 2018 | Beef Color  | Self-employed  |
| S. N. Earley | M. Ag. | Awarded, 2018 | Tenderness of Beef  | Veterinary School, Ross University |
| K. R. Herzog | M.S. | Awarded, 2019 | Supplemental Feed  | Producers Co-Op, TX |
| F. F. Suoerga | M.S. | Awarded, 2019 | Copper | Graduate School, Canada |
| C. S. Mesquita | M.S. | Awarded, 2020 | Beef Tenderness and Color | USDA, Lexington, NE |
| B. R. Barnes  | M. S. | In Progress | In Progress |   |
| A. K. Villaneva | M. S. | In Progress | In Progress |   |

* Served on 68 other Ph.D. and M.S. Committees

Non-thesis

1. Courses Prepared and Curriculum Development:
* Developed three courses: Introductory Horse Nutrition; Feed Mill Operation and Management; and Advanced Quality Control and Management in Feed Manufacturing
* Co-developed two graduate courses taught on the Trans-Texas Videoconference Network (TTVN)
1. Funded External Teaching Grants and Contracts: None
2. Submitted, but not Funded, External Teaching Grants and Contracts: None
3. Funded Internal Teaching Grants and Contracts: None
4. Submitted, but not Funded, Internal Teaching Grants and Contracts: None
5. Other:

Faculty Advisor for Student Organizations:

* + Animal Science Club – Texas State University, 2006 – 2011
	+ Agriculture Ambassadors – Texas State University, 2006 – 2011
	+ Texas State Water Ski Team, 2008 - 2011
	+ Techsan Collegiate Cattlewomen’s Association – Founding Member and Advisor, 1995 – 2001; 2004
	+ FarmHouse Fraternity – Faculty Advisor, 1977 – 1990, 2003-2006; Texas Association President, 1978 – 1979, 1981 – 1985
	+ Block and Bridle – Faculty Advisor, 1978 – 1980

# SCHOLARLY/CREATIVE

1. Works in Print
	1. Books (if not refereed, please indicate)
		1. Scholarly Monographs:
			* Grantsmanship Information: Guidelines, Outlines, Checklists, and Indicies of Sponsored Project Funding – College of Agricultural Sciences, Texas Tech University, 1985
		2. Textbooks: None
		3. Edited Books:
			* Underutilized Resources as Animal Feedstuffs, National Academy Press,

Washington, D.C., 1983

* + 1. Chapters in Books:
			- Cattle Feeding: A Guide to Management, Trafton Printing, Inc., Amarillo, TX, 1996, 1990
		2. Creative Books: None
	1. Articles
		1. Refereed Journal Articles:
1. Abdelrahim GM; Richardson C.R.; Gueye A. (2012). Impact of ergot infested sorghum on reproductive performance of sows. 1 (1): 1–6, 2012. Journal of Animal Research and Technology
2. Richardson CR; Vattem, DA (2012) Evaluation of antibacterial effects of sodium silicate complex for potential food safety applications. 7: 191-198. J. Food Safety
3. Townsend D; White LM; DeLeon RC; Lester CE; Cisneros I; Maitin V; Richardson CR; Vattem, DA\* (2011) Evaluation of Potential Redox Modulatory and Chemotherapeutic Effects of a Proprietary Bioactive Silicate Alka-Vita™/Alka-V6™/Alkahydroxy™ (AVAH) 3(4): 5-18. Int. J. Appl. Res. Nat. Prod.
4. Townsend D; White LM; Lester CE; DeLeon RC; Cisneros I; Maitin V; Richardson CR; Vattem, DA\* (2011) Evaluation of Potential Anti-Pathogenic and Anti-Retroviral Effects of a Proprietary Bioactive Silicate Alka-Vita™/Alka-V6™/Alkahydroxy™ (AVAH) 3(4): 19-28. Int. J. Appl. Res. Nat. Prod.
5. Villalobos, C., C.M. Britton, M. Avila, C.R. Richardson, G. Holt, and G. Bezanilla. 2009. Cotton By-Products Supplementation for Steers Grazing Tobosagrass (Hilaria mutica [Buckl.] Benth.) Rangeland. Texas J. Agric. and Nat. Resources. 22:17-31.
6. Vasconcelos, J.T., K. W. McBride, A. Gueye, M.L. Galyean, N. A. Cole, C. R. Richardson, and L. W. Greene. 2007. Effects of three different concentrations of crude protein and three supplemental urea concentrations on nitrogen and phosphorus utilization by feedlot cattle. J. Anim. Sci. In Press.
7. Cole, N. A., R. N. Clark, R. W. Todd, C. R. Richardson, A. Gueye\*, L. W. Greene, and K. McBride\*. 2005. Influence of dietary crude protein concentration and source on potential ammonia emissions from beef cattle manure. J. Anim. Sci. 83:722-731.
8. Richardson, C. R. 2005. Extrusion effects on palatability and nutrition. Petfood Industry. J. Anim. Sci. April, pp. 306-315.
9. Johnson, M. A.\*, G. A. Holt, C. R. Richardson, and J. W. Laird. 2004. In-vitro and lamb digestibility of cotton gin byproduct prepared by hot starch extrusion via the COBY process. J. Bioresearch Technol. (Accepted, resubmitted).
10. Richardson, C. R. 2004. Detailed summary report on strengths and weaknesses of current measures used by the FDA in animal feed safety and needed enhancements or modifications. FDA/CVM home page [http://www.fda.gov/cvm,](http://www.fda.gov/cvm) April, pp. 1-50.
11. Richardson, C. R. 2004. Summary of the animal feed safety system (AFSS) public meeting, September 23-24, 2003. FDA/CVM home page [http://www.fda.gov/cvm,](http://www.fda.gov/cvm) April, p 1-15.
12. Richardson, C. R. 2004. FDA feed manufacturing short course. 2004. FDA/CVM home page [http://www.fda.gov/cvm,](http://www.fda.gov/cvm) April, pp 1-62.
13. Richardson, C. R. and J. H. Mikus. 2004. Ingredient processing innovations: mineral chelation, vitamin encapsulation and increasing starch utilization. Petfood Industry J., May, pp 27-29.
14. Richardson, C. R., G. A. Nunnery, D. B. Wester, N. A. Cole, and M. L. Galyean. 2004. Power of test considerations for beef cattle experiments: A review. J. Anim. Sci. 82:E214- 222E.
15. Thiex, N., and C. R. Richardson. 2003. Challenges in measuring moisture content of feeds. J. Anim. Sci. 81:3255-3266.
16. Holt, G. A.\*, C. R. Richardson, G. A. Nunnery, K. F. Wilson, T. C. Bramble, L. D. Rea, and T. C. Wedegaertner. 2003. Performance of growing heifers fed diets containing cotton gin by-product extruded by the COBY process. The Prof. Anim. Scientist. 19:404-409.
17. Pollard, G. V.\*, C. R. Richardson, and T. P. Karnezos. 2002. Effects of organic chromium on growth, efficiency and carcass characteristics of feedlot steers. J. Anim. Feed Sci. and Technol. 98:121-128.
18. Clyburn, B. S.\*, C. R. Richardson, J. L. Montgomery, G. V. Pollard, A. D. Herring, and M. F. Miller. 2001. Effect of selenium source and vitamin E level on performance and meat quality of feedlot steers. In: Science and Technology in the Feed Industry, NGII OAX, United Kingdom, pp. 377-392.
19. Pollard, G. V.\*, J. L. Montgomery, T. C. Bramble, K. J. Morrow, C. R. Richardson, S. P. Jackson, and J. R. Blanton. 2001. Effects of organic chromium on protein synthesis and glucose uptake in ruminants. The Prof. Anim. Scientist. 17:261-266.
20. Richardson, C. R., B. D. Clements\*, and G. V. Pollard. 2001. Nutritional evaluations of low- grade corn for ruminants. Texas J. Agric. and Nat. Resources. 14:96-103.
21. Clyburn, B. S.\*, C. R. Richardson, M. F. Miller, C. E. Cloud, J. H. Mikus, and G. V. Pollard. 2000. Vitamin E levels and selenium form: effects on beef cattle performance and meat quality. In: Biotechnology in the Feed Industry, NGII OAX, United Kingdom, pp. 197-203.
22. Defoor, P. J.\*, M. L. Galyean, N. A. Cole, and O. R. Jones. 2000. Effects of planting density and processing method on laboratory characteristics of grain sorghum for ruminants. J. Anim. Sci. 78:2032-2038. (C. R. Richardson of CFIRE/Texas Tech University acknowledged for providing facilities and help with steam flaking the grains).
23. Herring, A. D., M. B. Larremore\*, L. J. Hughes, and C. R. Richardson. 2000. Effects of a commercial direct-fed microbial on weight change, milk yield, and milk composition of lactating beef cows: A case study. The Prof. Anim. Scientist. 16:54-58.
24. Herring, A. D., M. B. Larremore\*, K. J. Sanders\*, C. R. Richardson, and L. J. Hughes. 1999. Observations of milk production and weight change in beef cows fed extruded cottonseed. Texas J. of Agric. and Nat. Resources. 12:1-6.
25. LaCasha, P. A.\*, H. A. Brady, V. G. Allen, C. R. Richardson, and K. R. Pond. 1999. Voluntary intake, digestibility and selection of Matua bromegrass, Coastal bermudagrass, and alfalfa hay by yearling horses. J. Anim. Sci. 77:2766-2773.
26. Pollard, G. V.\*, and C. R. Richardson. 1999. Effects of Bio-chrome (Co-factor III) on growth, efficiency and carcass characteristics of feedlot steers. Pages 103-109 in The Feed Industry in the New Millennium, NG II OAX, United Kingdom.
27. Richardson, C. R. 1996. Feedmill operation, feed handling, processing and good manufacturing practices. In: Cattle Feeding: A Guide to Management. Trafton Printing. Inc., Amarillo, TX, 16 p.
28. Richardson, C. R. 1996. Non-traditional crops and other oilseed meals. Proc. Midwest Feeds Consortium Workshop, Des Moines, A, J. World Aquaculture, 13 p.
29. Richardson, C. R. 1996. Quality control in feed production. Proc. 1996 Mid-South Ruminant Nutrition Conference, Dallas, TX, pp. 1-5.
30. Richardson, C. R. 1995. Practical uses of enzymes to improve nutrient availability. Proc. Nutrition Institute, Technology for the 21st Century, Amer. Feed Industry Assn., St. Louis, Mo, 16 p.
31. Richardson, C. R. 1994. Feedmill operation, feed handling, processing and good manufacturing practices. Proc. 1994 International Feedlot Production Seminar, Monterrey, Mexico, Chapter 11, 15 p.
32. Modesitt, P. T.\*, C. R. Richardson, S. P. Jackson, J. L. Pipkin, and J. R. Clark. 1994. Reproductive and hematological effects of feeding diets containing gossypol to mature ewes. Texas J. Agric. and Nat. Resources. 7:1-11.
33. Richardson, C. R. 1994. Processing of grain sorghum for animal feeding. Proc. Sorghum Conference for Mexico, Zacatecas, Mexico, pp. 55-65.
34. Boyles, D. W.\*, C. R. Richardson, K. D. Robinson\*, and C. W. Cobb. 1992. Feedlot performance of steers fed steam-flaked grain sorghum with added enzymes. Proc. Western Sect. Amer. Soc. of Anim. Sci. 43: 502-505.
35. Richardson, C. R. 1990. Feedmill operation, feed handling, processing and good manufacturing practices. In: Cattle Feeding: A Guide to Management. Trafton Printing, Inc., Amarillo, TX., 16 p.
36. Deetz, L. E., M. C. Conner\*, J. A. Rogers, A. M. Papas, and C. R. Richardson. 1990. Performance of steers fed combinations of calcium salts of branched and unbranched fatty acids. J. Anim Feed Sci. and Technol. 31: 293-303.
37. Eck, T. P.\*, S. J. Bartle, R. L. Preston, R. T. Brandt, Jr., and C. R. Richardson. 1988. Protein source and level for incoming cattle. J. Anim. Sci. 66:1871-1876.
38. Bunting, L. D.\*, D. B. McCarthy\*, C. R. Richardson, and R. W. Tock. 1988. Pilot plant production of sulfur dioxide-treated mesquite wood. II. Digestibility and feedlot performance by lambs. J. Anim. Feed Sci. and Technol. 22:61-68.
39. Miller, M. D., C. R. Richardson, D. B. McCarthy\*, L. D. Bunting\*, and D. F. Buddingh. 1988. Ruminant fiber value of cotton linters and effect of digestibility and feedlot performance by lambs. Texas J. Agric. and Nat. Resources. 2:45-47.
40. Richardson, C. R., K. R. McLeod\*, and D. G. Lust\*. 1987. Utilization of fermented cattle packing plant paunch material by ruminants. Proc. 1987 Food Processing Waste Conf., Session 10-By-Product Utilization, 13 p.
41. Conner, M. C.\*, and C. R. Richardson. 1987. Utilization of cotton plant residues by ruminants. (Symposium on “Crop Residues in Beef Production Systems”). J. Anim. Sci. 65:1131-1138.
42. Tock, R. W., R. S. J. Chen\*, and C. R. Richardson. 1987. Synthesis of polymer structures from lignocellulose feedstocks. J. Chem. Engr. Comm. 359-86:1-23.
43. Bransby, D. I., A. G. Matches, and C. R. Richardson. 1986. Yield and morphological responses of a forage sorghum to Mefluidide. J. Grassl. Soc. Sth. Afr. 3, 2:47-51.
44. Arndt, D. L.\*, and C. R. Richardson. 1985. Effects of sodium hydroxide, monensin and pH on rumen turnover rate of cotton plant by-product by lambs. J. Nutr. Rep. Int’l. 31:687-694.
45. Deetz, L. E., C. R. Richardson, R. H. Pritchard, and R. L. Preston. 1985. Feedlot performance and carcass characteristics of steers fed diets containing ammonium salts of the branched-chain fatty acids and valeric acid. J. Anim. Sci. 61:1539-1549.
46. Bunting, L .D.\*, C. R. Richardson, and R. W. Tock. 1984. Digestibility of ozone treated sorghum stover by ruminants. J. Agr. Sci. 102-747-750.
47. Arndt, D. L.\*, and C. R. Richardson, 1982. Digestibility by lambs and performance of lambs and steers fed sodium hydroxide-treated cotton plant by-product. J. Anim. Sci. 54:377-383.
48. Tock, R. W., C. R. Richardson, I. Gancarz\*, J. Chang\*, and M. R. Owsley\*. 1982. Ruminant rations from mesquite biomass pretreated with water and ozone. J. Ind. Eng. Chem. 21:101-106.
49. Richardson, C. R., L. D. Bunting\*, M. R. Owsley\*, and L. B. Sherrod. 1982. Evaluation of mesquite for ruminants – effects of chemical pre-treatments on in vitro dry matter digestibility. Proc. Mesquite Utilization Symp., Texas Tech Univ. Library of Congress Card No. 82-73417, pp. H1-7.
50. Richardson , C. R., L. D. Bunting\*, M. R. Owsley\*, and D. B. McCarthy\*. 1982. Ozone and sulfur dioxide treated mesquite as feed for ruminants. Proc. Mesquite Utilization Symp., Texas Tech Univ. Library of Congress Card No. 82-73417, pp. I1-7.
51. Horton, J. M.\*, D. P. Hutcheson, C. R. Richardson, and W. L. Meis. 1982. The effects of grain processing and calcium source and level on finishing steer performance. Proc. Western Section Amer. Soc. of Anim. Sci., New Mexico State Univ., pp. 49-52.
52. Richardson, C. R., R. N. Beville\*, R. K. Ratcliff, and R. C. Albin. 1981. Sunflower meal as a protein supplement for growing ruminants. J. Anim. Sci. 53:557-563.
53. Arndt, D. L.\*, C. R. Richardson, R. C. Albin, and L. B. Sherrod. 1980. Digestibility of chemically treated cotton plant by-product and the effect on mineral balance, urine volume and pH. J. Anim. Sci. 51:215-223.
54. Richardson, C. R., R. C. Albin, R. N. Belville\*, and R. K. Ratcliff\*. 1978. Nutritional value of sunflower meal as a protein supplement for growing ruminants. Proc. 8th Int’l Sunflower Conf. pp. 576-584.
55. Richardson, C. R., and E. E. Hatfield. 1978. The limiting amino acids in growing cattle. J. Anim. Sci. 46:740-745.
56. Richardson, C. R., E. E. Hatfield, and D. H. Baker. 1976. Efficacy of orally administered N- hydroxymethyl-DL-methionine (Ca) as a source of methionine for ruminants. J. Nutr. Rep. Int’l. 13:291-298.
	* 1. Non-refereed Articles: None
	1. Conference Proceedings:
		1. Refereed Conference Proceedings:
57. Richardson, C. R. 2005. Extrusion effects on palatability and nutrition. Pet Food Forum, Chicago, IL, April 12-13.
58. Richardson, C. R. 2004. Managing integrity of feed ingredients in the cattle industry. Colorado Nutrition Roundtable, Fort Collins, CO., September 23.
59. Richardson, C. R., M. A. Bonds, D. C. Shelby, J. H. Mikus, and G. A. Nunnery. 2004. Nutritional and production influences on hide quality of cattle. Amer. Leather Chemists Assn., St. Louis, MO. June 16-20.
60. Richardson, C. R. and J. H. Mikus. 2004. Ingredient innovations: mineral chelation, vitamin encapsulation and increasing starch utilization. Pet Food Forum, Chicago, IL, March 29-30.
61. Richardson, C. R., G. A. Nunnery, D. B. Wester, N. A. Cole, and M. L. Galyean. 2003. Power of the test considerations for beef cattle experiments. Contemporary Issues Symposium: Designing Animal Experiments for Power. Amer. Soc. of Anim. Sci. Joint Annual Meeting, Phoenix, AZ, June 26.
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342. Cotton Gin Trash Equals Corn Silage for Sheep Roughage. Stockman. August 1979.
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349. Richardson Completes Experiment with Gin Trash. University Daily. June 21. 1978.
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352. The Untapped Roughage Supply. Practical chemical treatments can turn cornstalks and gin trash into first-class feedstuffs. Beef Magazine. October 1978.
353. Works not in Print
	1. Papers Presented at Professional Meetings: Listed under Conference Proceedings and Abstracts (Sections 3a, 3b, and 4)
	2. Invited Talks, Lectures, Presentations:
* Presented an invited paper on Good Manufacturing Practices and Hazard Analysis Critical Control Point at a Moroccan Feed Conference, Casablanca, Morocco (March 19, 2007)
* Presented an invited paper on Grain Processing Fundamentals and Effects on Feeding Value for Cattle at AGP Dairy Outlook Conference, Clovis, NM (December 14, 2006)
* Presented two invited papers: Grain Processing Techniques/What’s Best for Your Feedlot; and Feed Mixing and Distribution Systems at the 2001 Australian Lot Feeders Association Conference at Toowoomba (October 2 – 3, 2001).
* Presented an invited paper on Vitamin E Levels and Selenium Form and Their Effects on Beef Cattle Performance and on Meat Quality at the Alltech Selenium Conference at Dunboyne, Co. Meath, Ireland (October 18-19, 2000)
* Presented an invited paper on the Importance of Particle Size on Feed Quality at the 1999 Taiwan Feed Technology Short Course at Taichung, Taiwan (May 27, 1999).
* Presented an invited paper on Sorghum Processing and Its Application in Animal Nutrition at Guadalajara, Mexico (May 21-22, 1998)
* Presented an invited paper on the Utilization of Steam-Flaked Grain Sorghum and Corn at the National Grain Sorghum Producers Utilization Research Symposium at Zacatecas, Mexico (June 26-29, 1994)
* Presented an invited paper on Feed Mill Operation and Management at the International Beef Symposium at Monterrey, Mexico (May 25-27, 1994)
	1. Consultancies:
* Beef Cattle Nutrition and Feed Mill Technology Consultant
* Consultant for the U.S. Food and Drug Administration (FDA), Center for Veterinary Medicine, in the area of Feed Manufacturing and Good Manufacturing Practices, 1991 **–** 2007; Feed Safety, September 2003 **–** 2007
	1. Workshops:
* Co-developer and coordinator for a Moroccan Beef Feedlot and Slaughterhouse Study Tour at Texas State Univ. (October 26-November 1, 2008)
* Co-developer and coordinator for a Moroccan Beef Feedlot Study Tour at Texas State Univ. (October 14-20, 2007)
* Workshops: Developed and coordinated feed mill management workshops in cooperation with U.S. Feed Grain Council
1. 1999: 13 registrants; China; total fee – $2,000
2. 1999: 13 registrants; Morocco; total fee – $2,000
3. 1995: 3 registrants; Pakistan; total fee – $3,000
4. 1989: 13 registrants; Korea; sponsored by the U.S. Feed Grains Council
5. 1988: 11 registrants; Japan; sponsored by the U.S. Feed Grains Council
6. 1986: 7 registrants; Bulgaria; total fee – $2,000
7. 1985: 6 registrants; Mexico; total fee – $2,000
8. 1983: 5 registrants; Peoples Republic of China; total fee – $3,000
9. 1981: 14 registrants; Japan; total fee – $5,000
	1. Other:

Pelleting Training Course: developed and coordinated two pelleting training courses in cooperation with Westway Feed Products

* 2005: 30 registrants, registration fee – $150.00 per person

Safety Short Courses: Developed and coordinated 4 feedyard feedmill safety short courses in cooperation with the Texas Cattle Feeders Association and Kansas State Univ. Grain Sciences Dept.

* 1999 (February): 29 registrants; registration fee – $75.00 per person
* 1999 (July): 17 registrants; registration fee – $75.00 per person
* 1998 (March): 28 registrants; registration fee – $75.00 per person
* 1998 (July): 25 registrants; registration fee – $75.00 per person

Seminars: Developed and coordinated 10 feed mill management seminars in cooperation with the Texas Cattle Feeders Assn.

* 2003: 52 registrants; registration fee – $60.00 per person
* 1997: 110 registrants; registration fee – $30.00 per person
* 1993: 82 registrants; registration fee – $30.00 per person
* 1989: 85 registrants; registration fee – $30.00 per person
* 1988: 116 registrants; registration fee – $30.00 per person
* 1987: 111 registrants; registration fee – $30.00 per person
* 1986: 41 registrants; registration fee – $30.00 per person
* 1985: 75 registrants; registration fee – $30.00 per person
* 1983: 53 registrants; registration fee – $25.00 per person
* 1979: 119 registrants; registration fee – $25.00 per person

Mycotoxin Short Course: 1996; 13 registrants; 2 states, registration fee – $40.00 per person

Conducted two five-day short courses in mainland China on feed manufacturing and technology as related to the production of premixes and concentrates (Sept 4-25, 1987)

* Nanjing – 32 people attended the short course from feed manufacturing and animal feeding areas.
* Shenyang – 75 people attended the short course from feed manufacturing and animal feeding areas.
1. Grants and Contracts
	1. Funded External Grants, Contracts, and Donations:

# 2020 Applied Applications of Mule Deer Nutrition in Texas. College of Applied Arts, Undergraduate Learning Communities Grant ($5,000)

# 2016 "Farm In A Box" Research and Development Project. McCoy's Building Supply ($10,000) 2016 BGREEN Floating Gardens - College of Applied Arts ($4,000)

2011-2015 BGREEN- Building a Regional Energy and Educational Network. USDA ($480,000) 2009 **Anti**-metastatic and anti-retroviral in vivo testing of Alkahydroxy/ ALKA-V6. Cisne Enterprises, Inc. ($200,000.00)

# 2009 Donation for wildlife feed research and education ($25,000)

2009 Donation for wildlife management/nutrition and supplemental feeding ($10,000.00) 2008 ALKA VITA Testing. Cisne Enterprises, Inc. ($88,500.00)

# 2007 Determination of the consumption rate of a free choice Fenbendazole medicated Type-C liquid feed by pasture cattle. Intervet, Inc. ($4,604.50, settlement after sponsor terminated the experiment)

2005 GRO-TEC yeast supplementation in a commercial dairy lactation ration. GRO-TEC, Inc., Modoc, Indiana. ($13,340.00)

Effects of sorghum distillers grain on performance and condition score of lactating dairy cows. USDA/ARS, Bushland, TX. ($38,682.00)

2003 Biological evaluations of chelated zinc (Valumin ZN). Trouw Nutrition, Highland, IL. ($14,000.00)

In vitro evaluation of sorghum based distillers grains, and use in rations for transition cows and/or replacement heifers. USDA/ARS, Bushland, TX. ($15,000.00)

Measurement of cattle management, breed, and source factors that reduce hide quality. Texas Tech Leather Institute. ($20,000.00)

2002 Measurement of cattle management, nutrition, breed, and source factors that reduce hide quality. Texas Tech Leather Institute. ($25,000.00)

Utilization of Birdsong peanut hulls in beef and swine diets. Birdsong Corporation, Gorman, TX. ($4,000.00)

2001 Formation of a feed information service. USDA/ARS, Section 224, Bushland, TX. ($170,000.00)

Nitrogen and phosphorus balance in cattle… USDA/ARS, Section 224, Bushland, TX, ($35,000.00)

Improving nitrogen movement through beef feedlots. USDA/CREES, Texas A&M Experiment Station, Amarillo, TX. ($53,330.00)

2000 Extruded cotton gin trash and whole cottonseed for transition cows and replacement heifers. Cotton Incorporated, Raleigh, NC. ($12,000.00)

COBY processed byproducts with a feed grade enzyme. Loveland Industries, Greeley, CO. ($8,000.00)

Cattle Management Factors, Breed and Source that Cause Hide Defects. Texas Tech Leather Institute. ($20,000.00)

COBY processed cotton byproducts with a source of slow release urea. Nutri Source, Lamesa, TX. ($4,000.00)

Nutritional value of sunflower meal. National Cottonseed Products Association. Memphis, TN. ($6,526.00)

1999 Effects of Avala-4 on Sulfate Metabolism in Beef Cattle Consuming Water High in Dissolved Solids. Zinpro Corporation, Eden Prairie, NM ($12,000.00)

1998 Effects of corn hybrid and geographic location on nutritional value and steam flaking characteristics. Texas Corn Producers Board, Dimmitt, TX. ($10,000.00)

Effects of corn hybrid and geographic location on nutritional value and steam flaking characteristics. Optimum Quality Grains, Des Moines, IA. ($20,000.00)

Utilization of Jerusalem Artichoke flour by growing beef steers. Sweetner, Inc., Fargo, ND. ($5,000.00)

Effects of Multiple Stabilized Enzymes (MSE) on growth of nursery and growing pigs. Natur’s Way, Inc., Horton, KS. ($15,000.00)

Effects of organic selenium on growth and carcass composition of growing/finishing steers. Alltech, Inc., Nicholasville, KY. ($18,500.00)

1997 Effects of Multiple Stabilized Enzyme (MSE) on performance of steers during backgrounding and growing/finishing. Natur’s Way, Inc. Horton, KS. ($15,003.68)

Effects of Bio-Chrome (Co-Factor III) on growth, efficiency and carcass characteristics of feedlot steers. Alltech, Inc., Nicholasville, KY. ($18,051.50)

Steam flaking characteristics and nutritional value of different hybrids of corn. Optimum Quality Grains. Des Moines, IA. ($19,400.00)

Effects of corn hybrid and geographic location on nutritional value and steam flaking characteristics. Texas Corn Producers Board, Dimmitt, TX. ($10,000.00)

Effects of fibrolytic enzyme supplementation to steers fed different roughage levels. Loveland Industries, Greely, CO. ($28,250.50)

Utilization of copper proteinate and copper sulfate by growing steers. Zinpro Corporation, Eden Prairie, MN. ($10,000.00)

1996 Effects of clinoptilolite on performance and carcass characteristics of steers. II. Laboratory evaluations. ZO Mines, San Antonio, TX. ($19,193.60)

Effects of an antioxidant in beef feedlot diets on intake and performance. Kemin Industries, Des Moines, IA. ($9,356.80)

The effects of corn hybrids on flaking characteristics, nutritional value and starch retrogradation. Pioneer Hi Bred International, Des Moines, IA. ($5,000.00)

Effects of processing on the digestibility of amino acids in corn hybrids. Pioneer Hi Bred International, Des Moines, IA. ($5,700.00)

Effects of location on steam-flaking characteristics and nutritional value of different hybrids of corn. Pioneer Hi Bred International, Des Moines, IA. ($15,000.00)

Insta-Pro Model 2000R Extruder. Triple “F”, Des Moines, IA. ($51,390.00)

1995 Steam flaking characteristics and nutritional value of different varieties of grain sorghum and corn. Pioneer Hi Bred International, Des Moines, IA. ($15,000.00)

Detailed, replicated steam-flaking runs to determine processing differences and nutrient availability differences among grain sorghum varieties (Continued collaborative research with Lloyd W. Rooney). Texas Grain Sorghum Producers Board, Abernathy, TX. ($14,104.75)

Effects of RADEX on apparent digestibility and nitrogen utilization by steers fed a cotton gin trash based diet. Purina Mills, St. Louis, MO. ($6,125.00)

Laboratory evaluations of Zeobrite-40. Zeotech Corporation, Albuquerque, NM. ($1,300.00)

Evaluation of pelleting aids. PM Ag Products, Cedar Rapids, IA. ($1,530.00)

1994 Leucaena as an alternative roughage source for lactating dairy cows: Production, yield, and storage of irrigated leucaena silage. New Agra Corporation, Corpus Christi, TX. ($59,100.00)

Laboratory evaluations of UroPro (Research Code Name). PM Ag products Cedar Rapids, IA. ($3,000.00)

Laboratory evaluations of zeolites. Zeotech Corporation, Albuquerque, NM. ($1,040.00)

Laboratory evaluations of zeolite materials for Cycletrol. ZEO, Inc., Denver, CO. ($2,000.00)

Dose response of peroxide levels on dry matter digestibility. Kemin Industries, Des Moines, IA. ($2,698.40)

1993 Laboratory evaluations on urea/calcium compounds. Holladay and Holladay, Lamesa, TX. ($2,400.00)

Evaluation of urea/calcium compounds for ruminant feeding. Holladay and Holladay, Lamesa, TX. ($5,512.00)

Urea calcium compound (23-0-0-7) as a supplemental source of crude protein and calcium for feedlot cattle. Holladay and Holladay, Lamesa, TX. ($11,704.88)

Comparison of liquid range feed supplements. Nutrition Service Associates, Hereford, TX. ($1,260.00)

Evaluation of handling and mixing characteristics of Tolk Station mineral source for use in animal feeds. Southwestern Public Service, Amarillo, TX ($5,266.40)

Laboratory evaluations of zeobrite-40. Zeotech Corporation, Albuquerque, NM. ($1,984.00)

Upgrade of laboratory steam flaking unit: Detailed, replicated steam flaking runs. Texas Grain Sorghum Producers Board, Abernathy, TX. ($8,796.00)

1992 Effect of sorbitol on feedlot performance and carcass characteristics of steers fed a steam- flaked grain sorghum based diet. Roquette FERES, Gurnee, IL. ($18,224.00)

Nutritional feeding value of selected grain sorghum varieties. Texas Grain Sorghum Producers Board, Abernathy, TX. ($13,664.00)

Improving the market share of grain sorghum for cattle feeding. Texas Grain Sorghum Producers Board, Abernathy, TX. ($3,675.00)

Effects of steam-flaked grain sorghum vs. corn based finishing diets with 0,2 and 4% added fat on steer performance and carcass grade and yield. Texas Grain Sorghum Producers Board, Abernathy, TX. ($22,083.60)

Evaluation of oxidized fat sources on in vitro digestibility of feedlot diets. Kemin Industries, Des Moines, IA. ($2,000.00)

1991 Feedlot performance of steers fed steam-flaked grain sorghum with added enzymes.

Loveland Industries, Greeley, CO; and Texas Grain Sorghum Producer Board, Abernathy, TX. ($20,878.20)

1990 Effects of steam-flaked grain sorghum vs. corn based finishing diets with and without added fat on cattle performance, carcass characteristics, and chemical and organoleptic properties of beef. Texas Grain Sorghum Producers Board, Abernathy, TX. ($24,785.60)

Laboratory steam-flaking unit: Effects of grain sorghum varieties, moisture, temperature and flake density on starch availability, Texas Grain Sorghum Producers Board, Abernathy, TX. ($13,200.00)

1989 Utilization of mixed-oxidant predigested cotton gin trash by steers. Biolytic technologies, Roundrock, TX. ($40,000.00)

Effects of magnesium-calcium hydroxide and sodium bicarbonate on rumen functions. Nutrition Service Associates, Hereford, TX. ($7,025.00)

Utilization of steam flaked grain sorghum with added enzyme mixture. Creative Research Lab, Fremont, NE. ($5,020.00)

Laboratory evaluation of electrically charged ground limestone. Aerion Industries, Amarillo, TX. ($1,658.00)

Feeding efficiency of Group II sorghum in broiler diets. USDA/APHIS/ADC. Denver, CO. ($1,500.00)

1988 Cotton gin trash chemically processed with a combination of hydrogen peroxide and sodium hydroxide as a feedstuff for ruminants. FMC Corporation. ($15,000.00)

Desirability and feasibility of manufacturing chelated minerals. Nutrition Service Associates, Hereford, TX. ($6,808.00)

Effects of fat source and supplementation level on dietary energy and protein utilization. Amarillo By-Products, Amarillo, TX. ($5,000.00)

Starch availability of steam flaked corn and grain sorghum chemically conditioned with APSA-80. Amway Corporation, Ada, MI. ($2,688.00)

Nutritional evaluation of ozonated dicot lignocelluloses and their use as silage additions. BARD, Bet Dagan, Israel. ($150,000.00)

1987 Effects of potassium: sodium ratios and lasalocid on respiratory exchange/feedlot bloat in heat stressed cattle. Hoffmann-La Roche Inc., Nutley, NJ. ($12,227.00)

Effects of added enzyme mixtures on the utilization of corn, wheat, sorghum and barley grains. Creative Research Lab, Fremont, NE ($1,630.00)

Performance of steers fed grain sorghum with added enzymes, Creative Research Lab, Fremont, NE. ($14,229.00)

1986 Utilization of fermented cattle packing plant paunch material by ruminants. Bioferm Central, Inc., Northbrook, IL. ($5,000.00)

Effects of added enzyme mixtures on the digestibility and utilization of corn and grain sorghum. Creative Research Lab, Fremont, NE. ($1,000.00)

Effect of calcium salts of volatile fatty acids (CS-VFA) on performance of finishing cattle. Eastman Kodak Chemicals Division, Kingsport, TN. ($50,000.00)

1985 Digestibility and shrink of alfalfa and corn silages treated with BioPower silage inoculant: Effects of Lactobacillus feed additive on growth of growing cattle. Bio Techniques Laboratories, Inc., Redmond, WA. ($26,880.00)

Mefluidide effects on growth, composition and quality of forage and pasture sorghums. Minnesota Mining and Manufacturing Co. (3M). St. Paul, MN. Interdepartmental projects with the Dept. of Plant and Soil Science. ($5,000.00)

Utilization of sorghum and corn grains impregnated with dry urea. Seed Technology of Texas. Lubbock, TX. ($6,500.00)

1984 Moisture uptake and starch digestibility of corn and grain sorghum treated with Temper.

Carnation CO. Milling Division. Fresno, CA. ($7,500.00)

Moisture uptake and starch digestibility of corn and grain sorghum treated with E-Z Flake. Loveland Industries, Inc., Loveland, CO ($7,500.00)

The effects of chemical grain conditioning on feed mill energy usage. Center for Energy Research. One-half matching funds for energy research on grain processing. ($7,500.00)

1983 Mefluidide effects on growth, composition and quality of forage and pasture sorghums. Minnesota Mining and Manufacturing Co. (3M). St. Paul, MN. Interdepartmental project with the Department of Plant and Soil Science. ($5,000.00)

Feedlot performance of steers fed a growing-finishing diet with alfalfa and CalFeed protein meal. Thermonetics, Inc. Oklahoma City, OK. ($10,000.00)

Intermittent feeding of Bovatec or Tylan to finishing steers. Hoffmann-La Roche Inc. Nutley, NJ. ($10,000.00)

1982 Digestibility and metabolism of Cal II by growing wethers. Thermonetics, Inc. Oklahoma City, OK. ($5,000.00)

Mefluidide effects on growth, composition and quality of forage and pasture sorghums. Minnesota Mining and Manufacturing Co. (3M). St. Paul, MN. Interdepartmental project with the Department of plant and Soil Science. ($3,973.00)

Responses of beef cattle to the AS-VFA blend. Eastman Kodak Chemicals Division. Rochester, NY. ($16,500.00)

Nutritional value of different grades of corn, milo and wheat. Texas Grain and Feed Association. Fort Worth, TX. ($10,000.00)

In vitro evaluation of urea incorporated whole processed sorghum and corn. Seed Technology of Texas, Ltd. Lubbock, TX. ($1,000.00)

The effects of chemical grain conditioning on feed mill energy usage. Center for Energy Research. One-half matching funds for energy research on grain processing. ($8,200.00)

1981 Absorption and adsorption of Compen in feed mixtures. Allied Chemical. Omaha, NE. ($4,330.00)

Enzymes plus a surfactant as grain conditioners. Creative Research Lab. Hereford, TX. ($500.00)

1980 Effects of mechanical processing, alkali treatment and moisture level on nutrient

availability of sorghum fed to feedlot cattle. Texas Cattle Feeder’s Association. Amarillo, TX. ($1,760.00)

Temper, Per-Me-8 and water as grain conditioners. Albers Milling Co. Fresno, CA. ($2,482.00)

By-product fuel grade ethanol from grain and cotton gin residue. TENRAC. Transfer from 22-E227-200000. ($19,204.00)

Pelleted whole cottonseed as a source of protein, energy and fiber for cattle. Cotton Incorporated. Raleigh, NC. ($9,800.00)

The effects of processing method, treatment with wetting agents, and moisture level on the nutrient availability of grain sorghum fed to cattle and sheep. Houston Livestock Show and Rodeo. Houston, TX. ($6,500.00)

Enzymes plus a surfactant as grain conditioners. Creative Research Lab. Hereford, TX. ($500.00)

An evaluation of energy efficiency in making grain sorghum nutrients available to ruminants. Center for Energy Research. One-half matching funds for energy research on grain processing. ($5,371.00)

1979 Efficacy of feeding sodium hydroxide treated cotton gin waste to growing steers. Dow Chemical. Midland, MI. ($17,829.00)

Efficacy of feeding hydrolyzed cotton linters and cottonseed hulls vs. corn silage. Cotton, Inc. Raleigh, NC. ($9,300.00)

Digestibility of Cotton, Inc. treated gin trash. Cotton, Inc. Raleigh, NC. ($4,000.00)

Effects of chemical treatment of sorghum grain. Houston Livestock Show and Rodeo. Houston, TX. ($9,400.00)

Effects of supplementing feedlot cattle diets with protected methionine. Degussa Corp. Teteboro, NJ. ($8,250.00)

Pelleting efficiency, pellet durability. Nutri-Binder. Lubbock, TX. ($1,000.00)

1977 Effects of supplementing ruminant diets with protected amino acids. Degussa Corp.

Teterboro, NJ. ($8,250.00)

Efficacy of feeding formaldehyde treated soybean meal to growing lambs. Hubbard Milling Co. Mankato, MN. ($2,250.00)

Efficacy of feeding formaldehyde treated soybean meal to growing steers. Hubbard Milling Co. Mankato, MN. ($8,250.00)

Effects of sodium hydroxide treatment and mechanical processing on the utilization of cotton gin trash. Dow Chemical. Midland, MI. ($7,881.00)

Effects of feeding sodium hydroxide treated and pelleted cotton gin trash vs. corn silage. Houston Livestock Show and Rodeo. Houston, TX. ($10,283.00)

Digestibility of Cotton, Inc. processed cotton gin trash. Cotton, Inc. Raleigh, NC. ($4,000.00)

* 1. Submitted, but not Funded, External Grants and Contracts:

Cooperative agreements for implementation of the national animal identification system (NAIS) through outreach and education, USDA, 2008

* 1. Funded Internal Grants and Contracts: None
	2. Submitted, but not Funded, Internal Grants and Contracts: None
1. Fellowships, Awards, Honors:
* Recognized during faculty recognition week as a teacher who is the apple of your eye. “Apple Shine ‘79”. Sponsored by Mortar Board and Omicron Delta Kappa (highest student selected honor on campus)
* Outstanding Young Men of America – 1979, 1981, and 1983
* Who’s Who in Science – 1984
* Citizenship Award – Highest award given to a graduating high school senior on the basis of overall performance and character. Voted by the faculty from a class of 128 graduating seniors
* Keenland Scholarship (Keenland Association, Lexington, Kentucky)
* Scholarship – Junior College
* Dean’s List
* Officer in the U.S. Army
* National Honor Society – High School
* Journalism Award – High School
* FFA Chapter Star Farmer – High School
* Editor of High School paper
* Alpha Zeta
* Sigma XI
* Gamma Sigma Delta
* American Registry of Outstanding Professionals
* American Men and Women of Science
* Who’s Who in American Colleges and Universities

# SERVICE

1. University
	* Selected by the University to represent Texas State University on the Texas Higher Education Board to develop a Field of Study (FOS) in Animal Science, 2019 – present
	* Faculty Grievance Panel, 2017
	* Member of the Texas State Univ. IACUC Committee, 2006 – 2011
	* Member of the Texas State Univ. Freeman Ranch Working Committee, 2006 – 2011
	* Represent the Department and University at AASCARR Annual Conferences, 2006 – 2011
	* One of the key FarmHouse Fraternity alumni to help organize and establish the Texas Tech FarmHouse Chapter and Texas Association
	* Graduate Faculty, 1976 – present
	* Academic Publications Policy Committee, 1981 – 1983
	* Graduate Advisor, Department of Animal Science, 1982 – 1993 and 1995 – 1998
	* Developed and published a new Departmental Graduate Brochure
	* Developed a computer system for logging and compiling pertinent information about graduate applicants
	* Faculty Senate, September 1982 to June 1985; and 1989 – 1990
	* Committee on Committees, Chairman, 1982; member 1983
	* Academic Programs Committee, member 1982 – 1983
	* Faculty Status and Welfare Committee, Chairman, 1989 – 1990
	* Helped organize and establish Techsan Collegiate Cattlewomen’s Association, 1995
	* Faculty Grievance Panel 1995 – 2000
	* Executive Director for Extended Learning Search Committee, 1996
	* University Press Editorial Committee, 1997 – 2006
	* Annual Texas Beef Conference Planning Committee, 1977 – 1986
	* Curriculum Committee, 1976 – 1978
	* Water, Energy Committee, 1981
	* Burnett Center for Beef Cattle Research and Teaching, Building Committee, 1982 – 1985
	* Developed and operated an in vitro lab to analyze treated mesquite samples for Chemical Engineering and Range and Wildlife Management Departments (interdisciplinary project, 1977 – 1983)
	* Graduate Studies Coordination, 1982 – 1993 and 1995 – 1998
	* SACS Accreditation Team, 1994
	* Strategic Planning Committee, 1995 – 1997
	* Agriculture and Applied Economics Chairperson Search committee, 1997
	* Water Center Committee, 2005 – 2006
2. Departmental:

# Worked with departmental faculty, staff, and students (2006-present) to improve the atmosphere for students in the Department through:

* + - Curriculum study and revision

# Adding clubs and student organizations

* + - Adding a livestock judging team

# Promotion of graduate student research activities

* + - Involvement in University, regional, and state service activities

# Successfully completed two faculty searches for positions in Agriculture Economics, and Agricultural Mechanics/ Agricultural Education, 2006 – 2011

* + Successfully completed three staff positions searches. One for Administrative Assistant III and two for the Freeman Ranch Foreman**,** 2006 **–** 2011

# Developed a department of agriculture focus group/ advisory committee and coordinated meetings to address the role of the Department in Texas and U.S. Agriculture, 2006 – 2011

* + Attended annual meetings of the Texas Agriculture Teacher Conference

# Through this involvement, an alumni support group developed and alumni receptions were held in December 2008 and 2009

* Coordinated discussions with faculty at Southwest Texas Junior College, Uvalde, about developing a joint curriculum in wildlife management

# Developed research initiatives with some industry organizations and associations and the department, 2006 – 2011

* + Represent the Department at the Texas Agriculture Consortium Annual Conference, 2006 – 2011
	+ Faculty advisor for the following student organizations:
* Animal Science Club. 2006 – present
* Delta Tau Alpha (DTA) Honor Society, 2006 – 2011

# Agriculture Ambassadors, 2006 – 2011

* + Developed the Texas Tech Feed Mill Teaching and Research Program which includes: two undergraduate courses; one graduate course; and Master of Agriculture Program in Formula Feed Production.
	+ Feed Manufacturing Short Courses: Developed and coordinated 9 national feed manufacturing short courses in cooperation with the American Feed industry Assn., the Texas Grain and Feed Assn., and the Texas Cattle Feeders Assn.
		- 2003: 24 registrants; 3 states; and Australia; registration fee – $1,200.00 per person
		- 2001: 38 registrants; 3 states; registration fee – $1,050.00 per person
		- 1999: 17 registrants; 5 states; registration fee – $895.00 per person
		- 1997: 35 registrants; 5 states and 3 countries; registration fee – $895.00 per person
		- 1995: 36 registrants; 5 states; registration fee – $895.00 per person
		- 1993: 22 registrants; 7 states; registration fee – $725.00 per person
		- 1981: 17 registrants; 5 states and Puerto Rico; registration fee – $425.00 per person
		- 1980: 42 registrants; 9 states and 13 countries; registration fee – $375.00 per person
		- 1979: 39 registrants; 11 states and 3 countries; registration fee – $375.00 per person
	+ Mycotoxin Short Course: 1996; 13 registrants; 2 states, registration fee – $40.00 per person
	+ Seminars: Developed and coordinated 10 feed mill management seminars in cooperation with the Texas Cattle Feeders Assn.
		- 2003: 52 registrants; registration fee – $60.00 per person
		- 1997: 110 registrants; registration fee – $30.00 per person
		- 1993: 82 registrants; registration fee – $30.00 per person
		- 1989: 85 registrants; registration fee – $30.00 per person
		- 1988: 116 registrants; registration fee – $30.00 per person
		- 1987: 111 registrants; registration fee – $30.00 per person
		- 1986: 41 registrants; registration fee – $30.00 per person
		- 1985: 75 registrants; registration fee – $30.00 per person
		- 1983: 53 registrants; registration fee – $25.00 per person
		- 1979: 119 registrants; registration fee – $25.00 per person
	+ Workshops: Developed and coordinated 9 feed mill management workshops in cooperation with U.S. Feed Grain Council
		- 1999: 13 registrants; China; total fee – $2,000
		- 1999: 13 registrants; Morocco; total fee – $2,000
		- 1995: 3 registrants; Pakistan; total fee – $3,000
		- 1989: 13 registrants; Korea; sponsored by the U.S. Feed Grains Council
		- 1988: 11 registrants; Japan; sponsored by the U.S. Feed Grains Council
		- 1986: 7 registrants; Bulgaria; total fee – $2,000
		- 1985: 6 registrants; Mexico; total fee – $2,000
		- 1983: 5 registrants; Peoples Republic of China; total fee – $3,000
		- 1981: 14 registrants; Japan; total fee – $5,000
1. Community:
	* National and local Gideons Association
2. Professional:
	* Reviewer for J. Anim. Science; Texas J. National Resources; and J. of Amer. Leather Assn.
	* Animal and Food Sciences Building Committee, 2001 – present
	* Livestock Operations Committee, 1980 – present
	* Analytical Laboratory Committee, 1976 – 1980, 1984 – present
	* Graduate Faculty Committee, 1976 – present
	* Annual 4-H Dairy Judging Contest Committee, 1977 – 1997
	* Graduate Faculty Committee, Chairman, 1982 – 1997
	* Advising undergraduate and graduate students, 1977 – 1997
	* Space Utilization Committee, 1980 – 1996
	* Annual FFA Dairy Judging Contest Committee, 1977 – 1996
	* Animal Science and Food Technology Chairperson Search Committee, 1995
	* Burnett Center Building Committee, 1982 – 1984
	* Supervisor for Cattle Feedlot Operations, 1977 – 1982
	* Thornton Distinguished Professor Search Committee, 1981
	* Animal Science Chairperson Search Committee, 1980
	* Chairman of the Search/Screening Committee for Sheep Production and Management Position, 1980
	* Kilgore Beef Cattle Research Committee, 1977 – 1980
	* Chairperson of a nationally based committee on Rumen By-Pass Proteins for Cattle. (One meeting was held on the Texas Tech Campus), 1979
	* Instructor in an Iranian Farm Management Program. Case Study Texas Tech, February 1979 (918 contact hours)
	* Organized a 13 member industry-based, national advisory committee for the Texas Tech Feed Manufacturing Program, 1978
	* Annual Beef Conference Committee, 1976 – 1978
3. Organizations
4. Honorary:
	* Alpha Zeta
	* Sigma XI
	* Gamma Sigma Delta
	* American Registry of Outstanding Professionals
	* American Men and Women of Science
	* Who’s Who in American Colleges and Universities
5. Professional:
	* American Society of Animal Science, 1973 to present
	* American Dairy Science Association, 1976 to present
	* Plains Nutrition Council, 1977 to present (officer 6 years)
	* American Leather Chemist Association, 2003 – present
	* American Institute of Nutrition, 1982 – 1995
	* American Association of Cereal Chemists, 1986 – 1992
	* American Association for the Advancement of Science, 1982 – 1995
6. Service Honors and Awards:
	* University award for Continuing Education Excellence, Texas Tech University, 1992. Based on extensive work over the previous 12 years with the Division of Continuing Education