

CLAY P. MATHIS, PHD
Curriculum Vitae

MSC 137, Kleberg Ag Building, Rm. 124
Kingsville, TX 78363-8202
(361)593-5400

EDUCATION

PhD	August, 1998	Kansas State University	Ruminant Nutrition
M.S.	August, 1995	Texas A&M University	Physiology of Reproduction
B.S.	December, 1993	Texas A&M University	Animal Science

CURRENT EMPLOYMENT

Employer	Texas A&M University-Kingsville
Title:	Director and Endowed Chair, King Ranch [®] Institute for Ranch Management
Period:	July 2010 to present

PREVIOUS EMPLOYMENT

Employer:	New Mexico State University
Title:	Professor and Extension Livestock Specialist; 2007 to 2010
Title:	Associate Professor and Extension Livestock Specialist; 2004 to 2007
Title:	Assistant Professor and Extension Livestock Specialist; 1998 to 2004

AWARDS

2010 Distinguished Service Award. NMSU Extension Specialists' Association
2007 Applied Research Award. Western Section of American Society of Animal Science
2005 Extension Award. Western Section of American Society of Animal Science
1997 Purina Mills Beef Research Fellowship

TEACHING EXPERIENCE

Graduate Courses - Texas A&M University-Kingsville

RAMT 5351 – Systems Approach to Natural Resources Problem Solving: Concept of systems dynamics applied to natural resource management issues.
RAMT 5305 – Graduate Research Project: Leadership of graduate student research.
RAMT 5350 – Practicum in Ranch Management
RAMT 5695 – Advanced Problems in Ranch Management

Graduate Student Advising

M.S. Committees Chaired:

- Jeff Duncan. An Evaluation of Supplementation Alternatives for King Ranch (2013)
- Travis Moore . An Analysis of AgReserves, Inc. Feedyard Flow: Backgrounding Scenarios Which Optimize Flow at Least Possible Cost (2013)
- John Hay: Applying a Heifer Development Model to Optimize Efficiency and Production (2011)

- Jennifer Johnson: An Evaluation of Employee Management on Large Ranches (2011)
- Tommy Gilmore: A Grazing and Drought Plan for Gilmore Ranch South (2011)
- Jeremy Gingerich: A Strategic Ranch Management Plan for Vermejo Park Ranch (Summer 2012)
- Jason Van Tassell: An Evaluation of Restocking Alternatives for the Four Sixes Ranch (Summer 2012)
- Caleb Roach: A Hunting and Natural Resources Management Plan for A.T. Canales Ranch (Summer 2012)

Currently M.S. Committee Chair (anticipated defense semester):

- Tyrell Anderson (Summer 2015)
- Cody Peck (Summer 2015)
- Rhonda Wulf (Summer 2015)
- Tylor Braden (Summer 2014)
- Tyson Johnson (Summer 2014)
- Chris Redman (Summer 2014)
- Darrell White (Summer 2014)

M.S. Graduate Committee Member

- Michael Griger: Advisor: Dr. Kim McCuiston (Summer 2012)

New Mexico State University

ANSC 448/548 – Beef Industry Systems: Inputs, outputs and interrelationships of all sectors of the beef industry.

Previous Graduate Committee Service:

- Doctoral Students (9; **Co-Chair** of 1)
- Master's Students (9)

COMMITTEES AND COMMITTEE ASSIGNMENTS

National & Regional Committees

National Cattlemens Beef Association BQA Advisory Committee (2013-present)

eXtension Community of Practice: Cattle Clearinghouse (2006 to 2010)

Federation of Animal Science Societies

- Joint Extension Education Workshop Committee (2006 to 2008)

American Society of Animal Science

- Extension Education Committee (2006 to 2008)

American Society of Animal Science Western Section

- Extension Committee (2000 to 2002; 2009-2011) - **2002 Chairman**
- Awards Committee (2006 to 2008)
- Executive Committee (2002, 2004)

- Advisory and Coordinating Committee (2002 to 2005) - **2004 Chairman**

National Cattlemen's Beef Association BQA State Coordinators Committee (1999 to 2010)

- Animal Identification Committee - **2003 Vice-Chairman**

National Cattlemen's Beef Association Western Region IRM Working Group (2003 to present)

National 4-H Livestock Skillathon Contest Committee (2000 to 2007)

National Beef InfoBase Committee (2000 to 2002) - **New Mexico Ambassador**

Western Beef Resource Committee (WBRC; 1999 to 2010)

- WBRC Reproduction Section (1999 to 2005) - **Chairman**

State Committees

New Mexico Beef Industry Improvement Committee (2009 to 2010)

- Health Subcommittee
- Extension Service Collaboration Subcommittee

National Animal Identification System Stakeholder Advisory Committee to the New Mexico Livestock Board (2006 to 2010)
New Mexico Scrapie Certification Board (2005 to 2010)
New Mexico Cattle Growers Beef Quality Assurance Task Force (2000 to 2006)
Southern New Mexico State Fair Quality Assurance Control Committee (2002 to 2003)
Southern New Mexico State Fair Livestock Committee (2001 to 2002)

University, College, and Departmental Committees

Texas A&M University - Kingsville

TAMUK Long-term Budget committee (2012 to 2013)
TAMUK University Advancement Committee (2010 to 2012)
Promotion and Tenure Review Committee. Department of Agriculture, Agribusiness and Environmental Science (2010 to 2011; **2011 Chair**)

New Mexico State University

NMSU Faculty Senate (2007 to 2010) for NMSU Cooperative Extension Service (2009 to 2010)

- Committee on Committees (2009 to 2010)
- Faculty Affairs Committee (2009 to 2010)
- Long Range Planning Committee (2008 to 2009)
- University Affairs Committee (2007 to 2008)

Extension Plant Sciences Department Promotion and Tenure Evaluation Committee (2009 to 2010)
Extension Animal Sciences and Natural Resources Promotion and Tenure Committee (2009 to 2010)
College of Agriculture, Consumer, and Environmental Sciences Performance Evaluation Committee (2009)
NMSU Extension Specialist Promotion and Tenure Evaluation Committee (2008 to 2010)
College of Agriculture and Home Economics Distance Education Committee (2007 to 2010)
Ad-hoc Committee on NMSU Extension Faculty Appointment Conversion to 9-months (2008) - **Chairman**
Uniting NMSU Online Committee (2004 to 2006)
All-Extension Conference Planning Team (2004, 2005, 2009)
Corona Range and Livestock Research Center Steering Committee (2003 to 2010)
Ad Hoc All College Conference Review Committee (2003)
NMSU E-Extension Committee (2002 to 2006)
All College Conference Planning Committee (2001 to 2003) - **2003 Co-Chairman**

- Sustainable Animal and Rangeland Resources Subcommittee (2002 to 2003) - **Chairman**

Sustainable Animal and Rangeland Resources Program Committee (2001 to 2007)
Range Improvement Task Force (1998 to 2010)
Cattle Growers Short Course Planning Committee (1998 to 2010; **Coordinator**, 2004 to 2010)
NMSU Faculty Search Committees (11; **Chairman** of 2)
NMSU Graduate Faculty (1999 to 2010)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Texas and Southwestern Cattle Raisers Association
Plains Nutrition Council
American Registry of Professional Animal Scientists
CattleFax
National Cattlemen's Beef Association
American Society of Animal Science

EXTRAMURAL FUNDING

➤ **Cumulative funding:** **\$1,548,085**

Gifts Received supporting King Ranch Institute for Ranch Management (July 2010 to present)

➤ **2012** **\$225,000**
➤ **2011** **\$175,325**
➤ **2010** **\$555,530**

Hughes and Betsy Abell Family. 2012. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$5,000.**

Patricia Lewis Zoch Children's Foundation. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$5,000.**

Ag Reserves Inc. 2012. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$15,000.**

King Ranch Inc. 2012. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$15,000.**

Exxon/Mobil Foundation. 2012. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$10,000.**

South Texas Charity Quail Hunts. 2012. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$60,000.**

Texas AgFinance. 2012. Pledge fulfillment to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$100,000**

Exxon/Mobil Foundation. 2011. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$10,000.**

South Texas Charity Quail Hunts. 2011. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$60,000.**

Texas AgFinance. 2011. Pledge fulfillment to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$100,000**

Lyssey and Eckel, Inc. 2011. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$5,000.**

Ag Reserves Inc. 2010. Donation to King Ranch Institute for Ranch Management to create Deseret Scholarship Endowment fund. **\$500,000.**

Ag Reserves Inc. 2010. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$30,000.**

Exxon/Mobil Foundation. 2010. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$10,000.**

John & Ann Larkin, III. 2010. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$5,000.**

Ralph Leggett Memorial. 2010. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$10,250.**

Yarborough Foundation. 2010. Gift to support King Ranch Institute for Ranch Management. Texas A&M University-Kingsville. **\$100.**

Grants Funded – Texas A&M Kingsville

TAMUK Total: \$15,000

Rhoades, R.D., **C.P. Mathis**, and K.C. McCuiston. 2012. Phase 1-Development of a large ranching BQA toolbox. National Cattlemen's Beef Association. **\$10,000.**

Rhoades, R.D., **C.P. Mathis**, and K.C. McCuiston. 2012. Development of a long range strategic plan for the Santa Gertrudis Breeder International. **\$5,000.**

Grants Funded – New Mexico State University

NMSU Total: \$592,230

Mathis, C. P., M. Encinias, B. Carpenter, F. T. McCollum, III. 2009. Southwest Beef Symposium. Funded by New Mexico Beef Council for **\$2,000.**

Mathis, C. P., M. Encinias, B. Carpenter, F. T. McCollum, III. 2007. Southwest Beef Symposium. Funded by New Mexico Beef Council for **\$2,000.**

Mathis, C. P., M. Encinias, B. Carpenter, F. T. McCollum, III. 2007. Southwest Beef Symposium. Funded by Pfizer Animal Health for **\$2,000.**

- Löest, C. A., **C. P. Mathis**, M. K. Petersen, and J. E. Sawyer. 2005. USDA-NRI. Development of methods and decision-making tools to enable stakeholders to improve calf well-being: An integrated approach. Funded for **\$397,505**.
- Rasby, R., G. Selk, and J. Whittier. 2006. eXtension Community of Practice: Cattle Clearinghouse. Funded by eXtension for **\$50,000**. NMSU Cooperating Investigator: **C. P. Mathis**.
- Mathis, C. P.**, M. Encinias, B. Carpenter, F. T. McCollum, III. 2006. Southwest Beef Symposium. Funded by New Mexico Beef Council for **\$2,000**.
- Parker, R., M. Encinias, and **C. P. Mathis**. 2005. Animal Identification Education. Funded by Tri-National Livestock Consortium for **\$9,400**.
- Mathis, C. P.**, B. Carpenter, F. T. McCollum, III, and M. Encinias. 2004. Southwest Beef Symposium. Funded by National Cattlemen’s Beef Association for **\$750**.
- Mathis, C. P.** and R. Parker. 2004. New Mexico Ranch to Rail. Funded by New Mexico Cattle Growers Feeder Committee for **\$1,750**.
- Mathis, C. P.** 2003. New Mexico Ranch to Rail. Funded by New Mexico Cattle Growers Feeder Committee for **\$1,750**.
- Mathis, C. P.**, R. Parker, and J. E. Sawyer. 2003. New Mexico Beef Cattle IRM-SPA Workshop and On-Ranch Consultation. Funded by National Cattlemen’s Beef Association for **\$1,575**.
- Mathis, C. P.**, and J. E. Sawyer. 2002. New Mexico Ranch to Rail. Funded by New Mexico Cattle Growers Feeder Committee for **\$1,500**.
- Gipson, T. A., R. Merkel, R. Parker, **C. P. Mathis**, and C. Balok. 2001. Animal Production Food Safety Outreach Program for Small Beef, Sheep and Goat Producers in New Mexico and Oklahoma. Funded by USDA-FSIS for **\$60,000**.
- Gipson, T. A., R. Merkel, R. Parker, **C. P. Mathis**, and C. Balok. 2002. Animal Production Food Safety Outreach Program for Small Beef, Sheep and Goat Producers in New Mexico and Oklahoma. Funded by USDA-FSIS for **\$60,000**.

LISTING OF PUBLICATIONS

<u>Publication Type</u>	<u>No. Publications</u>
Peer-reviewed	28
Extension Guides, Circulars, and Proceedings	62
Research Proceedings and Reports	55
Abstracts	36
Popular Press	47

Peer-Reviewed

1. Mulliniks, J. T., J. E. Sawyer, **C. P. Mathis**, S. H. Cox, and M. K. Petersen. 2012. Winter supplementation during late gestation influences cow and steer progeny performance. *J. Anim. Sci.* 90:5099-5106. Winter protein management during late gestation alters range cow and steer progeny performance
2. McCuiston, K. C., J. Johnson Livsey, D. Wilmeth, D Probert, B. Dunn, R. Rhoades, and **C. P. Mathis**. 2011. Case Study: A Systems Analysis of Cattle Morbidity in a Niche Market Beef Cooperative. *J. Agric., Food Syst, and Comm. Dev.* 2:289-286.
3. Waggoner, J. W., C. A. Löest, J. L. Turner, **C. P. Mathis**, and D. M. Hallford. 2009. Effects of dietary protein and bacterial lipopolysaccharide infusion on nitrogen metabolism and hormonal responses of growing beef steers. *J. Anim. Sci.* 87:3656-3668.
4. **Mathis, C.P.**, S. H. Cox, C. A. Löest, M. K. Petersen, and J. T. Mulliniks. 2009. Pasture preconditioning calves at a higher rate of gain improves feedlot health but not post-weaning profit. *Prof. Anim. Sci.* 25:475-480.
5. Waggoner, J. W., C. A. Löest, **C. P. Mathis**, D. M. Hallford, and M. K. Petersen, M. D. Remmenga. 2009. Effects of supplemental rumen-protected methionine and bacterial lipopolysaccharide on nitrogen metabolism and hormonal responses of growing beef steers. *J. Anim. Sci.* 87:681-692.
6. Van E. Nolte, J., C. A. Löest, A. V. Ferreira, J. W. Waggoner, and **C. P. Mathis**. 2008. Limiting amino acids for growing lambs fed a diet low in ruminally undegradable protein. *J. Anim. Sci.* 86: 2627-2641.

7. Olson, K. C., R. C. Cochran, E. C. Titgemeyer, **C. P. Mathis**, T. J. Jones, and J. S. Heldt. 2008. Prediction of the energy content of tallgrass prairie hay. *J. Anim. Sci.* 86: 1372:1381.
8. **Mathis, C. P.**, S. H. Cox, C. A. Löest, M. K. Petersen, R. L. Endecott, A. M. Encinias, and J. C. Wenzel. 2008. Comparison of Low-input Pasture to High-input Drylot Backgrounding on Performance and Profitability of Beef Calves through Harvest. *Prof. Anim. Sci.* 24:169-174.
9. Cabrera, V. E., **C. P. Mathis**, R. E. Kirksey, T. T. Baker. 2008. Case Study: Development of New Mexico Dairy Manure, a Seasonal Prediction Model for Manure Excretion by Dairy Cattle. *Prof. Anim. Sci.* 24:175-183.
10. **Mathis, C. P.**, and J. E. Sawyer. 2007. Nutritional Management of Grazing Beef Cows. *Vet. Clin. Food Anim.* 23:1-19.
11. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III, and J. P. Banta. 2007. Case Study: Impact of morbidity in finishing beef steers on feedlot average daily gain, carcass characteristics, and carcass value. *Prof. Anim. Sci.* 23:174-178.
12. **Mathis, C. P.**, D. W. Bohnert, and J. E. Sawyer. 2006. Supplementation Strategies for Grazing Beef Cattle. *Cow-Calf Management Guide and Cattle Producers' Library.* CL-318.
13. Sawyer, J. E., **C. P. Mathis**, R. E. Kirksey, and L. A. Lauriault. 2006. Production alternatives for market beef cow value enhancement. *Prof. Anim. Sci.* 22:132-138.
14. Waterman, R. C., J. E. Sawyer, **C. P. Mathis**, D. E. Hawkins, G. B. Donart, and M. K. Petersen. 2006. Effects of supplements that contain increasing amounts of metabolizable protein with or without Ca-propionate salt in young beef cows. *J. Anim. Sci.* 84:433-446.
15. Sawyer, J. E., **C. P. Mathis**, and B. Davis. 2004. Adding value to culled beef cows. *J. Anim. Sci.* 82:3646-3653.
16. Farmer, C. G., B. C. Woods, R. C. Cochran, J. S. Heldt, **C. P. Mathis**, K. C. Olson, E. C. Titgemeyer, and T. A. Wickersham. 2003. Effect of supplementation frequency and supplemental urea level on dormant tallgrass-prairie hay intake and digestion by beef steers and prepartum performance of beef cattle cows grazing dormant tallgrass-prairie. *J. Anim. Sci.* 82:884-894.
17. **Mathis, C. P.**, J. E. Sawyer, R. Waterman, and C. A. Löest. 2003. Urea in Range Cattle Supplements. *Cow-Calf Management Guide and Cattle Producers' Library.* CL-321.
18. Sawyer, J. E., **C. P. Mathis**, C. A. Löest, D. A. Walker, K. J. Malcolm-Callis, L. A. Blan and R. Taylor. 2003. Case Study: Niche-targeted versus conventional finishing programs for beef steers. *Prof. Anim. Sci.* 19:188-194.
19. Rogers, C. A., T. W. Drummond, R. Flores, **C. P. Mathis**, and M. L. Looper. 2003. Case Study: Estrous characteristics are influenced by prostaglandin administration in beef heifers. *Prof. Anim. Sci.* 19:19-22.
20. Farmer, C. G., R. C. Cochran, D. D. Simms, J. S. Heldt, and **C. P. Mathis**. 2001. Impact of divergent wheat milling byproducts in supplements on the forage use and performance of beef cattle consuming low quality, tallgrass-prairie forage. *J. Anim. Sci.* 79:2472-2480.
21. **Mathis, C. P.**, R. C. Cochran, E. S. Vanzant, I. E. O. Abdelgadir, J. S. Heldt, K. C. Olson, D. Johnson, J. Caton, D. Faulkner, G. Horn, S. Paisley, R. Mass, K. Moore, and J. Halgerson. 2001. A collaborative study evaluating in situ and in vitro techniques for estimating protein degradability of different forages. *Anim. Feed Sci. Technol.* 93:31-42.
22. **Mathis, C. P.**, H. E. Hawkins, L. R. Sprott, D. K. Lunt, and D. W. Forrest. 2001. Pregnancy Rate in Beef Heifers after Synchrony to Random or Programmed Estrous Cycles. *J. Anim. Sci.* 79:561-567.
23. **Mathis, C. P.**, and J. E. Sawyer. 2000. Beef Cow Production Efficiency in Western Rangelands. *Cow-Calf Management Guide and Cattle Producers' Library.* CL-732.
24. **Mathis, C. P.**, R. C. Cochran, J. S. Heldt, B. C. Woods, I. E. O. Abdelgadir, K. C. Olson, E. C. Titgemeyer, and E. S. Vanzant. 2000. Effects of supplemental degradable intake protein on utilization of medium- to low-quality forages. *J. Anim. Sci.* 78:224-232.
25. **Mathis, C. P.**, R. C. Cochran, G. L. Stokka, J. S. Heldt, B. C. Woods, and K. C. Olson. 1999. Impact of increasing amounts of soybean meal on intake and digestion by beef steers and performance by beef cows consuming low-quality tallgrass-prairie forage. *J. Anim. Sci.* 77:3156-3162.
26. **Mathis, C. P.**, and R. Parker. 1999. Reproductive anatomy and physiology of the cow. *Cow-Calf Management Guide and Cattle Producers' Library.* CL-440.
27. Heldt, J.S., R.C. Cochran, **C.P. Mathis**, B. C. Woods, K. C. Olson, E.C. Titgemeyer, T.G. Nagaraja, E. S. Vanzant, and D.E. Johnson. 1999. Effects of level and source of carbohydrate and level of degradable intake protein on intake and digestion of low-quality tallgrass-prairie hay by beef steers. *J. Anim. Sci.* 77:2846-2854.

28. Heldt, J.S., R.C. Cochran, G. L. Stokka, C. G. Farmer, **C. P. Mathis**, E.C. Titgemeyer, and T.G. Nagaraja. 1999. Effects of different supplemental sugars and starch fed in combination with degradable intake protein on low-quality forage use by beef steers. *J. Anim. Sci.* 77:2793-2802.

Extension/Outreach Guides and Circulars

1. Peterson, W., M. Hutchcraft, and C.P. Mathis. 2012. White Paper - Agricultural Water: Protecting the Future of Our Nation. King Ranch® Institute for Ranch Management. Texas A&M University-Kingsville, Kingsville, TX.
2. Rhoades, R., and **C. P. Mathis**. 2011. Business Management of Hunting Enterprises on Working Ranches: Building a Hunting Enterprise Business Plan. King Ranch® Institute for Ranch Management. Texas A&M University-Kingsville, Kingsville, TX.
3. Carter, B. H., **C. P. Mathis**, C. A. Löest, and J. Wenzel. 2011. Castrating Beef Calves: Age and Method. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-227.
4. Carter, B., **Mathis, C. P.**, and C. L. Löest. 2010. Using Anti-suckling Devices to Wean Beef Calves. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide 648.
5. Runyan, C., J. Bader, **C. P. Mathis**. 2009. Water Quality for Livestock and Poultry. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide M-112.
6. Wenzel, J. C., **C. P. Mathis**, B. Carter. 2009. Cowherd Vaccination Guidelines. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-224.
7. Wenzel, J. C., **C. P. Mathis**, B. Carter. 2009. Calf Vaccination Guidelines. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-223.
8. **Mathis, C. P.**, C. L. Löest, and B. Carter. 2008. Preconditioning Beef Calves. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 637.
9. Wenzel, J. C., B. Carter, **C. P. Mathis**. 2008. Cattle Vaccination and Immunity. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-222.
10. **Mathis, C. P.**, and B. Carter. 2008. Minimizing Weaning Stress on Calves. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-221.
11. Cabrera, V., R. Kirksey, and **C. P. Mathis**. 2007. Grazing-N: A Nitrogen Balance Model for Grazing Dairy Heifers and Dry Cows in New Mexico. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 611.
12. **Mathis, C. P.**, C. A. Löest, F. T. McCollum, and G. R. Hagevoort. 2007. Using Byproduct Feedstuffs in Grazing Nutrition. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 612.
13. Endecott, R. L., and **C. P. Mathis**. 2006. Ration Balancing on the Ranch. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-125.
14. **Mathis, C. P.**, and M. Encinias. 2005. Early Weaning Beef Calves. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-126.
15. **Mathis, C. P.**, J. E. Sawyer, and R. Waterman. 2003. Urea in Range Cattle Supplements. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 583.
16. Parker, R., M. Looper, **C. Mathis**, and J. E. Sawyer. 2002. Biosecurity on the Beef and Dairy Operation. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-121.
17. Parker, R., **C. Mathis**, M. Looper, and J. E. Sawyer. 2002. Anthrax in Livestock. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-120.
18. **Mathis, C. P.**, and B. Faris. 2002. Wool Grades. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-409.
19. **Mathis, C. P.**, J. E. Sawyer, and R. Parker. 2002. Managing and Feeding Beef Cows Using Body Condition Scores. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 575.
20. Sawyer, J. E., and **C. P. Mathis**. 2001. Supplement Delivery Systems. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 571.
21. **Mathis, C. P.**, and J. Duffey. 2000. 4-H Market Lamb Project. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide 100 B-14.
22. **Mathis, C. P.** 2000. Use of Growth Implants in Suckling Beef Calves. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-218.
23. **Mathis, C. P.** and T. Ross. 2000. Sheep Production and Management. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide 100 B-15.

24. **Mathis, C. P.** 2000. Protein and Energy Supplementation to Beef Cows Grazing New Mexico Rangelands. NMSU Cooperative Extension Service Report, Las Cruces, NM. Circular 564.
25. **Mathis, C. P.** and J. E. Sawyer. 2000. Beef Cow Production Efficiency in the Southwest. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-217.
26. Parker, R, **C. Mathis**, and D. Hawkins. 1999. Breeding Soundness Evaluation of the Beef Bull. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide B-216.
27. **Mathis, C. P.** 1999. Market Lamb Showmanship. NMSU Cooperative Extension Service Report, Las Cruces, NM. Guide 100 B-14B.

Extension Proceedings

1. **Mathis, C. P.** 2010. Nutrition Tools: Fat, Urea, and Organic Minerals. In: Proc., Southwest Beef Symposium. Tucumcari, NM. pp 26-32.
2. **Mathis, C. P.** 2009. Early Weaning Beef Calves. Early Weaning of Beef Calves. In: Proc, 55th Annual Texas A&M University Beef Cattle Short Course. College Station, TX. pp D5-11.
3. **Mathis, C. P.** 2009. Balance Input Costs and Cow Performance. In: Proc., Southwest Beef Symposium. Midland, TX. pp 23-30.
4. **Mathis, C. P.** 2008. Calf Weaning and Preconditioning: The Value of Forage-Based Approaches. In: Proc., Amazing Grazing Seminar. 41st Annual Convention of the American Association of Bovine Practitioners, Charlotte, NC.
5. **Mathis, C. P.** 2008. Preconditioning Programs: Approaches, Economics, and Subsequent Performance. In: Proc., Plains Nutrition Council. San Antonio, TX. pp 25-35.
6. **Mathis, C. P.** 2008. Calf Management: Weaning to Shipping. In: Proc., Southwest Beef Symposium. Roswell, NM. pp 35-40.
7. **Mathis, C. P.**, S. H. Cox, M. K. Petersen, and C. A. Löest. 2007. Low-input Pasture vs. High-input Drylot Backgrounding: Research Report. In: Proc., New Mexico Cattle Growers' Short Course. Raton, NM. pp 22-26.
8. **Mathis, C. P.**, G. R. Hagevoort, and M. K. Petersen. 2007. Using Byproduct Feedstuffs: Cow-calf. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 31-40.
9. **Mathis, C. P.** 2007. Cow Type and the Southwest Environment. In: Proc., Southwest Beef Symposium. Amarillo, TX. pp 8-15.
10. Löest, C. A., and **C. P. Mathis**. 2006. Byproduct Feedstuffs: Ruminant Nutrition Fundamentals. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 18-24.
11. **Mathis, C. P.**, G. R. Hagevoort, and M. K. Petersen. 2006. Using Byproduct Feedstuffs: Cow-calf. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 31-40.
12. **Mathis, C. P.**, and M. Encinias. 2006. Early Weaning Beef Calves in the Southwest. In: Proc., Southwest Beef Symposium. Tucumcari, NM. pp 47-55
13. Encinias, M. and C. P. Mathis. 2006. Animal Tracking Technology: A Look into Radio Frequency Identification (RFID) Systems for Beef Cattle. In: Proc., Southwest Beef Symposium. Tucumcari, NM. pp 4-8.
14. **Mathis, C. P.**, J. W. Waggoner, and E. Fredrickson. 2005. Low stress weaning and preconditioning considerations. In Proc., New Mexico Cattle Growers' Short Course. Alamogordo, NM. pp 56-60.
15. Petersen, M. K., R. Endecott, and **C. P. Mathis**. 2005. Physiology of stress and its influence on cow performance. In Proc., New Mexico Cattle Growers' Short Course. Alamogordo, NM. pp 44-49.
16. **Mathis, C. P.**, and M. Encinias. 2004. Early Weaning: Where does it fit into a beef management program? In: Proc., Southwest Beef Symposium. Odessa, TX. pp 11-19.
17. **Mathis, C. P.** 2004. What percent protein supplement should I feed? In: Proc., 50th Annual Texas A&M University Beef Cattle Short Course. College Station, TX. pp D23-30.
18. **Mathis, C. P.**, J. E. Sawyer. 2004. Cubes, blocks, liquids, or tubs? In: Proc., 50th Annual Texas A&M University Beef Cattle Short Course. College Station, TX. pp D31-37.
19. Cox, S., M. Petersen, and **C. P. Mathis**. 2004. Using RFID ear tags to compliment individual animal record-keeping. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 45-48.
20. **Mathis, C. P.**, and J. E. Sawyer. 2004. New Mexico Forage Mineral Survey. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 13-21.
21. Parker, R., **C. P. Mathis**, and S. Cox. 2004. Individual animal identification: The current status. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 34-36.

22. Petersen, M. K., R. L. Endecott, C. A. Löest, and **C. P. Mathis**. 2004. Aspects of water nutrition for beef cattle. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 28-32.
23. **Mathis, C. P.**, and J. E. Sawyer. 2003. The influence of reproductive performance on profitability. In: Proc., New Mexico Cattle Growers' Short Course. Farmington, NM. pp 8-12
24. Löest, C. A., and **C. P. Mathis**. 2003. Feeding byproduct energy sources to cows. In: Proc., New Mexico Cattle Growers' Short Course. Farmington, NM. pp 25-28.
25. **Mathis, C. P.** 2002. New Mexico standardized performance analysis and ranch to rail: Information Gained. In: Proc., Pfizer Cattlemen's College. New Mexico Joint Stockmen's Convention. Albuquerque, NM. pp 19-36.
26. **Mathis, C. P.** 2002. Measuring production efficiency in the real world: Managing for improvement. In: Proc., Northeast New Mexico Beef Symposium. Tucumcari, NM. pp 17-21.
27. Löest, C. A., **C. P. Mathis**, and J. E. Sawyer. 2002. Feedlots: What they do and what they want. In: Proc., New Mexico Cattle Growers' Short Course. Las Cruces, NM. pp 34-36.
28. **Mathis, C. P.**, and J. E. Sawyer. 2002. The beef production enterprise: Gaining focus. In: Proc., New Mexico Cattle Growers' Short Course. Las Cruces, NM. pp 7-11.
29. **Mathis, C. P.**, and J. E. Sawyer. 2001. Evaluate your product: Ranch to Rail. In: Proc., New Mexico Cattle Growers' Short Course. Clayton, NM. pp 31-32.
30. Sawyer, J. E. and **C. P. Mathis**. 2001. Adding value with growing programs. In: Proc., New Mexico Cattle Growers' Short Course. Clayton, NM. pp 20-25.
31. Parker, W. R., **C. P. Mathis**, and J. E. Sawyer. 2001. Adding value with weaning programs. In: Proc., New Mexico Cattle Growers' Short Course. Clayton, NM. pp 10-11.
32. **Mathis, C. P.** 2000. Use of growth implants in suckling beef calves. In: Proc., New Mexico Cattle Growers' Short Course. Las Cruces, NM. pp 24-28.
33. **Mathis, C. P.** and Jason Sawyer. 1999. Beef cow production efficiency in the Southwest. In: Proc., New Mexico Cattle Growers' Short Course. Carlsbad, NM. pp 14-16.
34. Cochran, R. C., K. C. Olson, **C. P. Mathis**, and J. S. Heldt. 1998. Considerations for developing an effective supplementation program. In: Proc., Cow-Calf Conference VIII. Salina/Wichita Kansas.
35. Cochran, R. C., H. H. Köster, K. C. Olson, J. S. Heldt, **C. P. Mathis**, and B. C. Woods. 1998. Supplemental protein sources for grazing beef cattle. In: Proc., 9th Annual Florida Ruminant Nutrition Symposium. Gainesville, Florida.

Research Proceedings

1. Carter, B. H., **C. P. Mathis**, G. C. Duff, J. B. Taylor, K. M. Taylor, B. C. Graham, L. W. Hall, J. D. Allen, D. M. Hallford, and C. A. Löest. 2011. Supplemental branched-chain amino acids improve performance and immune response of newly received feedlot calves. In: Proc., Western Section American Soc. of Anim. Sci. 62: 15-18.
2. **Mathis, C. P.**, S. H. Cox, C. A. Löest, M. K. Petersen, and J. T. Mulliniks. 2009. Pasture preconditioning calves at a higher rate of gain improves feedlot health but not post-weaning profit. In: Proc., Western Section American Soc. of Anim. Sci. 60:388-391.
3. Graham, B. C., D. Cazac, **C. P. Mathis**, and C. A. Löest. 2009. Feeding Chile pepper byproduct with alfalfa hay decreases total tract diet digestibility in beef steers. In: Proc., Western Section American Soc. of Anim. Sci. 60:343-345.
4. **Mathis, C. P.**, S. H. Cox, M. K. Petersen, C. A. Löest, R. L. Endecott, and M. Encinias. 2007. Low-input pasture preconditioning system is more profitable through harvest than high-input drylot system. In: Proc., Western Section American Soc. of Anim. Sci. 58:122-125.
5. Waggoner, J. W., C. A. Löest, J. L. Turner, **C. P. Mathis**, K. K. Kane, L. Chen, D. M. Hallford, and M. K. Petersen. 2007. Effects of bacterial endotoxin and dietary protein on serum hormones and plasma amino acids in growing steers. In: Proc., Western Section American Soc. of Anim. Sci. 58:348-351.
6. Waggoner, J. W., C. A. Löest, T. M. Thelen, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and **C. P. Mathis**. 2006. Growing beef steers do not require supplemental dietary methionine during an endotoxin challenge. In: Proc., Western Section American Soc. of Anim. Sci. 57:25-28.

7. Cazac, D., C. A. Löest, J. W. Waggoner, **C. P. Mathis**, and M. K. Petersen. 2005. Ruminal degradation of a chile pepper byproduct by cows. In: Proc., Western Section American Soc. of Anim. Sci. 56:454-456.
8. Sawyer, J. E., **C. P. Mathis**, R. E. Kirksey, and L. M. Lauriault. 2005. Productivity and profitability of pasture-based versus intensive value addition strategies for culled beef cows. In: Proc., Western Section American Soc. of Anim. Sci. 56:173-176.
9. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III. 2005. Impact of preconditioning duration on feedlot performance, carcass characteristics and profitability on New Mexico Ranch to Rail steers. In: Proc., Western Section American Soc. of Anim. Sci. 56:186-188.
10. **Mathis, C. P.**, and J. E. Sawyer. 2004. New Mexico Forage Mineral Survey. In: Proc., Western Section American Soc. of Anim. Sci. 55:182-185.
11. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, P. J. DeFoor, J. E. Sawyer, and C. A. Rogers. 2003. Ruminally-protected methionine and undegradable true protein does not improve nutrient utilization by growing beef heifers. In: Proc., Western Section American Soc. of Anim. Sci. 54:57-59.
12. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, R. L. Endecott, T. Powers and R. C. Waterman. 2002. Effects of feed enzymes on ruminal degradability of mature foragers in vitro. In: Proc., Western Section American Soc. of Anim. Sci. 53:658-659.
13. Rogers, C. A., T. W. Drummond, H. L. Vaughn, R. Flores, **C. P. Mathis** and M. L. Looper. 2002. Comparison of two synchronization protocols on estrus characteristics, synchronization rates, and conception rates of beef heifers. In: Proc., Western Section American Soc. of Anim. Sci. 53:397-400.
14. Sawyer, J. E., and **C. P. Mathis**. 2002. Adding value to culled beef cows. In: Proc., Western Section American Soc. of Anim. Sci. 53:243-246.
15. Sawyer, J. E., **C. P. Mathis**, C. A. Löest, D. A. Walker, K. J. Malcolm-Callis, L. A. Blan and R. Taylor. 2002. Niche-targeted versus conventional finishing programs for beef steers. In: Proc., Western Section American Soc. of Anim. Sci. 53:589-592.
16. Waterman, R. C., L. Canales, R. L. Ashley, J. E. Sawyer, J. B. Taylor, G. D. Pulsipher, **C. P. Mathis**, D. E. Hawkins, E. E. Parker, S. H. Cox, J. A. Hartung, J. Horton, and M. K. Petersen. 2001. Responses to protein supplements differing in degradable intake protein to undegradable intake protein ratios with or without propionate salt to young postpartum beef cows. In: Proc., Western Section American Soc. of Anim. Sci. 52:181-185.
17. Cochran, R. C., H. H. Köster, K. C. Olson, J. S. Heldt, **C. P. Mathis**, and B. C. Woods. 1997. Observations regarding the amount and source of degradable intake protein in supplements for beef cattle consuming low-quality forages. In: Proc., AFIA Liquid Feed Symposium. St. Louis, Missouri.
18. Cochran, R. C., H. H. Köster, K. C. Olson, J. S. Heldt, **C. P. Mathis**, and B. C. Woods. 1998. Supplemental protein sources for grazing beef cattle. In: Proc., 9th Annual Florida Ruminant Nutrition Symposium. Gainesville, Florida.

Research Reports

1. Gingerich, J. H., D. Delaney, S. Moore, D. Morales, R. Rhoades, K. McCuiston, and **C. P. Mathis**. What is the Impact of Stocking Level on King Ranch Unit Performance? King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 43. Kingsville, TX.
2. Grigar, M., K. McCuiston, R. Rhoades, and **C. P. Mathis**. Understanding forage characteristics that impact supplementation decisions. King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 49. Kingsville, TX.
3. Hay, J., J. Van Tassel, D. Delaney, S. Moore, M. Falcon, G. Hopkins, D. Morales, R. Rhoades, K. McCuiston and **C. P. Mathis**. Should King Ranch Buy New or Used Ranch Pickups? King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 53. Kingsville, TX.
4. Hay, J., S. Moore, D. DeLaney, D. Morales, K. McCuiston, R. Rhoades, and **C. P. Mathis**. Applying a Heifer Development Model to Optimize Efficiency and Production. King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 43. Kingsville, TX.
5. Johnson, J., S. Moore, R. Rhoades, K. McCuiston, and **C. P. Mathis**. How Do Large Ranches Measure and Incentivize Employee Performance? King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 53. Kingsville, TX.
6. Roach, C., J. Johnson, D. Delaney, B. Thompson, M. Schnupp, R. Morales, R. Rhoades, K. McCuiston, and **C. P. Mathis**. Should King Ranch Sell a Branded Line of Nilgai Meat Products? King Ranch Inc.: Ranching and Wildlife Current Research Report. June, 2011. pp 27. Kingsville, TX.

7. Ashcroft, N. K., **C. P. Mathis**, S. T. Smallidge, J. M. Fowler, and T. T. Baker. 2010. Re-establishment of the Mexican Gray Wolf: The economics of depredation. New Mexico State University Range Improvement Task Force Publication.
8. Carter, B. H., S. H. Cox, **C. P. Mathis**, and M. K. Petersen. 2009. Impact of calthood growth-promoting implants on weaning weight and value. 2009 Corona Range Livestock Research Briefs.
9. **Mathis, C. P.**, S. H. Cox, C. A. Löest, M. K. Petersen, R. L. Endecott, A. M. Encinias, and J. C. Wenzel. 2008. Comparison of pasture and drylot calf preconditioning programs. In: Proc., Corona Range Livestock Research Center Field Day. Corona, NM. pp 55-57.
10. Petersen, M. K., R. L. Endecott, S. H. Cox, **C. P. Mathis**, C. A. Löest, and S. L. Ivey. 2008. Strategic supplementation: Planned low cost supplementation. In: Proc., Corona Range Livestock Research Center Field Day. Corona, NM. pp 67-71.
11. Petersen, M. K., S. H. Cox, **C. P. Mathis**, and J. T. Mulliniks. 2008. Strategic supplementation: Mineral nutrition with a self fed loose salt-mineral mix. In: Proc., Corona Range Livestock Research Center Field Day. Corona, NM. pp 58-61.
12. Mulliniks, J. T., S. H. Cox, S. L. Ivey, **C. P. Mathis**, J. E. Sawyer, M. K. Petersen. 2008. Cow nutrition impacts feedlot pull rate. In: Proc., Western Section American Soc. of Anim. Sci. 59:91-94.
13. Cabrera, V. E., **C. P. Mathis**, R. E. Kirksey, T. T. Baker. 2008. NM-Manure: A Seasonal Prediction Model for Manure Excretion by Dairy Cattle in New Mexico. NMSU Agricultural Experiment Station, Las Cruces, NM. Bulletin 797.
14. Waggoner, J. W., C. A. Löest, T. M. Thelen, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and **C. P. Mathis**. 2006. Effects of methionine supplementation on performance of stressed Angus-cross steers. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 59-61.
15. Waggoner, J. W., C. A. Löest, T. M. Thelen, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and **C. P. Mathis**. 2006. Effect of methionine supplementation on stress hormones and essential amino acid profiles in stressed Angus-cross steers. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 62-64.
16. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III. 2006. Impact of feedlot morbidity on performance, carcass characteristics and profitability on New Mexico Ranch to Rail steers. In: Proc., New Mexico Cattle Growers' Short Course. Clovis, NM. pp 72-73.
17. Petersen, M. K., R. L. Endecott, S. Cox, **C. P. Mathis**, C. Löest, and S Ivey. 2005. Strategic supplementation: Planned low cost supplementation. In: Proc., Corona Range and Livestock Research Center Field Day. Corona, New Mexico.
18. Cazac, D., C. A. Löest, **C. P. Mathis**, L. K. Morrison, and M. K. Petersen. 2005. Different levels of chili pepper byproduct affect digestibility of steers. In: Proc., New Mexico Cattle Growers' Short Course. Alamogordo, NM. pp 80-82.
19. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III. 2005. Preconditioning duration affects feedlot performance, carcass characteristics and profitability on New Mexico Ranch to Rail steers. In: Proc., New Mexico Cattle Growers' Short Course. Alamogordo, NM. pp 78-80.
20. Cazac, D., C. A. Löest, J. W. Waggoner, T. Covey, T. M. Thelen, **C. P. Mathis**, and M. K. Petersen. 2004. Ruminant Digestion of chile pepper byproduct by cows. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 71-74.
21. Ross, T., **C. P. Mathis**, S. Cox, and T. J. Stow. 2004. Improving range ewe productivity. In: Proc., New Mexico Cattle Growers' Short Course. Roswell, NM. pp 58.
22. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, P. J. DeFoor, J. E. Sawyer, and C. A. Rogers. 2003. Addition of rumen undegradable true protein to supplements containing rumen degradable protein can improve nutrient utilization by growing beef heifers. In: Proc., New Mexico Cattle Growers' Short Course. Farmington, NM. pp 71-72.
23. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, R. L. Endecott, T. Powers and R. C. Waterman. 2002. Feed-grade enzymes can increase the degradability of low-quality forages in vitro. In: Proc., New Mexico Cattle Growers' Short Course. Las Cruces, NM. pp 49.
24. Waterman, R. C., **C. P. Mathis**, J. E. Sawyer, D. E. Hawkins, and M. K. Petersen. 2002. A new concept in range cow supplement formulation. In: Proc., New Mexico Cattle Growers' Short Course. Las Cruces, NM. pp 52.
25. Farmer, C. G., R. C. Cochran, D. D. Simms, J. S. Heldt, and **C. P. Mathis**. 1999. Impacts of wheat milling byproducts in supplements on the intake and digestion of steers consuming low-quality forage. 1999 KSU Cattlemen's Day.

26. Farmer, C. G., R. C. Cochran, D. D. Simms, J. S. Heldt, and **C. P. Mathis**. 1999. Wheat bran and second clears as supplemental energy sources for beef cows grazing winter pasture. 1999 KSU Cattlemen's Day.
27. Heldt, J. S., R. C. Cochran, C. G. Farmer, **C. P. Mathis**, E. C. Titgemeyer, and T. G. Nagaraja. 1998. Effect of supplemental carbohydrate source on the utilization of low-quality tallgrass-prairie hay by beef steers. 1998 KSU Cattlemen's Day.
28. Heldt, J. S., R. C. Cochran, **C. P. Mathis**, E. C. Titgemeyer, and T. G. Nagaraja. 1998. Effects of various carbohydrate sources on the utilization of low-quality tallgrass-prairie hay in continuous culture. 1998 KSU Cattlemen's Day.
29. **Mathis, C. P.**, R. C. Cochran, B. C. Woods, J. S. Heldt, K. C. Olson, and D. M. Grieger. 1998. Impact of increasing amounts of supplemental high-protein soybean meal on performance of range beef cows. 1998 KSU Cattlemen's Day.
30. **Mathis, C. P.**, R. C. Cochran, J. S. Heldt, B. C. Woods, K. C. Olson, and G. L. Stokka. 1998. Effects of increasing amount of soybean meal on intake and digestibility of tallgrass-prairie hay. 1998 KSU Cattlemen's Day.
31. **Mathis, C. P.**, R. C. Cochran, J. S. Heldt, B. C. Woods, K. C. Olson, and G. L. Stokka, and E. C. Titgemeyer. 1998. Effects of supplemental degradable intake protein on intake and digestibility of bermuda hay. 1998 KSU Cattlemen's Day.
32. **Mathis, C. P.**, R. C. Cochran, J. S. Heldt, B. C. Woods, K. C. Olson, and G. L. Stokka, and E. C. Titgemeyer. 1998. Effects of supplemental degradable intake protein on intake and digestibility of brome hay. 1998 KSU Cattlemen's Day.
33. **Mathis, C. P.**, I. E. O. Abdelgadir, R. C. Cochran, J. S. Heldt, K. C. Olson, B. C. Woods, E. C. Titgemeyer, and E. S. Vanzant. 1997. In situ protein fractions and degradability of four diverse grasses. 1997 KSU Cattlemen's Day.
34. **Mathis, C. P.**, R. C. Cochran, B. C. Woods, J. S. Heldt, K. C. Olson, E. C. Titgemeyer, and E. S. Vanzant. 1997. Effects of supplemental degradable intake protein on intake and digestibility of forage sorghum hay. 1997 KSU Cattlemen's Day.
35. Heldt, J. S., R. C. Cochran, **C. P. Mathis**, B. C. Woods, K. C. Olson, E. C. Titgemeyer, T. G. Nagaraja, and E. S. Vanzant. 1997. Evaluation of the effects of carbohydrate source and level of degradable intake protein and digestion of tallgrass-prairie hay by beef steers. 1997 KSU Cattlemen's Day.
36. Woods, B. C., R. C. Cochran, J. S. Heldt, **C. P. Mathis**, and K. C. Olson. 1997. Effect of supplementation frequency and amount of nonprotein nitrogen in supplements on intake and digestion of low-quality forage. 1997 KSU Cattlemen's Day.
37. Sprott, L. R., J. S. Bluntzer, **C. P. Mathis**, M. D. Fanning, D. W. Forrest, and D. K. Lunt. 1995. Stage of the estrous cycle at Synchro-Mate B treatment and subsequent estrus and conception response in beef heifers. In: Beef Cattle Research in Texas. Texas Agric. Exp. Sta. Progress Report. Publ. 5256. pp 150.

Abstracts

1. **Mathis, C. P.**, K. C. McCuiston, R. D. Rhoades. 2012. A systems approach to ranching in arid environments. J. Anim. Sci. 90(Suppl. 3):252.
2. Carter, B. H., **C. P. Mathis**, G. C. Duff, , J. B. Taylor, K. M. Taylor, B. C. Graham, L. W. Hall, J. D. Allen, D. M. Hallford, and C. A. Löest. 2011. Supplemental branched-chain amino acids improve performance and immune response of newly received feedlot calves. J. Anim. Sci. 89(E-Suppl. 2):188.
3. **Mathis, C.P.**, S. H. Cox, C. A. Löest, M. K. Petersen, and J. T. Mulliniks. 2009. Pasture preconditioning calves at a higher rate of gain improves feedlot health but not post-weaning profit. J. Anim. Sci. 87(E-Suppl. 3):159.
4. Graham, B. C., D. Cazac, **C. P. Mathis**, and C. A. Löest. 2009. Feeding Chile pepper byproduct with alfalfa hay decreases total tract diet digestibility in beef steers. J. Anim. Sci. 87(E-Suppl. 3):155.
5. Baker, T. T., **C. P. Mathis**, J. Boren, S. Smallidge, G. Hawkes, S. Fernald, C. Allison, J. Fowler. 2008. New Mexico Range Improvement Task Force: An Integrated Team. J. Anim. Sci. 86(E-Suppl. 3):133.
6. Mulliniks, J. T., S. H. Cox, S. L. Ivey, **C. P. Mathis**, J. E. Sawyer, M. K. Petersen. 2008. Cow Nutrition impacts feedlot pull rate. J. Anim. Sci. 86(E-Suppl. 3):151.
7. **Mathis, C.P.**, S. H. Cox, M. K. Petersen, C. A. Löest, R. L. Endecott, and M. Encinias. 2007. Low-input pasture preconditioning system is more profitable through harvest than high-input drylot system. J. Anim. Sci. 85(Suppl. 2):167.

8. Waggoner, J. W., C. A. Löest, J. L. Turner, **C. P. Mathis**, K. K. Kane, L. Chen, D. M. Hallford, and M. K. Petersen. 2007. Effects of bacterial endotoxin and dietary protein on serum hormones and plasma amino acids in growing steers. *J. Anim. Sci.* 85(Suppl. 2):159.
9. Waggoner, J. W., C. A. Löest, J. L. Turner, **C. P. Mathis**, K. K. Kane, D. M. Hallford, and M. K. Petersen. 2007. Increasing dietary protein improves nitrogen retention in steers following an endotoxin challenge. In: *Proc., 2007 Plains Nutrition Council.* pp 110.
10. Waggoner, J. W., C. A. Löest, J. L. Turner, **C. P. Mathis**, K. K. Kane, D. M. Hallford, and M. K. Petersen. 2007. Effects of endotoxin and dietary protein on N metabolism, serum cortisol and haptoglobin in growing beef steers. *J. Anim. Sci.* 85(Suppl. 1):358.
11. Waggoner, J. W., C. A. Löest, T. M. Thelen, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and **C. P. Mathis**. 2006. Effects of bacterial endotoxin and supplemental dietary methionine in growing Angus-cross steers. In: *Proc., 2006 Plains Nutrition Council.* pp 131.
12. Waggoner, J. W., C. A. Löest, T. M. Thelen, M. K. Petersen, D. M. Hallford, M. D. Remmenga, and **C. P. Mathis**. 2006. Growing beef steers do not require supplemental dietary methionine during infection. *J. Anim. Sci.* 84(Suppl. 2):39.
13. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III. 2006. Impact of feedlot morbidity on performance, carcass characteristics and profitability of New Mexico ranch to rail steers. *J. Anim. Sci.* 84(Suppl. 1):12.
14. Cazac, D., C. A. Löest, J. W. Waggoner, **C. P. Mathis** and M. K. Petersen. 2005. Ruminal degradation of a chile pepper byproduct by cows. *J. Anim. Sci.* 83(Suppl. 2):130.
15. Sawyer, J. E., **C. P. Mathis**, R. E. Kirksey, and L. M. Lauriault. 2005. Productivity and profitability of pasture-based versus intensive value addition strategies for culled beef cows. *J. Anim. Sci.* 83(Suppl. 2):118.
16. Waggoner, J. W., **C. P. Mathis**, C. A. Löest, J. E. Sawyer, F. T. McCollum, III. 2005. Impact of preconditioning duration on feedlot performance, carcass characteristics and profitability on New Mexico Ranch to Rail steers. *J. Anim. Sci.* 83(Suppl. 2):117-118.
17. **Mathis, C. P.**, and J. E. Sawyer. 2004. New Mexico Forage Mineral Survey. *J. Anim. Sci.* 82(Suppl. 2):115.
18. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, P. J. DeFoor, J. E. Sawyer, and C. A. Rogers. 2003. Ruminally-protected methionine and undegradable true protein does not improve nutrient utilization by growing beef heifers. *J. Anim. Sci.* 81(Suppl. 1):13.
19. Munn, V. A., C. A. Löest, **C. P. Mathis**, M. K. Petersen, R. L. Endecott, T. Powers and R. C. Waterman. 2002. Effects of feed enzymes on ruminal degradability of mature foragers in vitro. *J. Anim. Sci.* 80(Suppl. 2):141.
20. Rogers, C. A., T. W. Drummond, H. L. Vaughn, R. Flores, **C. P. Mathis** and M. L. L. Looper. 2002. Comparison of two synchronization protocols on estrus characteristics, synchronization rates, and conception rates of beef heifers. *J. Anim. Sci.* 80(Suppl. 2):127.
21. Sawyer, J. E., **C. P. Mathis**, C. A. Löest, D. A. Walker, K. J. Malcolm-Callis, L. A. Blan, and R. Taylor. 2002. Niche-targeted versus conventional finishing programs for beef steers. *J. Anim. Sci.* 80(Suppl. 2):139.
22. Waterman, R. C., L. Canales, R. L. Ashley, J. E. Sawyer, J. B. Taylor, G. D. Pulsipher, **C. P. Mathis**, D. E. Hawkins, E. E. Parker, S. H. Cox, J. A. Hartung, J. Horton, and M. K. Petersen. 2001. Responses to protein supplements differing in degradable intake protein to undegradable intake protein ratios with or without propionate salt to young postpartum beef cows. *J. Anim. Sci.* 79(Suppl. 2):118.
23. **Mathis, C. P.**, R. C. Cochran, G. L. Stokka, J. S. Heldt, B. C. Woods, and K. C. Olson. 1999. Impact of increasing amounts of soybean meal on intake and digestion by beef steers and performance by beef cows consuming low-quality tallgrass-prairie forage. *J. Anim. Sci.* 77(Suppl. 1):81.
24. Farmer, C. G., R. C. Cochran, D. D. Simms, J. S. Heldt, and **C. P. Mathis**. 1999. Impact of divergent wheat milling byproducts in supplements on the forage use and performance of beef cattle consuming low-quality tallgrass prairie forage. *J. Anim. Sci.* 77(Suppl. 1):86.
25. Heldt, J. S., R. C. Cochran, **C. P. Mathis**, T.G. Nagaraja, E. C. Titgemeyer, and E. S. Vanzant. 1998. Effects of various carbohydrate sources on the utilization of low-quality tallgrass-prairie forage in continuous culture. *J. Anim. Sci.* 76(Suppl. 2):78.
26. **Mathis, C. P.**, R. C. Cochran, E. S. Vanzant, I. E. O. Abdelgadir, J. S. Heldt, K. C. Olson, J. Caton, D. Faulkner, T. Klopfenstein, K. Moore, S. Paisley, and C. Sheaffer. 1998. Evaluation of in situ and in vitro techniques for estimating degradable intake protein content in forages. *J. Anim. Sci.* 76(Suppl. 2):77.
27. Heldt, J. S., R. C. Cochran, C. G. Farmer, **C. P. Mathis**, T. G. Nagaraja, E. C. Titgemeyer, and E. S. Vanzant. 1998. Effects of supplemental carbohydrate sources on intake and digestion of low-quality tallgrass-prairie forage by beef steers. *J. Anim. Sci.* 76(Suppl. 1):206.

28. **Mathis, C. P.**, R. C. Cochran, J. S. Heldt, B. C. Woods, K. C. Olson, and E. C. Titgemeyer. 1998. Effects of supplemental degradable intake protein on intake and digestibility of medium-quality bermuda and low-quality brome hay. *J. Anim. Sci.* 76(Suppl. 1):205.
29. Heldt, J. S., R. C. Cochran, **C. P. Mathis**, E. C. Titgemeyer, T. G. Nagaraja, and E. S. Vanzant. 1998. Effects of various supplemental carbohydrate sources on the utilization of low-quality tallgrass-prairie forage in continuous culture. *J. Anim. Sci.* 76(Suppl. 2):78.
30. **Mathis, C. P.**, R. C. Cochran, E. S. Vanzant, I. E. O. Abdelgadir, J. S. Heldt, K. C. Olson, J. Caton, D. Faulkner, S. Paisley, T. Klopfenstein, K. Moore, and C. Sheaffer. 1998. Evaluation of in situ and in vitro techniques for estimating degradable intake protein content in forages. *J. Anim. Sci.* 76(Suppl. 2):77.
31. **Mathis, C. P.**, I. E. O. Abdelgadir, R. C. Cochran, J. S. Heldt, K. C. Olson, B. C. Woods, E. C. Titgemeyer, and E. S. Vanzant. 1997. In situ fiber digestion characteristics of four grasses of average to low quality. *J. Anim. Sci.* 75(Suppl. 1):208.
32. Woods, B. C., J. S. Heldt, R. C. Cochran, **C. P. Mathis**, K. C. Olson, D. M. Grieger, and E. C. Titgemeyer. 1997. Effect of urea level in protein supplements on the performance of beef cows grazing tallgrass-prairie range. *J. Anim. Sci.* 75(Suppl. 1):209.
33. Heldt, J. S., R. C. Cochran, **C. P. Mathis**, B. C. Woods, K. C. Olson, E. C. Titgemeyer, T. G. Nagaraja, and E. S. Vanzant. 1997. Evaluation of the effects of carbohydrate source and level of degradable intake protein and digestion of tallgrass-prairie hay by beef steers. *J. Anim. Sci.* 75(Suppl. 1):100.
34. **Mathis, C. P.**, I. E. O. Abdelgadir, R. C. Cochran, J. S. Heldt, K. C. Olson, B. C. Woods, E. C. Titgemeyer, and E. S. Vanzant. 1997. In situ protein fractions and degradability of four diverse grasses. *J. Anim. Sci.* 75(Suppl. 1):94.
35. **Mathis, C. P.**, R. C. Cochran, B. C. Woods, J. S. Heldt, K. C. Olson, E. C. Titgemeyer, and E. S. Vanzant. 1997. Effects of supplemental degradable intake protein on intake and digestibility of forage sorghum hay. *J. Anim. Sci.* 75(Suppl. 1):94.
36. Woods, B. C., R. C. Cochran, J. S. Heldt, **C. P. Mathis**, K. C. Olson, and E. C. Titgemeyer. 1997. Effect of supplementation frequency and amount of nonprotein nitrogen in supplements on intake and digestion of low-quality forage. *J. Anim. Sci.* 75(Suppl. 1):95.
37. **Mathis, C. P.**, H. E. Hawkins, L. R. Sprott, and D. W. Forrest. 1995. Conception rate in beef heifers relative to the presence of a corpus luteum at progestin administration. *J. Anim. Sci.* 73(Suppl. 1):242.

Popular Press

1. **Mathis, C. P.** 2011. Pushing the Weaning Envelop. *BEEF Magazine*. July, 2011.
2. **Mathis, C.P.** 2011. Two-Stage Weaning. *Angus Journal*. May, 2011.
3. **Mathis, C.P.** 2010. Some tips for winter supplementation of cattle. *BEEF Magazine*. September, 2010.
4. **Mathis, C. P.** 2010. Nutrition Tools: Fat, Urea, and Organic Minerals. In: *New Mexico Stockman*. March, 2010.
5. Wenzel, J., B. Carter, and **C. P. Mathis**. 2009. Cattle vaccination and immunity. In: *Progressive Dairyman*. March, 2009.
6. **Mathis, C. P.** 2007. Byproduct Feedstuffs (Part III). Identifying the best option. In: *New Mexico Stockman*. March, 2007.
7. **Mathis, C. P.** 2007. Byproduct Feedstuffs (Part II). Handling and pricing. In: *New Mexico Stockman*. February, 2007.
8. **Mathis, C. P.** 2007. Byproduct Feedstuffs (Part I). Nutritional value and feeding limits. In: *New Mexico Stockman*. January, 2007.
9. **Mathis, C. P.** 2006. Impact of morbidity in the feedlot goes far beyond medicine cost alone. In: *New Mexico Stockman*. November, 2006.
10. **Mathis, C. P.** 2006. Minimizing weaning stress on calves. In: *New Mexico Stockman*. September, 2006.
11. **Mathis, C. P.** 2006. Scrapie certification and eradication. In: *New Mexico Stockman*. June, 2006.
12. **Mathis, C. P.** 2006. Growth implants at branding. In: *New Mexico Stockman*. May, 2006.
13. **Mathis, C. P.** 2006. Feeding energy to grazing cattle. In: *New Mexico Stockman*. April, 2006.
14. **Mathis, C. P.** 2006. Upcoming Extension beef programs. In: *New Mexico Stockman*. March, 2006.
15. **Mathis, C. P.** 2006. Protein supplementation. In: *New Mexico Stockman*. January, 2006.
16. **Mathis, C. P.** 2005. Bovine Trichomoniasis. In: *New Mexico Stockman*. August 2005.
17. **Mathis, C. P.** 2005. Age verification of calves this fall. In: *New Mexico Stockman*. July 2005.
18. **Mathis, C. P.** 2005. Sheep identification programs. In: *New Mexico Stockman*. June, 2005.

19. **Mathis, C. P.** 2004. Cow age influences supplement intake. In: *New Mexico Stockman*. November 2004.
20. **Mathis, C. P.** 2004. New Mexico ranch to rail. In: *New Mexico Stockman*. September 2004.
21. **Mathis, C. P.** 2004. Calf marketing alternatives. In: *New Mexico Stockman*. August 2004.
22. **Mathis, C. P.** 2004. Mineral supplementation to range sheep. In: *New Mexico Stockman*. June 2004.
23. **Mathis, C. P.** 2004. Genetics influence longevity. In: *New Mexico Stockman*. January 2003.
24. **Mathis, C. P.** 2003. Preconditioning considerations. In: *New Mexico Stockman*. December 2003.
25. **Mathis, C. P.** 2003. Ranch to rail provides good information to producers. In: *New Mexico Stockman*. September 2003.
26. **Mathis, C. P.** 2003. Prenatal and postnatal lamb mortality. In: *New Mexico Stockman*. June 2003.
27. Zalesky, D., and **C. P. Mathis**. 2003. Bull management: Strive for fertility first. In: *New Mexico Stockman*. May 2003.
28. **Mathis, C. P.** 2003. EPDs: Focus on what matters most to your cow herd's profitability. In: *New Mexico Stockman*. March 2003.
29. **Mathis, C. P.** 2003. Can you improve the profit potential of your cow-calf enterprise? In: *New Mexico Stockman*. February 2003.
30. **Mathis, C. P.** 2002. Urea in range cattle supplements. In: *New Mexico Stockman*. November 2002.
31. Sawyer, J. E., and **C. P. Mathis**. 2002. Mineral in New Mexico forages. In: *New Mexico Stockman*. October 2002.
32. **Mathis, C. P.** 2002. New Mexico Ranch to Rail to be held in Union County, NM. In: *New Mexico Stockman*. September 2002.
33. **Mathis, C. P.** 2002. Drought: Plan for the worst...Hope for the best. In: *New Mexico Stockman*. July 2002.
34. **Mathis, C. P.** 2002. Copper toxicosis in sheep. In: *New Mexico Stockman*. June 2002.
35. **Mathis, C. P.** 2002. Scrapie eradication from sheep and goats. In: *Shear Wisdom*. June 2002.
36. **Mathis, C. P.** 2002. Subcutaneous clostridial injection-site lesions indicate improved immune response. In: *New Mexico Stockman*. March 2002.
37. **Mathis, C. P.** 2002. Influence of late gestation nutrition on calving difficulty and calf health. In: *New Mexico Stockman*. January 2002.
38. **Mathis, C. P.**, and J. E. Sawyer. 2001. Results Summary of the 2000-2001 New Mexico Ranch to Rail Program. In: *New Mexico Stockman*. September 2001.
39. **Mathis, C. P.** 2001. New Mexico Ranch to Rail. In: *New Mexico Stockman*. August 2001.
40. **Mathis, C. P.** 2001. Will selection for lamb production sacrifice wool quality? In: *New Mexico Stockman*. July 2001.
41. **Mathis, C. P.** 2001. Economics of implanting suckling calves. *FeedLot* 9(Jan./Feb):15.
42. **Mathis, C. P.** 2000. Beef production efficiency is affected by milking ability. In: *New Mexico Stockman*. December, 2000.
43. **Mathis, C. P.** 2000. Flushing ewes may enhance profitability. In: *New Mexico Stockman*. October 2000.
44. **Mathis, C. P.** 2000. Ranch to rail for New Mexico cattle producers: Learn more about the steer calves you produce. In: *New Mexico Stockman*. September 2000.
45. **Mathis, C. P.**, and R. Parker. 2000. Performance testing opportunities for bulls and rams. In: *New Mexico Stockman*. September 2000.
46. **Mathis, C. P.** 2000. Pregnancy testing cows. Is it worth the investment? In: *New Mexico Stockman*. August 2000.
47. Cochran, R. C. H. H. Köster, K. C. Olson, J. S. Heldt, **C. P. Mathis**, and B. C. Woods. 1998. Supplemental protein for grazing cattle examined. *Feedstuffs* 70(No. 7):12-19.

Dissertation/Thesis

- Mathis, C. P.** 1998. Degradable intake protein supplementation to beef cattle consuming low-quality forages. PhD Dissertation. Kansas State University, Manhattan.
- Mathis, C. P.** 1995. Pregnancy rate in beef heifers after synchrony to random or programmed estrous cycles. M.S. Thesis. Texas A&M University, College Station.